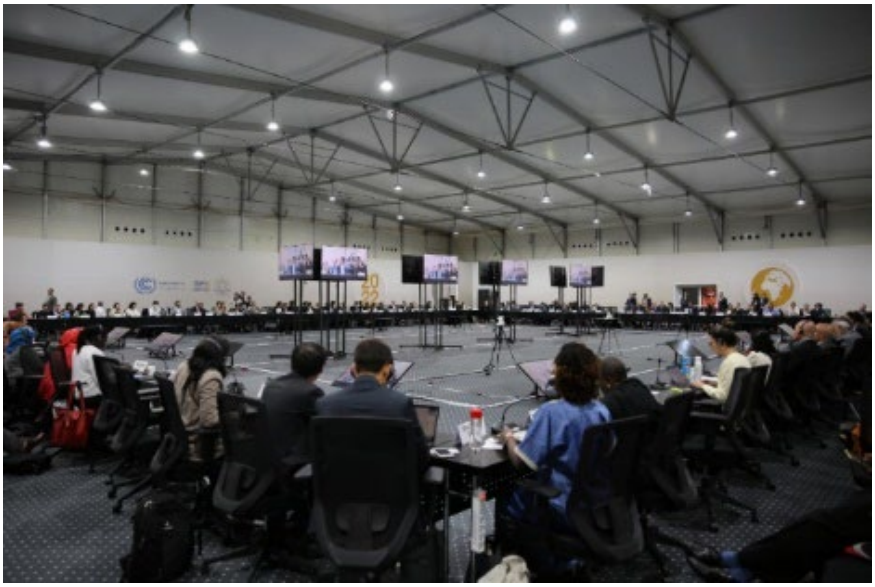
STUDY

Requested by the ENVI Committee

European Parliament

International Climate Negotiations

Issues at stake in view of the COP28 UN Climate Change Conference in Dubai and beyond



Policy Department for Economic, Scientific and Quality of Life Policies
Directorate-General for Internal Policies
Authors: Sienna HEALY, Lorenz MOOSMANN, Felix FALLASCH, Lambert SCHNEIDER, Nora WISSNER, Cristina URRUTIA, Anne SIEMONS, Dietram OPPELT, Anders MCCARTHY, Stefanie VON HEINEMANN, Neeta SHARMA

PE 754.191 - November 2023

EN

International Climate Negotiations

Issues at stake in view of the COP28 UN Climate Change Conference in Dubai and beyond

Abstract

This study provides an overview of the status of international climate negotiations and issues at stake at the COP28 climate change conference which will take place in Dubai (United Arab Emirates) from 30 November to 12 December 2023. 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).

This document was requested by the European Parliament's Committee on the Environment, Public Health and Food Safety (ENVI).

AUTHORS
Sienna HEALY, Öko-Institut e.V.
Lorenz MOOSMANN, Öko-Institut e.V.
Felix FALLASCH, Öko-Institut e.V.
Lambert SCHNEIDER, Öko-Institut e.V.
Nora WISSNER, Öko-Institut e.V.
Cristina URRUTIA, Öko-Institut e.V.
Anne SIEMONS, Öko-Institut e.V.
Dietram OPPELT, HEAT GmbH
Anders MCCARTHY, HEAT GmbH
Stefanie VON HEINEMANN, HEAT GmbH
Neeta SHARMA, HEAT GmbH

ADMINISTRATOR RESPONSIBLE
Georgios AMANATIDIS

EDITORIAL ASSISTANT
Catherine NAAS

LINGUISTIC VERSIONS
Original: EN

ABOUT THE EDITOR
Policy departments provide in-house and external expertise to support EP committees and other parliamentary bodies in shaping legislation and exercising democratic scrutiny over EU internal policies.

To contact the Policy Department or to subscribe for email alert updates, please write to:
Policy Department for Economic, Scientific and Quality of Life Policies
European Parliament
L-2929 - Luxembourg
Email: Poldep-Economy-Science@ep.europa.eu

Manuscript completed: November 2023
Date of publication: November 2023

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

For citation purposes, the study should be referenced as: Healy, S., Moosmann, L., Fallasch, F., Schneider, L., Wissner, N., Urrutia, S., Siemons, A., Oppelt, D., McCarthy, A., von Heinemann, S., Sharma, N., *International Climate Negotiations – Issues at stake in view of the COP28 UN Climate Change Conference in Dubai and beyond, S*tudy 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, 2023.

CONTENTS

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)
ATAG	Air Transport Action Group
AUD	Australian Dollar
BAU	Business As Usual
BINGO	Business and Industry NGOs
CAD	Canadian Dollar
CAEP	Committee on Aviation Environmental Protection
CAN	Climate Action Network
CBDR/RC	Common but Differentiated Responsibilities and Respective Capabilities
CDM	Clean Development Mechanism
CII	Carbon Intensity Indicator

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
CO2	Carbon Dioxide
CO2eq	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
CTCN	Climate Technology Centre and Network
ECONGO	Education and Capacity Building and Outreach NGOs
EEDI	Energy Efficiency Design Index
EEXI	Energy Efficiency Existing Ship Index
EIG	Environmental Integrity Group
ENGO	Environmental NGOs
ETF	Enhanced Transparency Framework
ETS	Emissions Trading System
EU	European Union
F-gas	Fluorinated Gas
FAO	Food and Agriculture Organization
FBOs	Faith Based Organisations
FMCP	Facilitative, Multilateral Consideration of Progress

G7	Group of Seven
G20	Group of Twenty
G-77	Group of 77 at the United Nations
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
GWP	Global Warming Potential
HCFC	Hydrofluorocarbon
HFCs	Hydrofluorocarbons
ICAO	International Civil Aviation Organization
ICC	International Chamber of Commerce
ICLEI	International Council for Local Environmental Initiatives
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 Organizations

IRA	Inflation Reduction Act
ITMO	Internationally Transferred Mitigation Outcome
ITUC	International Trade Union Confederation
JI	Joint Implementation
KCI	Katowice Committee of Experts on the Impacts of the Implementation of Response Measures
KJWA	Koronivia Joint Work on Agriculture
kWh	Kilowatt hour
LCIPP	Local Communities and Indigenous Peoples Platform
LDC	Least Developed Countries
LGMA	Local Government and Municipal Authorities
LMDC	Like-Minded Developing Countries
LNG	Liquid Natural Gas
LTAG	Long-Term Aspirational Goal
LTF	Long-term Finance
LTS	Long-term Strategy
LULUCF	Land Use, Land Use Change and Forestry
MEPC	Marine Environmental Protection Committee
Mha	Million Hectares
MLF	Multilateral Fund
MPGs	Modalities, Procedures and Guidelines (for the transparency framework for action and support)
MP	Montreal Protocol

MRV	Monitoring, Reporting and Verification
Mt	Megatons
NCQG	New Collective Quantified Goal (on climate finance)
NDC	Nationally Determined Contribution
NGO	Non-Governmental Organisation
NOAA	National Oceanic and Atmospheric Administration
ODS	Ozone Depleting Substances
OECD	Organisation for Economic Co-operation and Development
OEWG	Open-Ended Working Group
PCCB	Paris Committee on Capacity-Building
RACHP	Refrigeration, Air Conditioning and Heat Pump
RINGO	Research and Independent Non-Governmental Organisations
RNFCO	Renewable Fuel of Non-Biological Origin
SAF	Sustainable Aviation Fuel
SB	Subsidiary Body
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technological Advice
SCF	Standing Committee on Finance
SDG	Sustainable Development Goal
SEEMP	Ship Energy Efficiency Management Plan
SIDS	Small Island Developing States
TEAP	Technology and Economic Assessment Panel

TEC	Technology Executive Committee
TF	Technology Framework
TM	Technology Mechanism
TUNGO	Trade Union Non-Governmental Organisations
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN	United Nations
UK	United Kingdom
US	United States
USD	United States Dollar
V20	Group of Vulnerable Twenty
WGC	Women and Gender Constituency
WIM	Warsaw International Mechanism (for loss and damage)
YOUNGO	Youth Non-Governmental Organisations

LIST OF BOXES

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

The United Nations Framework Convention on Climate Change (UNFCCC) is the international framework for addressing the mitigation of climate change, the adaptation to a changing climate, loss and damage related to climate change and the support given to developing countries. The upcoming 28th Conference of the Parties (COP28) will take place in Dubai (United Arab Emirates) from 30 November to 12 December 2023.

The international framework for addressing climate change

Under the UNFCCC, the Kyoto Protocol was adopted in 1997 and set emission targets for developed countries only. The Paris Agreement, which was adopted in 2015, requires all of its Parties to take ambitious actions in the areas of mitigation, including through carbon markets; adaptation; loss and damage and support.

The key instruments for enhancing ambition under the Paris Agreements are the nationally determined contributions (NDCs), in which Parties outline their mitigation actions and targets, and the Global Stocktake, which evaluates collective progress towards the goals of the Paris Agreement. These goals are: (1) to limit the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit this increase to 1.5°C; (2) to increase the ability to adapt to the adverse impacts of climate change and to foster climate resilience; and (3) to make finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Separate United Nations agencies address greenhouse gas emissions from international aviation and international maritime transport. These sectors have seen strong emission increases in recent years. The emissions of hydrofluorocarbons (HFCs), which also grew rapidly in recent years, are addressed both under the UNFCCC and by the Kigali Amendment to the Montreal Protocol. The Intergovernmental Panel on Climate Change (IPCC), which completed its Sixth Assessment Report cycle in 2023, assesses the scientific information relevant for understanding and addressing climate change.

Implementation of the Paris Agreement

A set of rules for the implementation of the Paris Agreement was agreed at the climate change conferences in Katowice in 2018 and in Glasgow in 2021. These rules relate to mitigation, adaptation, support, accountability and international carbon markets. The current focus of the climate negotiations is on putting the Paris Agreement into practice, which involves a work programme to raise mitigation ambition, work on the global goal on adaptation and on the delivery of support to developing countries.

The first Global Stocktake under the Paris Agreement comes to a conclusion at COP28. It will be important for Parties to agree on key messages on the status of collective progress towards the goals of the Paris Agreement, and to provide clear guidance on how to increase climate action and support.

Climate policies of main Parties

With regards to the implementation of mitigation actions, the members of the Group of Twenty (G20) play a key role because they are the main emitters of greenhouse gases. Although they have taken a wide range of mitigation actions in recent years, the implementation of their NDCs is not consistent with the goal of keeping the global temperature rise below 1.5°C. Most G20 members communicated long-term strategies, which aim for climate neutrality around mid-century. This aim requires, among others, a fundamental change of their energy systems in the coming decades, including an accelerated shift towards renewable energy.

Stakeholders in the negotiations

In the climate negotiations, Parties that have similar interests speak as a group and coordinate their positions. The main groups are the G-77 and China, which is comprised of developing countries, and the Umbrella Group, which includes many developed countries. The European Union also negotiates as a group.

Non-governmental organisations, intergovernmental organisations and United Nations specialised agencies attend the climate change conferences as well. They have an important role by giving expert advice and emphasise the need for climate action and support.

Outlook

COP28 will face a number of challenges, including the difficulty of adopting the agenda, due to disagreements on proposals for new items by some groups. Progressing on loss and damage and on finance, as well as achieving an ambitious outcome on the Global Stocktake will constitute additional challenges. Once the key messages under the Global Stocktake on how to increase climate ambition have been agreed, Parties will be tasked in 2024 with the preparation of new NDCs, taking into account the outcomes of the Global Stocktake and reflecting the highest possible ambition. The need for additional short-term action, the implementation of transparency provisions and carbon markets, and the negotiations on a new climate finance goal will also constitute key challenges in 2024.

1. INTRODUCTION

With climate-related disasters affecting more and more people across the globe, the mitigation of climate change and the addressing of its impacts requires urgent attention and collective action. The response to climate change at the international level is coordinated under the United Nations Framework Convention on Climate Change (UNFCCC). At the 28th Conference of the Parties (COP28) in Dubai in the United Arab Emirates from 30 November to 12 December 2023, delegates from over 190 countries will meet to discuss and to promote the mitigation of climate change, the adaptation to a changing climate, how to address climate change related loss and damage, and the support given to developing countries.

This study provides an overview of the issues at stake at COP28. It is delivered to the European Parliament's delegation to COP28 but the study is also intended for a wider audience – for readers who would like to gain an overview of the international climate negotiations and of the climate policies of the world's large economies.

The study is structured as follows: chapter 2 introduces the international framework for addressing climate change, i.e. the UNFCCC, the Kyoto Protocol and the Paris Agreement. This chapter also provides information on sectoral agreements to address climate change outside the UNFCCC and on the work of the Intergovernmental Panel on Climate Change (IPCC).

Chapter 3 describes the key developments at recent climate change conferences and the related issues at stake at the upcoming COP28.

For the main Parties, their climate policies and their commitments under the Paris Agreement are described in chapter 4. This information is provided for each member of the Group of Twenty (G20), meaning it encompasses all of the main economies and the main emitters of greenhouse gases. The stakeholders of the negotiation, i.e. groups of Parties, non-governmental and international organisations, are introduced in chapter 5.

Chapter 6 provides an outlook on the key cross-cutting challenges at COP28 and on developments expected in 2024 and beyond.

Chapters 2.1 to 2.3 and 5 constitute an update of chapters 2.1 to 2.3 and 4 of the study 'The COP27 Climate Change Conference – Status of climate negotiations and issues at stake' (Moosmann et al. 2022).

2. THE INTERNATIONAL FRAMEWORK FOR ADDRESSING CLIMATE CHANGE

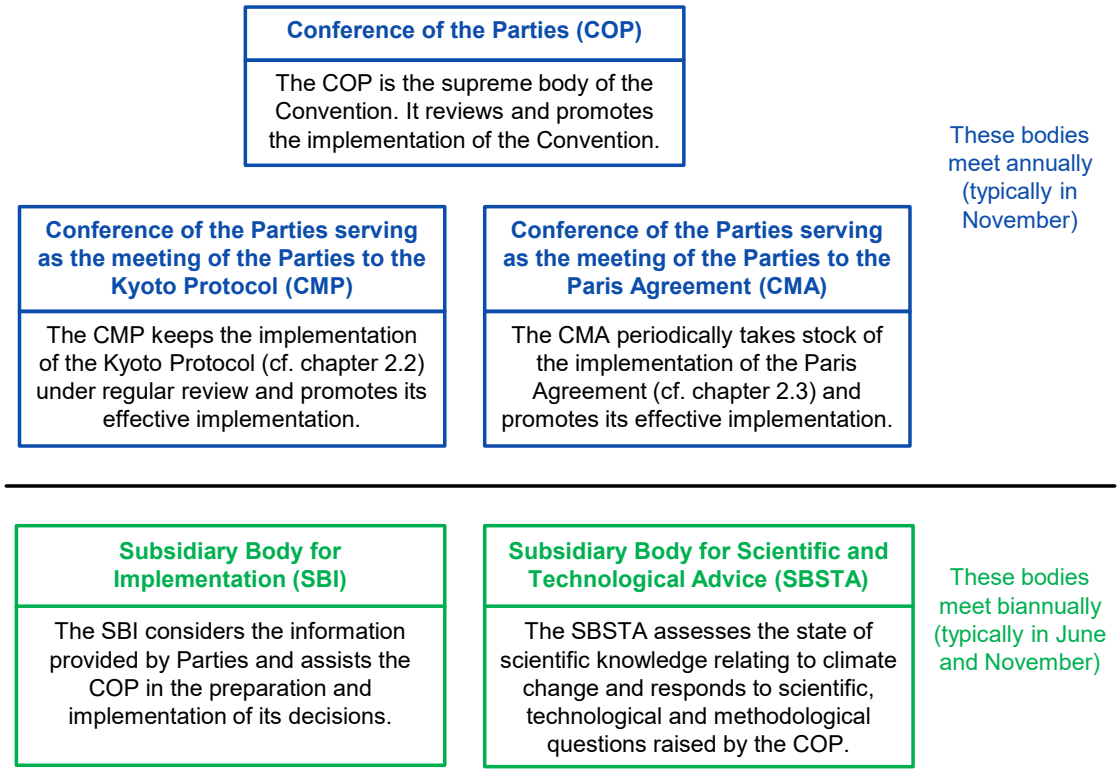
2.1. The United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC 1992) is one of three conventions adopted at the UN Conference on Environment and Development in Rio de Janeiro in 1992. The other two conventions adopted in Rio are closely linked to the impacts of climate change – the UN Convention on Biological Diversity (UN 1992a) and the UN Convention to Combat Desertification (UN 1992b).

The objective of the UNFCCC 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 facilitate adequate adaptation to its effects.

Following the 1992 Rio conference, most countries signed and ratified the Convention. Currently it has 198 Parties (United Nations 2023a). 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 took place annually, with the exception of 2020, when the conference was postponed due to the COVID-19 pandemic. Besides the COP, there are other bodies under the Convention, as depicted in Figure 1.

Figure 1: The Conference of the Parties and related bodies



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

2.2. 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 (UNFCCC 1998).

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.

The Kyoto Protocol allowed countries to achieve their emission reductions or limitations using the following carbon market mechanisms:

- The Clean Development Mechanism (CDM), whereby developed countries were able to use certified emission reductions from mitigation projects in developing countries to achieve their commitments.
- Joint Implementation (JI), whereby 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.

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 (UNFCCC 2012) committed a restricted number of developed country Parties to limiting or reducing their GHG gas emissions in the period from 2013 to 2020. Since large emitters such as the Russian Federation or Japan did not assume a commitment for this period, emission reductions under the Doha Amendment are mainly achieved through the commitment of the European Union to decrease GHG emissions by 20% compared to 1990.

The reviews of the GHG inventories up to 2020 were conducted in 2022, and review reports published in early 2023. Parties with a target in the second commitment period that did not achieve their emission reduction domestically had to acquire units under the Kyoto Protocol's carbon market mechanisms. The process of retiring units equivalent to each Party's target is currently underway.[1] It can be expected that all Parties will be able to retire the required amount and that a large surplus of units from the Kyoto Protocol mechanisms will remain. This is due to the limited participation and low overall ambition under the second commitment period of the Kyoto Protocol.

[1] True-up period reporting and review process for the second commitment period of the Kyoto Protocol, https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-kyoto-protocol/second-commitment-period/true-up-period-reporting-and-review-process-for-the-second-commitment-period-of-the-kyoto-protocol

2.3. The Paris Agreement

2.3.1. Negotiation history

As the mitigation commitments under the Kyoto Protocol covered a limited number of developed countries only, the international community prepared a successor to the Kyoto Protocol, which would include commitments by all countries. After a failure to come to conclusion in 2009, the negotiations focused on an agreement that would allow Parties to determine their contributions in a bottom-up approach. Nevertheless, this agreement would have legal force and require all Parties to contribute to its mitigation goals.

The negotiations on this agreement came to an end 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 contributing 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 requiring climate change mitigation and adaptation action from 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.

2.3.2. Signature, ratification and entry into force

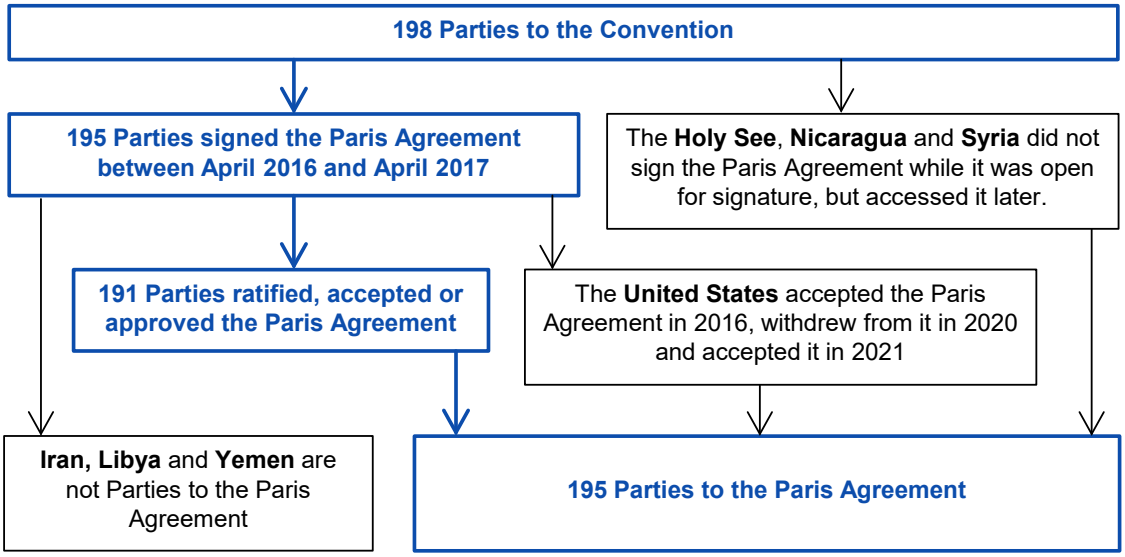
After its adoption, the Paris Agreement was open for signature for one year, starting in April 2016. 195 of the then 197 Parties to the Convention signed the Paris Agreement during that period. What is more important than the signing is the actual ratification, which legally binds Parties to the agreement. 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 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, and 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 2023b). The most recent country to ratify the Paris Agreement is Eritrea, which deposited its instrument of ratification in February 2023.

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

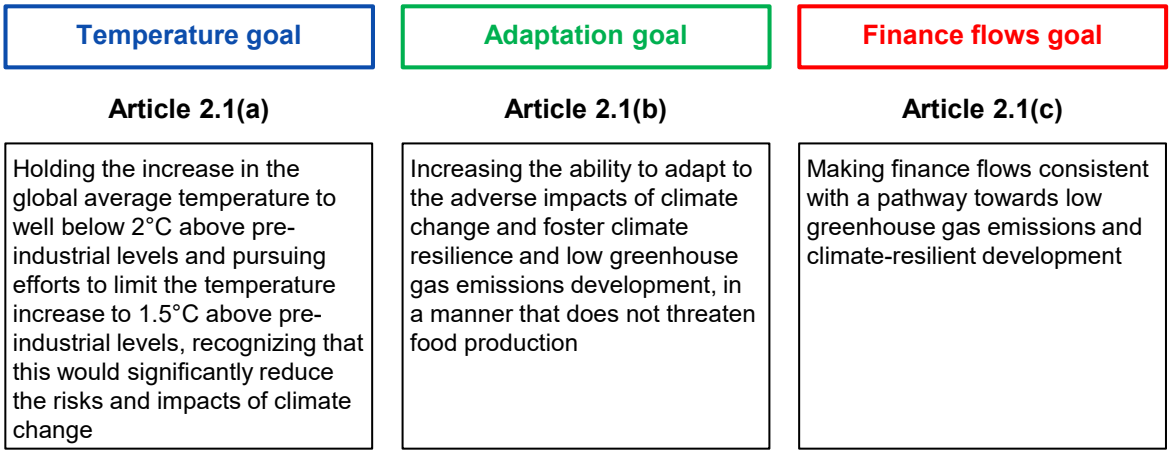


Source: United Nations (2023b), authors' own illustration

2.3.3. 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 above 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



Source: UNFCCC (2015b)

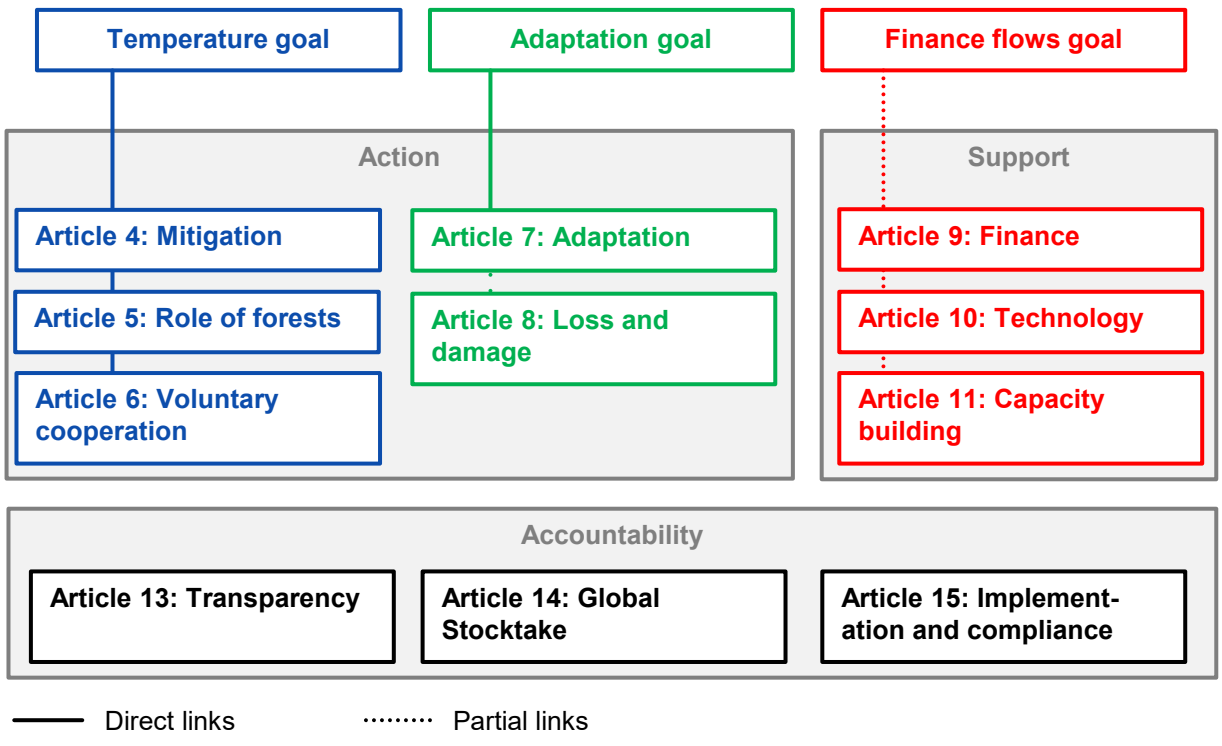
The 'finance flows' goal needs to be distinguished from the '100 billion dollar' goal, a commitment by developed country Parties, first made at the COP in Copenhagen in 2009, to mobilise climate finance amounting to USD 100 billion per year by 2020, from public and private sources. The '100 billion dollar' 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 (cf. chapter 2.3.4 below). 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.

2.3.4. 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 depicted in Figure 4. In the following, an overview of the topics of the Paris agreement is provided.

Figure 4: Topics addressed by the Paris Agreement



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

Note: Loss and damage is partially linked to the adaptation goal, because increasing resilience helps to avert and minimise loss and damage. Financial, technology and capacity building support are partially linked to the 'finance flows' goal, because this goal is broader and goes beyond the topic of support provided to developing countries

Mitigation

Mitigation, i.e. the reduction of GHG emissions and the enhancement of sinks of GHG, 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 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' prevailing 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 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. This article also establishes a new carbon crediting mechanism under international oversight and a framework for countries to engage in non-market approaches.

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 address the mitigation of GHG emissions adequately. 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 giving 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.

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) on Loss and Damage, established by the COP in Warsaw in 2013, is subject to the authority and guidance of the CMA.

Support (finance, technology and capacity building)

Climate action requires, among other things, financial resources, technologies and skills. As has already been 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 through 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 had been 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.

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. This framework comprises the three layers of biennial reporting, technical expert review and Facilitative, Multilateral Consideration of progress (FMCP).

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 also provide such information. Finally, developing country Parties should provide information on support needed and received.

Information on the national inventory, on tracking of progress and on support provided will undergo a technical expert review. Part of that information will be discussed in the FMCP – a question-and-answer session organised under the SBI.

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.

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 in updating and enhancing their NDCs. The first GST is currently underway and will be 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. Following the first Global Stocktake, countries need to communicate new NDCs in 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.

2.4. Sectoral agreements outside the UNFCCC

Besides the UNFCCC, other international organisations and frameworks address greenhouse gas emissions. Specifically, emissions from international aviation are addressed under the International Civil Aviation Organization (ICAO – see section 2.4.1). Emissions from international maritime transport are addressed under the International Maritime Organization (IMO – see section 2.4.2).

Hydrofluorocarbons (HFCs) are a group of potent greenhouse gases which are used as a replacement of ozone-depleting substances (ODS). The phase-down of HFCs is laid out in an amendment to the Montreal Protocol (section 2.4.3). Finally, methane, the second-most important greenhouse gas after carbon dioxide, is the subject of various international initiatives (section 2.4.4).

2.4.1. International aviation

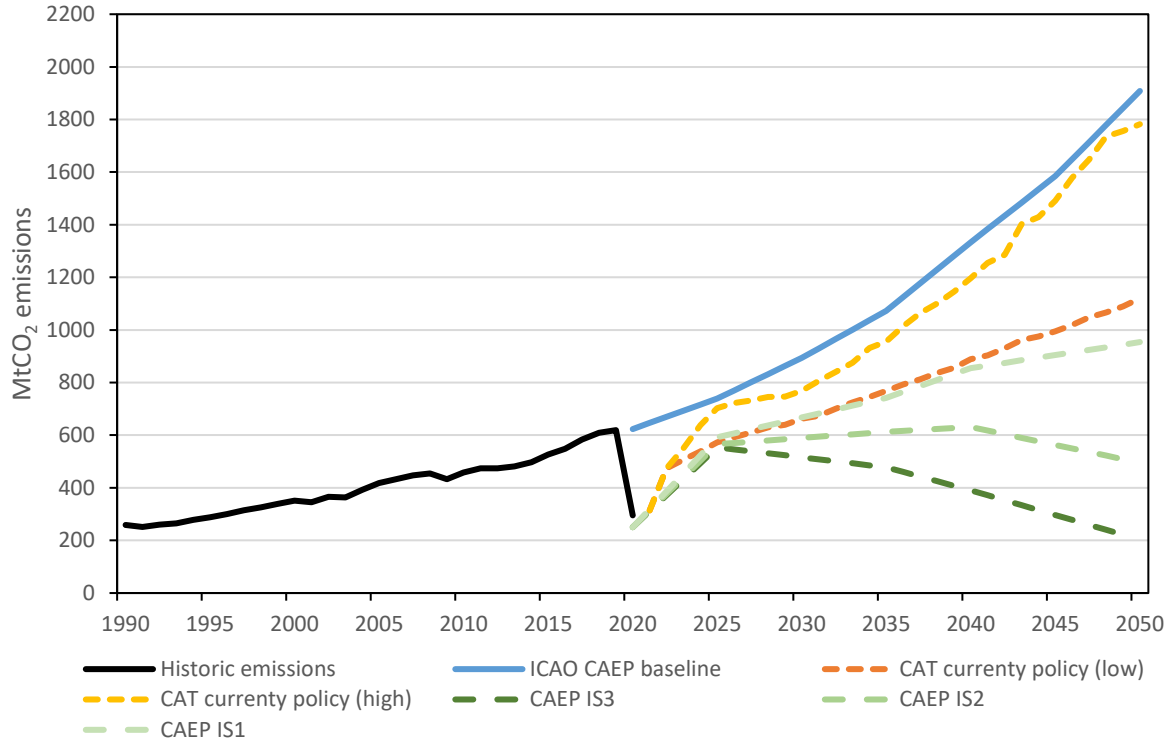
CO_2 emissions from global aviation accounted for approx. 2.4% of annual global CO_2 emissions in recent years (Lee et al. 2021). Due to the growth of the sector, the CO_2 emissions from aviation have increased by approx. 140% over the past three decades (OECD 2023). Overall, aviation's contribution to human-induced global warming is estimated to be approx. 4% - most of this cumulative impact due to emissions since 1990 (Klöwer et al. 2021). The actual contribution of aviation to global warming is estimated to be three times larger if non-CO_2 effects are considered as well. In addition to direct greenhouse gas emissions, aviation has namely other harmful effects on the climate through cloud formation and other chemical processes (Lee et al. 2021).

The largest part of aviation emissions can be attributed to international aviation: 619 million tonnes of CO_2 in 2019 (OECD 2023).

Figure 5 shows the historic development of CO_2 emissions from international aviation between 1990 and 2020 (OECD 2023). It also shows different scenarios for the future development of CO_2 emissions from international aviation. The business-as-usual scenario by the Committee on Aviation Environmental Protection (CAEP) shows a significant growth in aviation emissions until 2050. Projections by CAT (2022) based on current policies also result in an emission growth up

to 2050. The emission reduction scenarios modelled by CAEP for the new climate target (see below) include various mitigation measures, including such as sustainable aviation fuels (SAF), hydrogen aircrafts and technology improvements. These three scenarios result in remaining emissions between 200 and 950 megatons (Mt) CO_2 in 2050.

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



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

After a significant decrease in air transport and respective emissions due to the COVID-19 pandemic, passenger numbers and emissions are on the rise again. Continental and intercontinental travel grew back to at least 60% of pre-pandemic levels in 2022 (Roland Berger 2023). The reduction of aviation emissions due to the COVID-19 pandemic is thus considered to be small in the long term as air transport seems to normalise quickly and air travel and emissions are projected to more than double up to 2050 (ATAG 2021; Klöwer et al. 2021).

Given this projected increase in emissions, a drastic course correction is needed for aviation to be compatible with the goals of the Paris Agreement. Gains in energy efficiency will only play a smaller role compared to the use of SAF and other propulsion technologies (like electric aircrafts) (ICAO 2022). However, the production of SAF and novel technologies requires time and policy interventions to be scaled up. It therefore remains highly challenging to achieve climate neutrality in the aviation sector by 2050 (Leipold et al. 2021).

Policy instruments to mitigate emissions from international aviation

Back in 2016, ICAO set a medium-term goal of carbon-neutral growth after 2020 (ICAO 2016). ICAO's Carbon Offset and Reduction Scheme for International Aviation (CORSIA) aims to compensate for any CO_2 emissions above a baseline to achieve this medium-term goal. Airlines can use carbon credits to fulfil their offset requirements and they can reduce their offset requirements by using SAF. For the pilot phase (2021-2023), a baseline of the average CO_2 emissions of the year 2019 was agreed. For the timeline 2024-2035 a baseline of 85% of 2019 emissions applies. This scheme only covers flights on international routes between participating countries. CORSIA has been criticised for a number of shortcomings. For example, the baseline of 2019 is very high resulting in no offsetting requirements for the year 2021 as the actual emissions subject to CORSIA offsetting were lower in that reporting year compared to the baseline.[2] Other issues raised were the lack of ambition of its goal of 'carbon-neutral growth,' the coverage of CO_2 emissions only, the quality of the eligible carbon credits, and its weaknesses in terms of ensuring compliance and enforceability (Broekhoff et al. 2020; ICF Consulting et al. 2020; Schneider and Wissner 2021; Siemons et al. 2021).

At the 41st ICAO assembly in 2022, ICAO member states agreed on a new climate target: the Long-Term Aspirational Goal (LTAG) of net zero emissions in 2050. ICAO's CAEP published a related feasibility report (ICAO 2022). This report modelled different emission trajectories until 2050 – whereby all scenarios exclude out-of-sector measures (e.g. offsetting) and foresee that some sectoral emissions will remain in 2050.

Overall, ICAO foresees a basket of measures to reduce emissions consisting of technical and operational measures to increase fuel efficiency, the use of SAF, and the purchase of carbon offsets (CORSIA). Work will now continue on implementing the LTAG and the basket of measures. Next steps could be an alignment of CORSIA with the Paris Agreement. As suggested by Schneider and Wissner (2021), CORSIA's ambition could be increased by adopting a new trajectory (like net zero emissions by 2035), by addressing non-CO_2 effects and by improving the quality of carbon credits eligible under the scheme.

The EU has meanwhile implemented policy instruments to address aviation's climate impact in the face of rising aviation emissions globally. The EU Emissions Trading System (EU ETS) currently only covers intra-European flights and flights to the United Kingdom and Switzerland. However, it was strengthened in 2023 when a revision of the ETS for aviation was agreed (EU 2023). From 2026 onwards all allowances will be auctioned, and the linear reduction factor, which caps emissions from aviation, will be increased to 4.3% from 2024 to 2027 and to 4.4% from 2028 onwards (compared to 2.2% previously). Flights to or from countries participating in CORSIA are exempted from the EU ETS as they are subject to CORSIA offsetting requirements. As of 2027, all flights to or from countries not participating in CORSIA will be subject to the EU ETS.

---

[2] Total CO_2 emissions in baseline years: https://www.icao.int/environmental-protection/CORSIA/Documents/CCR%20Info%20Data%20Transparency_PartII_Oct2022.pdf; Total CO_2 emissions for the reporting year 2021: https://www.icao.int/environmental-protection/CORSIA/Documents/CCR%20Info%20Data%20Transparency_PartIII_Oct2022.pdf

There will be a staged approach regarding non-CO_2 effects: a monitoring, reporting and verification (MRV) system will be implemented to cover non-CO_2 emissions from 2025 onwards. By 2028, an impact assessment will be conducted on the system which will be accompanied, when appropriate, by a legislative proposal to expand the EU ETS to non-CO_2 effects of aviation.

Further, the ReFuelEU Regulation[3] will establish an increasing quota for SAF for distributors at EU ports with a sub-quota for Renewable Fuel of Non-Biological Origin (RFNBOs). In order to avoid circumvention through strategic refuelling outside the EU, airlines will be obliged to refuel 90% of the required fuel volume for outgoing flights at EU airports on an annual average.

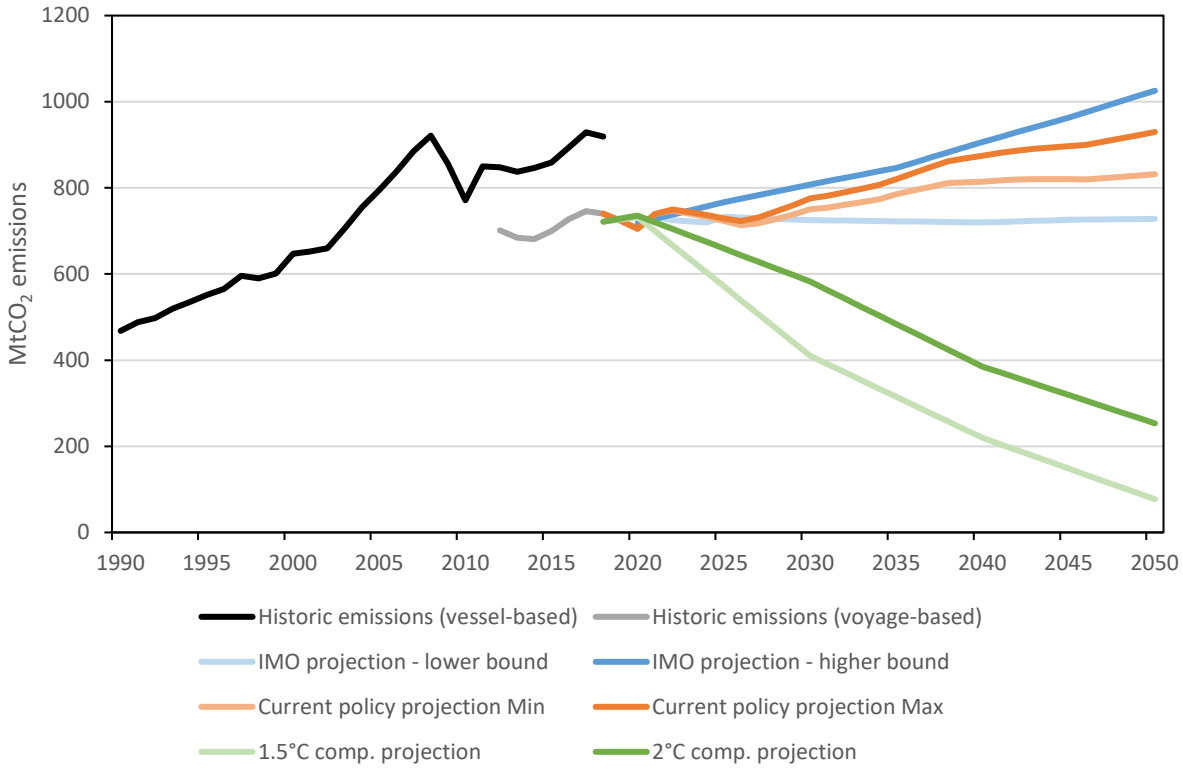
2.4.2. International maritime transport

In 2018, maritime transport accounted for approx. 2.9% of global greenhouse gas emissions (IMO 2020). The major share of these emissions can be attributed to international maritime transport. Over 90% of climate-relevant emissions from this sector are CO_2 emissions – besides smaller quantities of methane, nitrous oxide and black carbon emissions (IMO 2020). International voyages also represent the major share of emissions from EU-related maritime transport with approx. 83 $MtCO_2$ of the total 124 $MtCO_2$ reported in 2021 (EC 2023). Besides its substantial share of global GHG emissions, the importance of maritime transport for the global economy has been highlighted in the last years through, for example, the disruption of supply chains due to the COVID-19 pandemic and the obstruction of the Suez Canal by the Ever Given vessel.

Figure 6 provides an overview of historic CO_2 emissions from international maritime transport and a range of emission projections up to 2050. On average, annual emissions from this sector have increased in recent decades despite energy efficiency gains (IMO 2020). International maritime transport emissions were less impacted by the COVID-19 pandemic than aviation, with passenger traffic being impacted the most (Millefiori et al. 2021; Roland Berger 2023). Without further interventions, emissions from maritime transport are expected to grow as they are strongly correlated with economic growth. The business-as-usual (BAU) scenarios all lead to an increase in emissions in 2050 compared to today with a wide range of projected emissions in 2050 (represented by the blue and red lines in the figure below). In contrast, emissions have to decrease significantly for the sector to follow a 1.5 °C or 2 °C compatible pathway.

[3] ReFuelEU Aviation Regulation, trilogue result: https://www.consilium.europa.eu/en/press/press-releases/2023/04/25/council-and-parliament-agree-to-decarbonise-the-aviation-sector/

Figure 6: Historic 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).

Policy instruments to mitigate emissions from maritime transport

IMO member states adopted a revised GHG Strategy at the 80th meeting of the Marine Environmental Protection Committee (MEPC80) in July 2023 (IMO 2023). It provides an update to the Initial Greenhouse Gas Strategy from 2018, which has been the main framework for international shipping's climate targets so far (IMO 2018). The revised strategy includes the 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 reduction pathway is underpinned by 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.

Next to this absolute emissions reduction goal, the earlier target of reducing the average carbon intensity (CO_2 emissions per transport work) by at least 40% by 2030 compared to 2008 remains in place and might be updated in context of the revision of the energy efficiency measures in 2026 (Smith and Shaw 2023). Further, the revised strategy foresees the uptake of 'zero or near-zero GHG emission technologies, fuels and/or energy sources' which 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 – next time in 2028.

While Pacific islands and developed countries were in favour of higher ambitions during the negotiations at MEPC80, some emerging countries (e.g. in South America) as well as China, India and Saudi Arabia opposed these and called for weaker targets.[4]

The new climate targets for international shipping are a major step forward in addressing the emissions of the sector. However, the revised strategy will not ensure a 1.5 °C compatible pathway due to the vague phrasing of the 2050 target (e.g. around/close to 2050, net-zero) and the non-binding interim targets (Smith and Shaw 2023).[5] The strategy might be aligned with a 2 °C pathway but it will very likely depend on additional efforts by individual member states and the implementation of further policies. It remains unclear whether offsetting is included in the revised reduction targets. Offsetting is not explicitly excluded in the final text and the phrasing of a 'net-zero' target was agreed in the end (Smith and Shaw 2023). The issue will likely be further debated in the context of IMO mid-term measures, as described further below.

Another important decision at MEPC80 was that all reduction targets and indicative checkpoints mentioned above shall take a well-to-wake approach for GHG emissions of marine fuels and including not only CO_2 but also other relevant GHG (such as methane and nitrous oxide). This agreement is connected to the adoption of guidelines on the lifecycle GHG intensity of marine fuels. These guidelines are not a mandatory policy instrument but will be used for the implementation of future measures, including a fuel standard.

Over the years, the IMO has adopted several policies (so-called short-term measures within IMO) targeting the energy efficiency of ships: 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) (Lloyd's Register 2020). 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). To further implement the revised strategy and induce the necessary fuel switch, a basket of mid-term measures shall be finalized and agreed in 2025 and enter into force in 2027. At MEPC80, it was agreed that the basket of measures shall consist of a technical element (e.g. a goal-based marine fuel standard, similar to FuelEU Maritime Regulation as described below) and an economic element (e.g. carbon pricing like a levy). These measures will be further developed at the next meetings. Furthermore, it was agreed at MEPC80 that the IMO will provide input to the Global Stocktake (see section 3.7).

While stringent policy instruments at the international level are still lacking and will take a few years to be implemented, new policies were agreed at the EU level. After establishing a MRV system for CO_2 emissions from EU-related maritime transport, the EU bodies agreed in 2023 to

[4] Pacific "mixed feelings" after compromise on shipping's climate goals, https://www.climatechangenews.com/2023/07/07/imo-mepc-shipping-climate-net-zero-emissions-cuts-2030-2040-pacific/

[5] IMO's newly revised GHG strategy, https://theicct.org/marine-imo-updated-ghg-strategy-jul23/

include the sector in the existing EU ETS from 2024 onwards (EU 2023). The maritime EU ETS strongly builds on the EU MRV system for maritime transport. The EU ETS thus covers CO_2 emissions from ships with a gross tonnage of 5000 and on voyages within the EU waters (and in ports) but also on 50% of voyages to/from third countries. From 2026 onwards, methane and nitrous oxide emissions will also be included.

In addition, a review is scheduled to potentially include smaller ships in the EU ETS. Allowances will be auctioned and there is a phase-in period lasting until 2026. Within 18 months of the adoption of a market-based measure at IMO or by 2028 at the latest, the EU Commission must compile a report to examine the measure regarding its ambition in light of the objectives of the Paris Agreement, its environmental integrity, and the coherence between the EU ETS and that measure. The EU Commission is then tasked with making proposals on either amending the EU ETS to account for an IMO carbon pricing measure on the EU-related international voyages or, alternatively, extending the scope of the maritime EU ETS to more than 50% of incoming and outgoing voyages. The FuelEU Maritime Regulation, also agreed in 2023,[6] sets a limit to the GHG intensity of energy used onboard a ship. This limit decreases over time from 2% below the reference value in 2025 to 80% below the reference value in 2050. The Regulation is supposed to incentivise the use of low-carbon or post-fossil fuels. It also includes a mandate regarding onshore power supply and a sub-quota for RFNBOs as defined by the EU Renewable Energy Directive. In addition, negotiations are ongoing on a European Commission's proposal to end the energy tax exemption of fuels used in intra-EU maritime transport.

2.4.3. Addressing fluorinated gases under the Montreal Protocol

The Montreal Protocol (MP) on substances that deplete the ozone layer celebrated its 35th Anniversary in November 2022. The MP has led to the effective elimination of ozone-depleting substances that were once widely used in products like refrigerators, spray cans, and fire extinguishers. Global consumption and production of these harmful chemicals has been phased out at an unprecedented scale and pace.[7] The adoption of the Kigali Amendment to the MP has expanded the Protocol's compliance bound funding to include Hydrofluorocarbons (HFCs), a group of greenhouse gases used predominantly in the refrigeration, air conditioning and heat pumps (RACHP) sector. In fact, the emergence of HFCs is a direct consequence of the ODS phase out actions under the MP, and HFCs are now to be phased down by 85% until 2047 as per the Kigali Amendment. As of August 2023, 151 countries are Party to this Amendment[8] with all major economies having completed ratification.

In July 2023, the 45th Open Ended Working Group (OEWG) meeting was held for all Parties of the Protocol. Current issues discussed under the MP include[9]:

---

6 Regulation (EU) 2023/1805 on the use of renewable and low-carbon fuels in maritime transport, and amending Directive 2009/16/EC, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1805

7 91st meeting of the Executive Committee, UNEP/OzL.Pro/ExCom/91/8

8 All ratifications, https://ozone.unep.org/all-ratifications

9 45th meeting of the Open-ended Working Group of the Parties, UNEP/OzL.Pro.WG.1/45/L.1/Add.1

Replenishment: The Multilateral Fund (MLF), the funding mechanism of the MP, receives funds every triennium. The Technology and Economic Assessment Panel (TEAP), one of three panels associated with the MP, is tasked with the assessment of the funding requirement of the MLF based on decisions of the Parties. The TEAP has estimated that USD 975-1086 million will be required for the 2024-2026 triennium. Apart from the funding of the ODS phase out and HFC phase down actions, the overall proposed budget comprises USD 20 million earmarked for enhancing and maintaining energy efficiency during phase down of HFCs, approximately USD 13.5 million each for funding the preparation of national inventories of banks of waste-controlled substances and gender mainstreaming activities. The planned activities underline the ability of the Montreal Protocol addressing climate issues within its field of competence going beyond its original mandate of ozone protection.

Recovery of the Ozone Layer: The Scientific Assessment Panel (SAP) reported that the stratospheric ozone is on the way to full recovery. Full global recovery is anticipated by 2045 for the Arctic and by 2066 for the Antarctic. The measures undertaken by the Montreal Protocol and its Kigali Amendment are expected to prevent additional global warming, which would have resulted without the measures, with about 0.5–1°C related to the phase out of ODS by 2050, and 0.2–0.4°C for the phase down of HFCs (WMO 2022; IPCC 2022a). Potential risks remain to this recovery, namely in the form of emissions from ODS banks in old equipment, HFC23 and very short-lived substances which need further assessment.

Unexplained increases in emission of HFC23: The SAP has confirmed that global emissions of HFC23, a by-product of the production of HCFC22, a Hydrochlorofluorocarbon, are 8 times higher than expected. The need for abatement measurers during production and feedstock use was emphasised. TEAP has been tasked to conduct further analysis on these emissions.

Dumping of obsolete equipment: Several Parties raised the concern on the international trade and sale of used refrigeration, air-conditioning and heat pump products and equipment which are energy inefficient and containing or relying on high GWP refrigerants. The principle of shared responsibility of both exporting and importing countries was highlighted. Requests were made for appropriate measures to curb the trade of such products, addressed under the Montreal Protocol as 'dumping' by ensuring that cooling equipment that is prohibited for use in the domestic market should also be prohibited from export.

The Montreal Protocol has led to the widespread elimination of ozone-depleting substances and expanded its mandate with the Kigali Amendment to phase down potent greenhouse gas HFCs by 85% by 2047. While significant progress has been made, the Kigali Amendment currently only addresses a phase down, not a full phase out of HFCs. In some cases, Parties are taking steps beyond the Kigali Amendment, addressing a complete phase out of F-gases and their replacement with environmentally friendly substances which are completely F-gas free. This includes the position of the EU Parliament on the proposed revision of the European Regulation

on F-gases[10], and the position of the California Legislature in the state of California[11]. The MP could consider a full phase out of HFCs and alternative low GWP F-gases, many of which have harmful environmental impacts. This would build on the momentum of the Kigali Amendment and further the Protocol's mission of protecting the ozone layer, mitigating climate change and environmental protection. With leadership from progressive Parties, the MP has the potential to drive an ambitious worldwide F-gas phase out.

2.4.4. Addressing methane emissions

Methane levels in the atmosphere hit record highs in 2022, underscoring the urgent need for action on this potent greenhouse gas. The latest data from the National Oceanic and Atmospheric Administration (NOAA) shows atmospheric methane concentrations rose 14 ppb in 2022, marking one of the fastest annual increases ever recorded. This continues a worrisome trajectory of rapidly rising methane concentrations since 2020, with over half of emissions estimated to result from human activity. As methane traps 87 times more heat than CO_2 (over a time period of 20 years), curbing methane emissions is critical to meeting climate goals and averting catastrophic warming[12].

While many Parties have already planned and implemented policies and measures to reduce methane emissions at national level, the issue of methane emissions is also addressed internationally through the Global Methane Pledge (GMP), launched at COP26 in 2021. It represents a collective effort to reduce global methane emissions. Countries who join the commitment: i) agree to take voluntary actions to reduce global methane emissions by at least 30% from 2020 levels by 2030; ii) commit to moving towards using the highest tier IPCC good practice inventory methodologies; and iii) agree to continuously improve the accuracy, transparency, consistency, comparability, and completeness of national greenhouse gas inventory reporting under the UNFCCC and Paris Agreement.

As of mid-2023, 150 nations have joined the GMP and more than 50 countries have developed national methane action plans or are in the process of doing so[13]. Following the launch of the GMP at COP26, the USA and EU convened a Methane Ministerial at COP27 in order to highlight the progress made as well as discuss further steps, including enhanced efforts leading up to COP28[14].

---

[10] Fluorinated gases: reinforced EU action to cut emissions, https://www.europarl.europa.eu/news/en/press-room/20230327IPR78543/fluorinated-gases-reinforced-eu-action-to-cut-emissions

[11] California Legislature: Senate Bill SB-1206 Hydrocarbon gases: sale or distribution (September 2022), https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220SB1206

[12] Climbing methane levels in the atmosphere are contributing to overall rise in greenhouse gases, https://www.pbs.org/newshour/science/climbing-methane-levels-in-the-atmosphere-are-contributing-to-overall-rise-in-greenhouse-gases

[13] Global Methane Pledge, https://www.globalmethanepledge.org

[14] Global Methane Pledge: From Moment to Momentum, https://www.state.gov/global-methane-pledge-from-moment-to-momentum/

In 2022, several GMP pathways were launched which target different sectors, such as: i) the GMP Energy Pathway which targets methane emissions reductions in the fossil energy sector[15]; ii) the GMP Food and Agriculture Pathway which targets methane emission reductions in the agriculture sector whilst advancing climate and food security goals; and iii) the GMP Waste Pathway which aims to reduce emissions across the solid waste value chain.

As part of the EU 'Fit for 55' package, the European Commission proposed the first EU-wide legislation aimed at cutting methane emissions in 2021[16]. This policy proposal includes binding 2030 methane reduction targets for all sectors, EU Member States will have to set national reduction targets as part of their national energy and climate plans and operators will have to submit a methane leak detection and repair programme to the national authorities upon the entry into force of this legislation. Negotiations between the European Parliament, Council and Commission are ongoing in order to finalise the text.

In the United States, the Methane Emissions Reduction Programme[17] was created under the Inflation Reduction Act in order to decrease methane emissions from the petroleum and natural gas sector. This programme includes financial and technical assistance worth more than USD 1 billion and covers plugging wells, mitigating health effects in low-income communities, assistance in preparing and submitting GHG reports and monitoring methane emissions. Moreover, the programme introduces a 'Waste Emissions Charge' covering waste emissions from facilities reporting more than 25,000 tonnes of CO_2eq per year, with costs per tonne increasing from USD 900 to USD 1,500 between 2024 and 2026. At the COP27, the US government announced the deployment of USD 20 billion in new investments aimed at reducing methane emissions[18].

In November 2022 Nigeria strengthened methane emission guidelines and became the first African country to regulate methane emissions[19], whilst Colombia joined the GMP at COP27 and became the first country in Latin America to regulate methane emission through the passage of a national resolution in 2022[20].

The International Energy Agency (IEA) has estimated that USD 75 billion in cumulative capital and operating expenditure will be necessary globally up to 2030 to reduce methane emissions in line with a 2050 Net-Zero scenario and to remain within 1.5°C of temperature increase (this corresponds to a reduction of 100 million tons of methane emissions by 2030). Importantly, methane emission abatement is a cost-effective way to reduce GHG emissions, as up to USD 45

---

15 Global Methane Pledge Energy Pathway, https://www.iea.org/policies/15806-global-methane-pledge-energy-pathway#

16 Proposal for a Regulation on methane emissions reduction in the energy sector, COM(2021) 805 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2021%3A805%3AFIN&qid=1639665806476

17 Methane Emissions Reduction Program, https://www.epa.gov/inflation-reduction-act/methane-emissions-reduction-program.

18 Delivering on the U.S. Methane Emissions Reduction Plan, https://www.whitehouse.gov/wp-content/uploads/2022/11/US-Methane-Emissions-Reduction-Action-Plan-Update.pdf

19 Guidelines for Management of Fugitive Methane and Greenhouse Gas Emissions in the Upstream Oil and Gas Operations in Nigeria, https://www.nuprc.gov.ng/wp-content/uploads/2022/11/METHANE-GUIDELINES-FINAL-NOVEMBER-10-2022.pdf.

20 IEA – Policies, https://www.iea.org/policies/14970-resolution-400662022-technical-requirements-for-the-detection-and-repair-of-leaks-the-utilisation-flare-and-venting-of-natural-gas-during-exploration-and-production-of-hydrocarbons-activities

billion can be generated from the sale of captured methane (IEA 2023a). Finally, current mitigation actions in published NDCs could – if implemented to their maximum technical mitigation potential – reduce global emission by approx. 30% and achieve the targets of the GMP (Malley et al. 2023).

The Global Methane Pledge aims to reduce methane emissions 30% by 2030, but current policies cover just 13% of emissions. Implementing all existing climate pledges could achieve a 30% cut, but this is insufficient to meet the 45% reduction needed this decade to limit warming to 1.5°C. Though over 150 nations have joined the pledge, key methane reduction policies and regulations are still lacking[21]. While Nigeria and Columbia are the first African and Latin American nations, respectively, to regulate methane, broader developing world engagement is essential. Urgent action is needed on significant emitting sources in agriculture, landfills and fossil fuel infrastructure. Accelerated leadership, finance, and collaborative action are critical this decade to close the methane emissions gap.

2.5. The Intergovernmental Panel on Climate Change

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 and assesses the scientific, technical and socio-economic information relevant for understanding the risk of human-induced climate change. The IPCC's work covers physical scientific aspects of the climate system and climate change, the vulnerability of socio-economic and natural systems to climate change as well as options for mitigating climate change. It produces general assessment reports (every five to seven years) as well as special reports and technical papers on specific issues, often upon the request of the COP or the SBSTA, which then find entrance into COP decisions.

In 2023, the IPCC completed its sixth assessment cycle, in which it produced the Sixth Assessment Report (AR6) comprising contributions from each of the three Working Groups on the physical science basis; impacts, adaptation and vulnerability; and mitigation of climate change as well as synthesis report on climate change. It summarised the state of scientific knowledge on the drivers of climate change, its impact and how mitigation and adaptation can reduce the risks related to climate change.

AR6 has been a major input to the Global Stocktake process under the UNFCC (see section 3.7). The Synthesis Report was finalized during the Panel's 58th Session held in Interlaken, Switzerland from 13 to 19 March in 2023 to inform the 2023 Global Stocktake.[22] Moreover, the IPCC has developed guidelines for national greenhouse gas inventories which are used by all Parties to prepare national reports on their greenhouse gas emissions.[23]

---

21 Policy Watch: World dangerously lagging on plugging methane emissions, https://www.reuters.com/sustainability/climate-energy/policy-watch-world-dangerously-lagging-plugging-methane-emissions-2023-05-31/.

22 AR6 Synthesis Report: Climate Change 2023, https://www.ipcc.ch/report/ar6/syr/

23 2006 IPCC Guidelines for National Greenhouse Gas Inventories, https://www.ipcc.ch/report/2006-ipcc-guidelines-for-national-greenhouse-gas-inventories/ and Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, https://www.ipcc.ch/report/2019-refinement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories/

Box 1: Selected headline statements from the Sixth Assessment Report of the IPCC

The Synthesis Report of the Sixth Assessment Cycle, which was adopted in March 2023, provides comprehensive information on the state of climate change and on ways to address it. In its headline statements, the report addresses the main findings and challenges associated with climate change:

- Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming. For any given future warming level, many climate-related risks are higher than assessed earlier.
- Some future changes are unavoidable and/or irreversible but can be limited by deep, rapid and sustained global greenhouse gas emissions reduction.
- Adaptation options that are feasible and effective today will become constrained and less effective with increasing global warming.
- Limiting human-caused global warming requires net zero CO2 emissions. Rapid and far-reaching transitions across all sectors and systems are necessary to achieve deep and sustained emissions reductions and secure a liveable and sustainable future for all.
- Effective climate action is enabled by political commitment, well-aligned multilevel governance, institutional frameworks, laws, policies and strategies and enhanced access to finance and technology. Finance, technology and international cooperation are critical enablers for accelerated climate action.

The Synthesis Report, but also the reports of the IPCC working groups, which were published earlier, constituted a key input to the Global Stocktake (cf. section 3.7).

Source: Authors' selection of statements from: AR6 Synthesis Report – Headline Statements, https://www.ipcc.ch/report/ar6/syr/resources/spm-headline-statements/

3. DEVELOPMENTS IN IMPLEMENTATION OF THE PARIS AGREEMENT (COP25-27) AND MAIN ISSUES AT STAKE AT COP28

In this chapter, the outcomes of the previous climate change conferences are summarised, and an outlook is given on the main issues to be discussed at COP28 in Dubai. The outcomes and issues are structured according to the main topics under the Paris Agreement. In addition, the status of other main negotiation items under the Convention is presented.

3.1. Mitigation

Article 4 of the Paris Agreement establishes the obligation for all Parties to 'prepare, communicate and maintain successive' NDCs and to pursue 'domestic mitigation measures' for achieving the objectives established in their NDCs. It also determines that NDCs will be recorded in a public registry. After the adoption of the Paris Agreement, negotiations continued on two key mandates, which were completed with the adoption of decision 4/CMA.1 in Katowice in 2018:

- **Information on clarity, transparency and understanding:** Referring to the information Parties must provide when communicating their NDCs. For example information on the base year or reference year for their NDC, the sectors and gases covered by their NDC, and relevant methodological information for estimating GHG emissions and removals. Parties are also required to detail how they consider that their NDC is fair and ambitious. Parties shall provide this information for their second and then every following NDC.
- **Guidance for accounting for NDCs:** Which establishes how Parties will account for the GHG emissions and removals corresponding to their NDCs. For example, the guidance specifies that accounting is done according to methodologies and metrics assessed by the IPCC and adopted by the CMA. Also Parties must use the same data, definitions, metrics and assumptions when communicating and implementing their NDCs. This is referred to as methodological consistency. The accounting guidance also applies starting with the second NDC and Parties will report the information in their biennial transparency reports.

Other mitigation related mandates under the Paris Agreement were:

- The modalities and procedures for the operation and use of the NDC registry.
- The consideration of common time frames for NDCs. This question is important because NDCs were communicated with time frames of either five or ten years.
- Further guidance on features of NDCs.

The negotiations on the NDC registry and common time frames were part of the Paris Agreement Work Programme, whereas negotiation on features were deferred until CMA7.

3.1.1. Outcomes of COPs 25-27

COP25/CMA2 in Madrid in 2019 concluded without delivering significant progress on the modalities and procedures for the NDC registry and on common time frames. Decision 1/CMA.2, titled 'Chile Madrid Time for Action' calls for Parties to close the ambition gap between current NDCs and the emissions pathway needed to limit the global temperature increase to well below 2°C or 1.5°C and reiterates the call for submitting mid-century long-term low greenhouse gas emissions development strategies.

The outstanding mitigation mandates under the Paris Agreement Work Programme, modalities for the NDC registry and common time frames, were completed at CMA3 in Glasgow in 2021. The CMA adopted the NDC registry (decision 20/CMA.3), a repository of all NDCs which is accessible online as of June 2022[24].

Decision 6/CMA.3 on common time frames encourages Parties to communicate NDCs with end dates in 2035 and 2040 and to do so in 2025 and 2030 respectively, as well as to communicate NDCs 'every five years thereafter'. Although this is only an encouragement, it must be understood in light of the obligations of the Paris Agreement. Parties 'shall' communicate NDCs every five years and progression in ambition is expected with each subsequent NDC. For more information on the decision on common time frames, please see Moosmann et al. (2022).

COP26/CMA3 in Glasgow also put a strong emphasis on mitigation ambition. The conference took place in light of the findings of the Sixth Assessment Report of the IPCC and was the moment for Parties to present new or updated NDCs. The cover decisions 1/CP.26 and 1/CMA.3, known as the '**Glasgow Climate Pact'**, include several provisions to strengthen mitigation action, for example:

- Parties for the first time recognised a concrete figure for reducing CO_2 emissions, -45% by 2030 relative to 2010, as well as the need for a net-zero emission level around mid-century.
- Parties recognised the need for a deep reduction in non-CO_2 greenhouse gases, specifically mentioning actions to reduce methane emissions by 2030.
- Parties for the first time explicitly addressed coal and fossil fuels by stating the need for a phase-down of unabated coal power generation and a phase-out of inefficient fossil fuel subsidies.
- The UNFCCC secretariat was tasked to provide annual updates to the synthesis report on NDCs[25] and was requested to prepare a synthesis report on long-term low greenhouse gas emission development strategies.
- Parties emphasised the importance of protecting, conserving and restoring ecosystems and biodiversity for limiting the global temperature increase to the level set out in the Paris Agreement, stressing their role as sinks and reservoirs.

[24] NDC registry, https://unfccc.int/NDCREG

[25] The preparation of a synthesis report on NDCs was mandated by decision 1/CMA.2, paragraph 10.

The CMA further established a '**work programme to urgently scale up ambition and mitigation**' up to 2030 and asked the subsidiary bodies to propose a decision on the work programme for CMA4. This work programme is explicitly aimed at complementing the Global Stocktake. The CMA also called on Parties to revise their NDCs and strengthen their 2030 targets by the end of 2022. It also called for Parties to present or update their long-term low greenhouse gas emission development strategies. The decision also introduced annual **high-level ministerial round tables on pre-2030 ambition**, starting in 2022.

COP27/CMA4 in Sharm El-Sheikh adopted the '**Sharm el-Sheikh Implementation Plan**', two cover decisions, 1/CP.27 and 1/CMA.4, that do not respond to a specific mandate but rather aim to capture political progress on ambition and implementation and reflect developments that are linked to the negotiations, such as the Global Climate Action Agenda (IISD 2022b). Some specific new elements included in the Sharm el-Sheikh Implementation Plan are:

- Parties recognised that a reduction of 43% by 2030 compared to 2019 of all greenhouse gases is required to limit global warming to 1.5°C. The figure included in the decision from Glasgow only referred to CO_2.
- Parties noted the finding of the UNFCCC secretariat's synthesis report on NDCs, that implementation of all latest NDCs would reduce the global GHG emission level by 0.3% only in 2030 compared to 2019.
- Calls and requests for Parties to communicate new or updated NDCs and to strengthen the 2030 targets in NDCs by the end of 2023.
- A specific section on energy that emphasises the need to increase the use of low-emission and renewable energy. The section also refers to the global energy crisis and stresses the urgency to transform energy systems.
- Parties established a work programme on just transition pathways for achieving the goals of the Paris Agreement and decided to convene annual high-level ministerial round tables on just transition starting with CMA5 in 2023.

Completing the mandate on the 'work programme to urgently scale up ambition and mitigation' from Glasgow, Parties adopted the '**Sharm el-Sheikh mitigation ambition and implementation work programme**'[26] (decision 4/CMA.4). This decision operationalises the work programme through 'focused exchanges of views, information and ideas' on all sectors covered by the GHG inventories and relevant thematic areas to scale up mitigation ambition and implementation in the critical years until 2030. This work programme includes global dialogues and 'investment focused events', with a view to unlocking finance for mitigation implementation. Under the guidance of the co-chairs of the dialogues, the secretariat will prepare reports on key findings, opportunities and barriers identified during the global dialogues and the co-chairs will present these reports at the annual high-level ministerial round tables on pre-2030 ambition. The work programme will continue in this format until CMA8, where a decision on its continuation

[26] Landing page of the Sharm el-Sheikh mitigation ambition and implementation work programme, https://unfccc.int/topics/mitigation/workstreams/mitigation-work-programme

will be taken. After much debate between Parties, it was also agreed that the outcomes of the work programme will be 'non-prescriptive, non-punitive, facilitative, respectful of national sovereignty and national circumstances, take into account the nationally determined nature of nationally determined contributions and will not impose new targets or goals'.

The **first global dialogue** under the mitigation and ambition work programme took place from 3 to 4 June 2023 in conjunction with SB58 in Bonn[27]. The dialogue focused on accelerating the just energy transition, focusing on the implementation of policies and measures, addressing financial, technological and capacity-building needs, as well as promoting sustainable development and addressing socioeconomic effects. The second global dialogue and the investment focused event took place from 15 to 17 October in Abu Dhabi. The second global dialogue focused on 'opportunities, actionable solutions and technologies for just energy transition(s) in the transport sector'.

The first annual high-level ministerial roundtable on pre-2030 ambition also took place during COP27/CMA4. The event addressed questions on how to increase ambition and address barriers. At the beginning of the meeting the UNFCCC secretariat presented key findings of the synthesis reports on NDCs and long-term strategies and an IPCC representative presented mitigation options identified in the Working Group III contribution to the 6th IPCC Assessment Report.

3.1.2. Issues at stake at COP28

COP26 and COP27 concluded with calls for Parties to scale up ambition in their NDCs and to present long-term low greenhouse gas development strategies. All but one of the G20 countries, have followed the call for updating their NDCs (see chapter 4). So far, 68 Parties have submitted long-term strategies[28]. Long-term strategies are a key policy tool to drive climate policies towards net-zero by providing clear targets and direction of travel. Significant announcements were made by China and India in 2023 in their long-term strategies, pleading to achieve net-zero in 2060 and 2070 respectively. However, the gap between the ambition level of current NDCs and what is needed to stay below a 1.5°C temperature increase remains stark. This gap will continue to be in the spotlight, as was the case at the two previous COPs.

The following mitigation related mandates and events will be central to COP28:

- The first high-level ministerial on just transition pathways. The CMA is expected to adopt a decision on how to operationalise the work programme established in Sharm el-Sheikh.
- The second high-level ministerial on pre-2030 ambition, where the co-chairs of the mitigation work programme will present the report on the global dialogues convened in 2023.
- Paragraph 16 of Decision 4/CMA.4 on the mitigation ambition and implementation work programme requested the subsidiary bodies to consider progress in implementing the

[27] Report on the first global dialogue, https://unfccc.int/sites/default/files/resource/MWP_GD1_report.pdf?download

[28] Long-term strategies portal, https://unfccc.int/process/the-paris-agreement/long-term-strategies

work programme, so as to recommend a draft decision for consideration and adoption by the CMA.

One of the challenges related to mitigation negotiations at COP28 will be to ensure coherence between the outcomes of the Global Stocktake and the mitigation and ambition work programme and to deliver meaningful outcomes. Both negotiation streams are supposed to deliver outcomes that inform Parties' NDCs and contribute to increasing ambition of climate action. Both streams have delivered rich materials that can help Parties to identify opportunities for improved implementation, but they differed in their mode of work and scopes. Also, the mitigation work programme was conceived to complement the Global Stocktake and with a distinct focus on the urgency of scaling up action in the current decade, which is the only way of limiting the temperature increase to 1.5°C.

As in previous COPs the initiatives, partnerships and actions announced beyond the formal negotiations, for example as part of the Global Action Agenda will also play a role in shaping the perception of the conference by the wider public. Key announcements made at earlier COPs include the methane pledge (see chapter 2.4.4) and the leader's declaration on forests and land use, which promised work to 'collectively halt and reverse forest loss and land degradation by 2030'. Progress on these initiatives would be a positive signal for COP28 and a strong indication that Parties have moved from pledging climate targets to implementing climate action.

3.2. Voluntary cooperation under Article 6 of the Paris Agreement

Article 6 of the Paris Agreement governs the rules for the engagement 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. The analysis below focuses on Article 6.2 and Article 6.4.

3.2.1. Overview of the rulebook adopted at COP26 in Glasgow and COP27 in Sharm El-Sheikh

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 as well as political issues that could not yet be resolved. At COP27 in Sharm El-Sheikh, some of these open questions could already be finalized, while others were left open for COP28 and COP29 to be resolved.

3.2.1.1. Article 6.2 – A framework to engage in international carbon markets and account 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'.

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.

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.

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 through an initial report describing the country's approach towards international carbon markets, annual reports focussing on ITMO transactions, and biennial reports describing in more detail the international cooperation countries are engaging in – and the international expert review of these reports.

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 where 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.

3.2.1.2. 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 are 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.

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 finalized at COP27 in Sharm El-Sheikh.

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 in the voluntary carbon market into the negotiations, namely whether non-authorized 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.

At COP26, countries also agreed on a transition of the 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.

3.2.1.3. Phasing out the CDM

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 has happened by the end of June 2023.

3.2.2. Issues at stake at COP28 in Dubai

At COP28 in Dubai, Parties are confronted with a long list of detailed mandates on various topics. These are elements that are still missing to fully complete the international rulebook for Article 6. Many issues are quite technical, but some are rather political. Among the list of issues, the following are the most important for finalizing the rulebook.

- **Registries:** In Sharm el-Sheikh, Parties remained divided on two options for how ITMO registries could be implemented: some Parties, such as the EU, EIG, LDCs, Japan, New Zealand and AILAC, wish to implement 'transactional' registries that enable the transfer of ITMOs between registries. Other Parties wish to only implement 'non-transactional' ITMO registries. These registries would not enable for direct transfer of ITMOs but compile information on transactions that may occur in underlying registries, such as the voluntary carbon market registries. The question thus related to the connection and interoperability of registries under Article 6. 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 may also be considered in the context of national registries.
- **Authorization:** The content, timing, and types of authorizations under Article 6, and any revisions to authorizations, are a particularly contested area in the negotiations. The EU, AILAC, AGN, New Zealand, Japan 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 that there is 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 authorizations, whereas other Parties, such as the US, expressed caution given that the context of authorizations may differ by country. Similarly, with regard to changes to authorizations, 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.

- **Agreed electronic format (AEF):** The AEF is the most central element for reporting on ITMOs. It is the table where 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 has been finalized by COP26 in Glasgow, but Parties already indicated at a technical workshop in April 2023 and at the subsidiary bodies session in June 2023 that significantly more work would be required. Solving these matters also requires a common understanding on matters beyond the design of the AEF, in particular on authorization.
- **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, 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 and China argue that holding back submissions of the AEF would be detrimental to the information flow and reduce transparency.
- **Manuals and capacity building:** Many Parties recognize that significant capacity building is necessary to implement Article 6. Manuals on how to complete the initial report, and other relevant reports, can facilitate reporting by countries. Parties will further consider the format and type of such manuals, as well as capacity building needs and efforts.
- **Implementation of the Article 6.4 mechanism:** The Supervisory Body of the Article 6.4 mechanism adopted several documents in the course of 2023 to implement the new mechanism and will report back to Parties in Dubai, which will have to provide guidance to the Supervisory Body. Key points include, for example, guidance on removal activities, the implementation of ambitious baselines, and addressing non-permanence.
- **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 consider 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.

Overall, it could turn out to be quite challenging to solve all matters. There is therefore a risk that some issues or the entire package would be further delayed by one year to COP29.

3.3. Adaptation

When negotiating the Paris Agreement, countries crafted a careful balance between adaptation and mitigation. This reflects that many developing countries already today face significant costs from adverse effects of climate change. The increase in frequency and severity of extreme weather events often threatens to reverse decades of development gains within a few days.

In the lead-up to the Paris Agreement, developing countries had argued that all elements of the new agreement should have the same legal status. Many developed countries on the other hand favoured a focus on mitigation and transparency.

To mend these divergent views, Article 7.1 of the Paris Agreement establishes a Global Goal on Adaptation (GGA) that for the first time formulates a collective global commitment on adaptation. Negotiators framed it as a qualitative goal that does not include quantitative commitments and indicators to measure progress towards the goal. It mainly aims at enhancing the adaptive capacity, strengthening resilience, and reducing vulnerability to climate change.

With the Paris Agreement, Parties further agreed to submit and periodically update adaptation communications (ADCOMs) as a vehicle for Parties to communicate plans, actions as well as support needs.

The Paris Agreement in Article 7.6 addresses support and international cooperation on adaptation, while in Article 9.4 countries agreed that scaling-up financial resources should follow a balance between adaptation and mitigation.

3.3.1. Overview of CMA decisions on adaptation of COPs 25-27

After agreement on the Paris rulebook at COP24, the subsequent COPs advanced the adaptation agenda mostly on the political level. Important outcomes include the following:

- The Glasgow Climate Pact, adopted at COP26, calls on developed countries to double adaptation finance from 2019 levels by 2025. In 2020 – the latest data currently available for estimates on climate finance flows – developed countries had mobilised approx. USD 83.3 billion in climate finance, of which approx. USD 28.3 billion had been for adaptation. This presents an increase of 8.3 billion in adaptation finance compared to 2019 levels (OECD 2022).
- At COP26, the Adaptation Fund received a record pledge of USD 356 million, which included EUR 100 million by the European Commission. At COP27 the fund received further pledges of USD 230 million, with Japan, Iceland, Portugal, the Republic of Korea, and Slovenia making contributions for the first time.
- The COP27 presidency launched the Sharm-El-Sheikh Adaptation Agenda[29] which includes 30 global adaptation outcome targets that should serve as aspirational adaptation outcomes for 2030. These targets cover the areas of food security, agriculture,

[29] Sharm-El-Sheikh Adaptation Agenda, https://climatechampions.unfccc.int/wp-content/uploads/2022/12/SeS-Adaptation-Agenda_Complete-Report_COP27-.pdf

water and nature systems, human settlements, ocean and coastal systems, infrastructure, planning and finance.

A main technical focus of the negotiations on adaptation since 2021 has been the operationalization of the global goal on adaptation. The following section describes the background of this work programme and the issues at stake at COP28.

3.3.2. Glasgow-Sharm El-Sheikh work programme on the Global Goal on adaptation

Parties at COP26 in Glasgow agreed to conduct a two-year work programme with the aim of broadening the technical basis that is needed for further defining the GGA. Four workshops were held over the course of 2022 to allow for deep dives into selected themes such as methodologies, indicators, data and metric for monitoring and evaluating progress on adaptation.

At COP27 in Sharm-El-Sheikh, Parties reviewed the progress made under the work programme and decided to initiate the development of a framework for the global goal on adaptation (UNFCCC 2022d). This decision reflects a compromise between developing countries that wanted to define the goal at COP27 and developed countries that preferred to continue technical work to broaden the information basis.

Parties at COP27 agreed that the framework should be adopted at COP28 and that the work programme will function as the main platform to advance its development. For this purpose, four additional technical workshops are held in 2023.

Table 1: 2023 workshops under the Glasgow-Sharm El-Sheikh work programme

Workshop	Theme	Documents
5th Workshop 20-23 March 2023, Maldives	Transformational adaptation: changing mindsets, indigenous wisdom and cross-cutting issues	Link
6th Workshop 04-05 June 2023, Bonn, Germany	Target-setting, including through mainstreaming	Link
7th Workshop 31 Jul – 02 Aug 2023, Buenos Aires, Argentina	Interfacing the GGA with other processes, including the Global Stocktake	Link
8th Workshop 27-29 Sep 2023 Gaborone, Botswana	Taking stock of the Glasgow-Sharm-el-Sheikh work programme (framework)	Link

The COP28 presidency emphasized that it considers the adoption of the framework for the Global Goal on Adaptation to be central to the success of the COP and a successful outcome of the Global Stocktake (Al Jaber 2023b).

At the Subsidiary Bodies meeting in June 2023, Parties agreed on the possible structural elements for a decision on the GGA framework for consideration and adoption at CMA5. These include the following elements for the GGA framework:

i. Purpose
ii. Dimensions
iii. Themes
iv. General cross-cutting considerations
v. Enabling conditions (option 1) or means of implementation (option 2)
vi. Reporting

Agreeing on one of the two options for element (v) will likely be a key aspect of the negotiations at COP28. With option 2, the GGA would be more closely linked to the finance provisions of the Paris Agreement, while option 1 would be more broadly focussing on enabling conditions.

The negotiations on the GGA have close links with the negotiations on finance, in particular the call for doubling adaptation finance by 2025 and the technical deliberations on establishing a new collective quantified goal (NCQG) that are also progressing in parallel (cf. chapter 3.5.1).

As adaptation is a key priority for developing countries, making progress on the GGA will be an important component of the package of decisions in Dubai.

3.4. Loss and damage

With extreme weather events becoming more frequent, the question of how to deal with loss and damages resulting from the adverse effects of climate change have become a priority matter for many developing countries. The issue has been at the centre of negotiations at the past COPs with developed and developing countries having divergent views on multilateral funding arrangements for addressing loss and damage.

The term *loss and damage* entered the multilateral climate negotiations as early as 1991 when Vanuatu on behalf of the Alliance of Small Island States (AOSIS) proposed that the new framework convention on climate change should establish an international insurance pool that provides financial insurance against losses and damages resulting from sea level rise.[30] The proposal did not meet agreement, but Article 4.8 of the UNFCCC mentions insurance as one of the actions that Parties should consider when implementing the commitments under the Convention (UNFCCC 1992, Article 4.8).

The Vanuatu proposal foresaw that the contributions to the insurance pool should be calculated using an approach used in the 1963 *Brussels Supplementary Convention on Third Party Liability in*

[30] 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

the field of Nuclear Energy[31] – a compensation scheme for damages resulting from nuclear incidents. Under the Vanuatu proposal, industrialized countries contributions to the insurance pool would have been calculated based on a country's gross domestic product and its share of greenhouse gas emissions. For industrialized countries such a mechanism was unacceptable because it would have meant that they accept liability and compensation for damages caused by their greenhouse gas emissions. Avoiding any provisions that suggest liability for climate damages continues to be a central aspect of the loss and damage negotiations.

After the Vanuatu proposal did not meet agreement, negotiations on loss and damage only resumed in 2007, when Parties agreed to discuss the issue as part of enhanced action on adaptation under a new climate change agreement.[32] In a long stretch of negotiations between 2009 and 2013 – which included the failed attempt to create a new treaty in 2009 and the subsequent adoption of the Cancun Agreements in 2010 – Parties in 2013 finally reached agreement to create institutional arrangements on loss and damage as part of the multilateral response to climate change. These arrangements were crafted at subsequent COPs – and confirmed through the Paris Agreement – in such a way that they avoid the question of liability and compensation. They included the following elements:

- The Warsaw International Mechanism for Loss and Damage, established in 2013 at COP18, whose mandate is to strengthen dialogue, enhance knowledge and understanding as well as action and support for countries experiencing loss and damage.[33]
- The Santiago Network on Loss and Damage, established in 2019 at COP 25 in Madrid, with the mandate to catalyse technical assistance of relevant organizations for the implementation of relevant approaches in developing countries that are particularly vulnerable to the adverse impacts of climate change.[34]

Both institutions contributed to improving international cooperation on loss and damage. Developing countries however raised concerns that the question of funding arrangements for loss and damage are not sufficiently addressed.

3.4.1. Overview of CMA decisions on loss and damage of COPs 25-27

In 2021, at COP26 in Glasgow, the G77 and China therefore proposed the establishment of a dedicated loss and damage finance facility. This proposal did not meet consensus but as a compromise a two-year 'Glasgow Dialogue' was established with the mandate to discuss '*arrangements for the funding of activities to avert, minimize and address loss and damage associated with the adverse impacts of climate change*' (UNFCCC 2021a).

---

31 Brussels Supplementary Convention, https://www.oecd-nea.org/jcms/pl_31528/brussels-supplementary-convention-full-text

32 Decision 1/CP.13, Bali Action Plan, paragraph 1 (c) (iii), https://unfccc.int/sites/default/files/resource/docs/2007/cop13/eng/06a01.pdf

33 Decision 2/CP.19, https://unfccc.int/documents/8106

34 Decision 2/CMA.2, paragraph 38, https://unfccc.int/documents/210477

The decision establishing the Glasgow Dialogue did not prescribe any outcomes of the dialogue, thus giving little certainty whether it would indeed result in the establishment of funding arrangements.

The decision however helped to further raise awareness about developing countries' support needs related to loss and damage. Several subnational entities and countries pledged bilateral support at COP26 and COP27 to address loss and damage (Table 2). Further, the G7 together with the Vulnerable Twenty (V20) Group at COP27 launched the 'global shield against climate risks', an initiative aiming at enhancing financial support for countries experiencing loss and damage.[35]

Table 2: Overview of pledges for support to address loss and damage

Country/entity	Pledge	Comment
Austria	EUR 50 million	Contribution to the Santiago Network and projects focussing on climate risk and early warning systems
Belgium	EUR 2.5 million	Support for a project in Mozambique, focussing on capacity building for officials on loss and damage, disaster risk reduction and research
Canada	CAD 8.25 million	Contributions to the Global Shield Against Climate Risk (CAD 7 million) and the Santiago Network (CAD 1.25 million)
Denmark	EUR 13 million	Package funding that includes a contribution to the Global Shield Against Climate Risk and bilateral support for projects
Germany	EUR 170 million	Contribution to the Global Shield Against Climate Risk
Ireland	EUR 10 million	Contribution to the Global Shield Against Climate Risk
New Zealand	NZD 20 million	Focussed on the Pacific region
Scotland	GBP 5 million	Contribution to the Climate Justice Fund
Wallonia region of Belgium	EUR 2 million	Contribution to the CVF/V20 Joint-Multi Donor Fund for Loss and Damage

Source: The Loss & Damage Collaboration, https://www.lossanddamagecollaboration.org/pages/festival-of-pledges-for-loss-damage-are-they-new-and-additional-and-do-they-meet-the-needs-on-the-ground

Further, developing countries successfully built political momentum around the issue of loss and damage ahead of COP27 in Sharm-El-Sheikh in 2022. As a result, loss and damage for the first time became a stand-alone agenda item at a climate conference.

[35] Global shield against climate risk, https://www.bmz.de/resource/blob/127498/global-shield-against-climate-risks-concept-barrierefrei.pdf

Under this newly created agenda item, negotiations at COP27 continued to centre around the question of funding arrangements. While views between developing and developed countries continued to diverge during the conference, the EU proposed at the last day of the conference that it would support the establishment of a fund, provided that it will be supported by a broad contributor base and will close specific priority gaps in the existing institutional landscape. Such a fund should further have a focus on countries that are particularly vulnerable to climate change.[36]

Parties subsequently agreed by the end of COP27 to establish funding arrangements for loss and damage, including a fund. In decisions 2/CP.27 and 2/CMA.4 (UNFCCC 2022c; 2022b) they tasked a Transitional Committee (TC) to work out the details of the new arrangements and the fund and to make recommendations for the design of these arrangements to be considered by Parties at COP28.

3.4.2. Transitional Committee on the operationalization of the new funding arrangements

The TC had a slow start in 2023, with the selection of country representatives being delayed by about three months as constituencies had difficulties to reach agreement on nominations. The delay emphasises the high political stakes that are associated with the fund design-process, with many countries wanting to make an active contribution.

The TC consists of 24 members, with 10 members from developed and 14 members from developing country parties, the latter nominated in such a way to ensure geographical representation of relevant UN regional groups and constituencies.[37] The process and composition of the transitional committee is modelled after the design process for the Green Climate Fund (GCF).

The TC met four times over the course of 2023 and discussed the following potential elements of the fund[38]:

- Governance of the fund, including composition and roles and functions of the board, decision making procedures and rules of procedure
- Relationship to the COP/CMA
- Stakeholder input and participation
- Expert and technical advice
- Fund Secretariat

[36] Lia et al. (2022) What is loss and damage? – Explaining the concept of 'loss and damage', its role in international climate negotiations, and which countries are suffering the worst effects. Chatham House https://www.chathamhouse.org/2022/08/what-loss-and-damage

[37] Membership – Transitional Committee, https://unfccc.int/tc-membership

[38] Co-Chairs compilation text: Loss and Damage Fund Terms of Reference, https://unfccc.int/sites/default/files/resource/2023-09-01_CoChairsCompilation.pdf

- Eligibility for accessing the fund
- Complementarity and coherence with other funds
- Financial inputs
- Financial instruments
- Trustee

At the meetings of the TC, it became clear that there continue to be divergent views among Parties on several issues. For example, developing countries favour the establishment of a new institution without any ties to existing funds such as the Green Climate Fund (GCF), Global Environment Facility (GEF), the Adaptation Fund or the World Bank. Many developed countries on the other hand are of the view that the fund should be hosted by an existing institution, arguing that this would expedite its operationalization. More specifically, both the EU and the US propose that the fund will be hosted by the World Bank as a *Financial Intermediary Fund* (FIF).[39] Examples for FIFs are the Climate Investment Funds and the Global Partnership for Education.[40]

Another open issue for the TC to solve is the question how to operationalize a focus of the fund on the most vulnerable countries. Options include restricting fund access to specific groups of countries or establishing minimum floors that reserve certain amounts of funding for these groups. Ministerial discussions at the sidelines of the UN General Assembly in September 2023 were not able to bring consensus on this topic. Developed countries, including the EU, want the fund to explicitly target countries particularly vulnerable to the adverse effects of climate change such as LDCs and SIDS. Developing countries on the other hand are strongly opposed to any arrangements that restrict access to specific countries only.[41]

Disagreement also remains relating to the question of who should contribute to the new fund. Developed countries are opposed to the idea that only their constituency will be invited to contribute to the new fund. They argue that all countries 'capable to do so' should contribute, suggesting that also emerging economies should provide resources. Emerging economies oppose these suggestions pointing to the historic responsibility of developed countries for climate change.[42]

Initially the TC had planned to meet four times over the course of 2023. At the last meeting, however, no consensus could be reached on the key issues outlined above. The TC therefore decided to hold an additional meeting on 3-5 November 2023 in Abu Dhabi in a last attempt to

---

39 EU-Submission, https://unfccc.int/sites/default/files/resource/Submission%20of%20the%20EU%20TC%20members%20%28France%2C%20Germany-Ireland%2C%20Denmark-Netherlands%29.pdf?download;
US-Submission, https://unfccc.int/sites/default/files/resource/United_States_2023-08-27%20U.S.%20Submission_LD%20bridging%20proposal_0.pdf

40 For a detailed overview on the different options discussed in the TC the following paper provided by the Technical Support Unit to the TC provides a detailed overview on their specifics https://unfccc.int/sites/default/files/resource/Final_Draft_5a_Institutional%20Arrangements.pdf

41 Ministerial shows fault lines on climate loss and damage fund, https://www.climatechangenews.com/2023/09/25/ministerial-shows-fault-lines-on-climate-loss-and-damage-fund/

42 ibid

resolve disagreement ahead of COP28. In any case, Parties will further consider the new funding arrangements, including any recommendations of the TC, at COP28. This will include the more political questions of a potential focus of the fund on vulnerable countries, its donor base and its governance.

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 COP28 are presented separately for these three aspects of support.

3.5.1. Finance

The provision of climate finance continues to be a key and hotly debated topic in the UNFCCC negotiations. Providing support to developing countries and implementing promises made are key factors for building trust between developed and developing countries in the negotiations. Already in 2009, developed country Parties committed to jointly mobilising USD 100 billion per year by 2020 to address the needs of developing countries in fighting climate change. This goal was confirmed in 2015 when adopting the Paris Agreement, together with an agreement to set a new climate finance goal by 2025 which should go beyond the mobilisation of USD 100 billion per year[43]. However, like in 2020 and 2021, the goal to mobilise USD 100 billion per year has not been achieved in 2022 which was met by many Parties with serious concern.

Latest data from the OECD of its analysis of climate finance provided and mobilised by developed countries was published in 2022 (OECD 2022). According to this report, in 2020, the total climate finance provided and mobilised by developed countries for developing countries amounted to USD 83.3 billion, missing the USD 100 billion goal. Of this total amount provided, USD 48.6 billion (58%) was for mitigation and USD 28.6 billion (34%) was for adaptation activities. There was a particular rise noted in the share of adaptation finance in bilateral climate finance, where it doubled from 18% in 2016 to 36% in 2020. However, the aim of an equal balance between mitigation and adaptation finance stated in Article 9.4 of the Paris Agreement has still not been achieved. USD 13.1 billion of the reported climate finance was private finance mobilised in 2020 (OECD 2022).

At COP27 in Sharm El-Sheikh, Parties also discussed the Standing Committee on Finance (SCF)'s fifth biennial assessment and overview of climate finance flows reported under the UNFCCC[44]. According to this assessment, public climate finance reported by developed country Parties was at least 6% higher in 2019-2020 than in 2017-2018, amounting to an annual average of USD 40.1 billion. 79% of this support was channelled through bilateral, regional and other channels and the remainder through multilateral institutions. Mitigation finance made up about 57% of the

[43] Climate finance, https://unfccc.int/topics/climate-finance/the-big-picture/introduction-to-climate-finance.

[44] Fifth Biennial Assessment and Overview of Climate Finance Flows, https://unfccc.int/documents/619173.

support provided. Climate finance by the EU has steadily increased since 2013 and remained roughly constant in 2020 and 2021. In 2021, EUR 23.04 billion was committed by the EU, its Member States and the European Investment Bank as public support to developing countries in their efforts towards mitigation of and adaptation to global warming.[45]

COP27 also noted the report prepared by the SCF on progress towards achieving the goal of developed countries of mobilizing jointly USD 100 billion per year by 2020[46]. This report made use of climate finance reported under the UNFCCC and of additional preliminary data for 2020 provided by Parties. However, Parties did not agree on specifically mentioning in the COP decision that the USD 100 billion goal was not achieved in any year since 2020. Developed countries were urged in Sharm El-Sheikh to meet this goal and the cover decision of COP27 calls upon MDBs and international financial institutions to mobilise additional climate finance.

Ahead of the COP26 in 2021, the COP presidency had released a 'delivery plan,' developed by Germany and Canada and setting out how the goal would be reached by 2023[47]. The plan was accompanied by a technical note by the OECD that developed the underlying scenarios (OECD 2021). A progress report on the delivery plan was published in 2022 and highlights improvements and steps made to increase climate finance. The report also underlines challenges in enhancing support due to the effects of the Covid-19 pandemic and the global economic downturn. It identifies four key areas for enhanced collective action, namely providing greater transparency on efforts to double adaptation finance, enhancing access to finance, increasing focus on finance from MDBs and unlocking the potential of mobilising private finance where it makes sense to do so (Government of Canada 2022). In an open letter published in September 2023, representatives from Germany and Canada present their efforts to 'advocate for the delivery of the USD 100 billion goal in 2023'. They express confidence that the goal will indeed be met this year; however, official data on climate finance delivered will only be available with a delay[48]. Additionally, the methodologies for accounting for climate finance by developed countries are contested (see below). It is likely that the Global Stocktake which will be concluded with its political phase at COP28 will result in clear messages around the failure to meet the USD 100 billion goal (see section 3.7).

In terms of the activities to be targeted by climate finance, the outcomes of COP26 in Glasgow included a call for developed countries to double adaptation finance by 2025 compared to 2019 levels. A roadmap for implementing this goal was not agreed to as planned at COP27. The SCF was asked to prepare a report on doubling adaptation finance to be considered at COP28 in 2023. The Adaptation Gap Report published by UNEP in 2022 concludes that international adaptation finance flows are 5-10 times below estimated needs and this gap is widening (estimated annual

[45] Council approves 2021 climate finance figure, https://www.consilium.europa.eu/en/press/press-releases/2022/10/28/council-approves-2021-climate-finance-figure/.

[46] Report on progress towards achieving the goal of mobilizing jointly USD 100 billion per year to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation, https://unfccc.int/documents/618943.

[47] Climate finance delivery plan, https://ukcop26.org/wp-content/uploads/2021/10/Climate-Finance-Delivery-Plan-1.pdf.

[48] Open letter - Canada and Germany's Way Forward on Climate Finance in 2023, https://www.auswaertiges-amt.de/en/newsroom/news/-/2616670.

adaptation needs are USD 160-340 billion by 2030 and USD 315-565 billion by 2050) (UNEP 2022).

For the period beyond 2025, Parties initiated deliberations on a new collective quantified goal (NCQG) in 2021 and decided to set such a goal in 2024. Deliberations continued at COP27, but no substantial progress on the topic was made and discussions were focused on procedural issues. At the Subsidiary Bodies session in Bonn in June 2023, there was some convergence on design features of the NCQG, including that it should be oriented at the needs of developing countries and that the core public finance obligations lie with developed countries. However, diverging views remain whether the donor base should be extended for the climate finance target post 2025 unclear.

A substantial outcome of COP27 with close links to climate finance was the agreement on loss and damage, including the decision to establish a fund for loss and damage matters (see section 3.4.1).

The UNFCCC Climate Finance Data Portal presents information on financial resources that have been made available by developed to developing country Parties[49]. An interactive web portal to facilitate access to the information reported in the Biennial Reports will be available from December 2025 onwards.

With regard to a longer-term perspective on climate finance, COP27's cover decision (Sharm El-Sheikh Implementation Plan) highlights that a global transformation to a low-carbon economy will require investments of at least USD 4-6 trillion a year. To deliver such funding, a transformation of the financial system is required, encompassing governments, central banks, commercial banks, institutional investors and other financial actors. According to a report by the Independent High-Level Expert Group on Climate Finance (IHLEG 2022), this requires accelerated investment, the mobilisation of climate finance at scale including from the private sector, stepped-up engagement by MDBs and other finance institutions, increasing the scope of concessional finance through innovative ways (including special drawing rights, the voluntary carbon market, philanthropy and guarantees) as well as tackling debt and liquidity challenges faced by many countries. The first assessment by the SCF on the needs of developing countries underlined that trillions rather than billions of climate finance will be needed for mitigation and adaptation activities over the coming years; with more than USD 8.9 trillion needed up to 2030 (SCF 2021). Due to a lack of information from a number of countries as well as a lack of data, tools and capacity for assessing adaptation needs, this amount is considered to be significantly underestimated. This is also in line with the IPPC's report stating that mitigation-related investment in developing countries must increase by four to eight times to USD 2-3 trillion annually until 2030 in order to keep global warming within the limits set by the Paris Agreement (IPCC 2022a, chapter 15 and corrigenda[50]).

Also, at COP27 a dialogue was initiated to enhance understanding of the scope of Article 2.1(c) of the Paris Agreement which aims at making finance flows consistent with low-GHG, climate-

[49] UNFCCC Climate Finance Data Portal, https://unfccc.int/climatefinance?home.

[50] For a list of corrigenda see https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_TS.pdf

resilient development and its complementarity with Article 9 of the Paris Agreement (which addresses climate finance). Article 2.1(c) featured more prominently in discussions at COP27 which was criticised by several developing countries as a way to divert attention from developed countries' obligations to provide climate finance. Concerns were also expressed that considering climate risks in decisions on providing finance and investments could further obstruct access to support by the most vulnerable countries (Eckstein 2023).

The agenda item on long-term finance (LTF) under the Convention was extended until 2027 in 2021. However, this agenda item duplicates discussions under the Paris Agreement under which developed country Parties shall biennially communicate indicative quantitative and qualitative information on projected levels of public climate finance.

At Sharm El-Sheikh, developing countries continued to voice criticism about the provision of climate finance since a large share is provided as loans which increases their debt burden. Also, the provision of climate finance lacks accountability and transparency. A clear definition of what should count as climate finance remains absent though (Shishlov and Censkowsky 2022). Civil society actors as well as governments from recipient countries have repeatedly criticised the EU and other donor countries for over-estimating their contributions, particularly by including non-concessional loans at face value (e.g. INKA consult 2021; INKA consult and CARE 2021; CAN 2021; Zagema et al. 2023). Also, countries use different approaches for determining the climate objectives of flows and whether financial means are 'new and additional' (Roberts et al. 2021; Mitchell et al. 2021). Negotiations on a shared definition on climate finance were postponed at COP27, though. Developed countries, particularly the US, emphasised the role of the private sector in meeting climate finance targets.

3.5.2. Technology development and transfer

The synthesis report by the co-facilitators on the technical dialogue of the Global Stocktake (UNFCCC 2023c), alongside the Global Stocktake summary report on the third meeting of the technical dialogue, identified a crucial need for expediting the development and deployment of climate technologies to meet the mitigation and adaptation objectives of the Paris Agreement.

Concurrently, the IEA Net Zero update report (IEA 2023b) spotlighted climate technologies as pivotal for attaining net zero emissions, asserting that existing technologies suffice to align with the 1.5°C goal. The focus should now shift towards accelerating the deployment of these technologies, especially in energy generation, transportation, and industrial sectors. The report underscores the necessity for a fossil fuel-free climate transformation to meet global renewable energy and emissions targets, calling for a doubling of renewable energy capacity and energy efficiency improvements by 2030. While global clean energy investments have soared in recent years to USD 1.8 trillion, a further escalation to USD 4.5 trillion is needed by 2030. Large-scale carbon removal technologies, especially for cement process emissions, are crucial for significant emissions reductions.

In line with Article 10.2 of the Paris Agreement, COP27 saw the initiation of a joint work programme (2023-2027)[51] between the Technology Executive Committee (TEC) and Climate Technology Centre and Network (CTCN), aiming to bolster cooperative action on technology development and transfer. This programme, targeting high-potential sectors like water, energy, food, and industry, symbolizes a significant stride towards enhanced integration between TEC and CTCN, with the latter increasingly adopting programmatic and sectoral approaches for technology project implementation through national and regional strategies.

During the June 2023 Subsidiary Bodies session in Bonn, discussions centred on technology development and transfer, and the interlinkages between Technology and Financial Mechanisms, emphasizing the dire need for technical and financial support to bridge technology gaps in developing countries as stressed by the G77 and China[52]. A workshop is planned for the 60th session of the Subsidiary Bodies in summer 2024 to delve deeper into these linkages, addressing funding needs for the Technology Mechanism bodies and exploring how the technology framework can help close the technology gap to meet the Paris Agreement goals. The current funding in many countries and among private actors is still largely directed towards fossil fuel-based technologies and requires an urgent realignment to zero-emission technologies. The Technology Mechanism and Framework can take a critical role in steering and building capacities for countries, regions, NDCs, and long-term strategies.

Looking ahead to COP28, negotiations under the Technology Mechanism and Framework will revolve around the Joint Annual Report of TEC and CTCN. Various side events are planned, spotlighting the Work Program 2023-2037, the Technology Framework's Artificial Intelligence initiative (AI4Climate)[53], and climate technologies for adaptation and disaster reduction, aiming to foster a conducive ecosystem for climate technology development and deployment to help meet the Paris Agreement goals.

3.5.3. Capacity building

Capacity building is critical for developing countries, especially least developed countries (LDCs) and small island developing states (SIDS), to effectively implement their NDCs and meet the commitments under the Paris Agreement. Many developing nations still face considerable institutional and systemic capacity constraints. These capacity gaps hamper their ability to adequately mitigate and adapt to climate change impacts. Key limitations include lack of technical expertise and insufficient financial resources to invest in capacity building. Article 11 of the Paris Agreement establishes capacity building as an essential element of support for developing countries.

---

[51] Joint work programme of the UNFCCC Technology Mechanism for 2023-2027, https://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEC_Documents_doc/6e7cae499c2b418e93d2d2a1bcca1a20/e9a1b6ffadbe47bcb3f2634881df13f5.pdf.

[52] Bonn climate talks: Key outcomes from the June 2023 UN climate conference, https://www.carbonbrief.org/bonn-climate-talks-key-outcomes-from-the-june-2023-un-climate-conference/.

[53] Artificial intelligence for climate action, https://www.ctc-n.org/news/artificial-intelligence-climate-action

Progress on capacity building, related actions and measures on climate-related capacity building are reported through the Paris Committee on Capacity Building (PCCB). The PCCB consists of twelve members from developed and developing countries who convene annually and provide regular reports to the COP and the CMA.[54] Through its capacity building portal[55] the PCCB provides guidance and facilitates access to information on projects, tools, training courses, and other resources to support developing countries in bridging existing gaps between policy, practice, and research at local, national, and regional levels. To further disseminate knowledge for enabling and enhancing climate action in developing countries, the PCCB launched a toolkit in 2022, which is available in Arabic, English, French and Spanish.[56]

One of the flagship activities of the PCCB is the Capacity-building Hub[57]. It was established during COP24 to enable cooperation, sharing of knowledge and experiences among various actors involved in capacity building for climate change mitigation and adaptation and has been taking place every year at the margins of the COP. The activities of the Hub are streamed online. The 5th Capacity-building Hub is scheduled to take place at COP28 and will showcase efforts made to enhance climate action through the lens of capacity building. Additionally, the UNFCCC secretariat launched the 'Capacity-building Talks' public event series in 2020 as means to disseminate information, share best practices and foster dialogue and discussions among relevant stakeholders, aiming to strengthen the work on capacity building within the UNFCCC process.[58]

To contribute to the implementation of the Glasgow work programme on Action for Climate Empowerment and to further address capacity needs and gaps for youth to effectively engage in climate action, the UNFCCC secretariat and the Italian Ministry of Environment and Energy Security support the implementation of the Youth4Capacity programme, in the framework of the Youth4Climate initiative.[59] Activities include virtual knowledge and skill enhancement events, webinars or training sessions, in person capacity building events during the Regional Climate Weeks and other relevant events, a mentorship programme aimed at connecting youth with experts from non-Party stakeholders, outreach through social media, as well as opportunities for youth from the global north and global south and other actors to exchange experiences, lessons and knowledge on capacity-building.

The Capacity Award Programme to Advance Capabilities and Institutional Training in one Year (CAPACITY)[60] Fellowship Programme contributes to building capacity for addressing climate change in SIDS and LDCs, through the development of local professional expertise. Fellows are recruited to work and be trained within the UNFCCC secretariat in Bonn for a period of one year.

---

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

55 Capacity-building Portal, https://unfccc.int/cbportal#tab_home

56 PCCB toolkit, https://unfccc.int/process-and-meetings/bodies/constituted-bodies/paris-committee-on-capacity-building-pccb/areas-of-work/capacity-building-portal/pccb-toolkit-to-assess-capacity-gaps-and-needs-to-implement-the-paris-agreement

57 Capacity-building Hub, https://unfccc.int/capacity-building-hub

58 Capacity-building Talks, https://unfccc.int/Capacity-building%20Talks

59 Youth4Capacity, https://unfccc.int/topics/capacity-building/workstreams/youth4capacity#Objectives

60 CAPACITY Fellowship programme, https://unfccc.int/CAPACITY%20Fellowship

The target group are mid-career professionals already in a government's employment and who are nationals of and working in a SIDS or LDC.

The cover decision of COP27, the Sharm El-Sheikh Implementation Plan (UNFCCC 2022a) includes capacity building as a cross-cutting theme. It notes existing capacity building gaps and calls on developed country Parties to increase support for long-term country-driven capacity building interventions.

The Capacity Building Initiative for Transparency (CBIT) provides funding to strengthen the institutional and technical capacities of developing countries to meet the enhanced transparency reporting requirements defined in Article 13 of the Paris Agreement (cf. chapter 3.6).[61]

While some progress has been made, critical capacity building gaps remain in developing countries that require scaling up of support. Targeted technical and financial assistance is essential to help countries identify specific needs and implement customized capacity building programmes to strengthen national institutions and expertise.

Going forward, capacity building must be further integrated into implementation of NDCs, long-term strategies and towards full decarbonisation strategies of developing countries, national adaptation plans, and other climate strategies. Countries and multilateral institutions must increase collaboration, investments and accelerated actions to build developing country capacity as an integral part of the climate response.

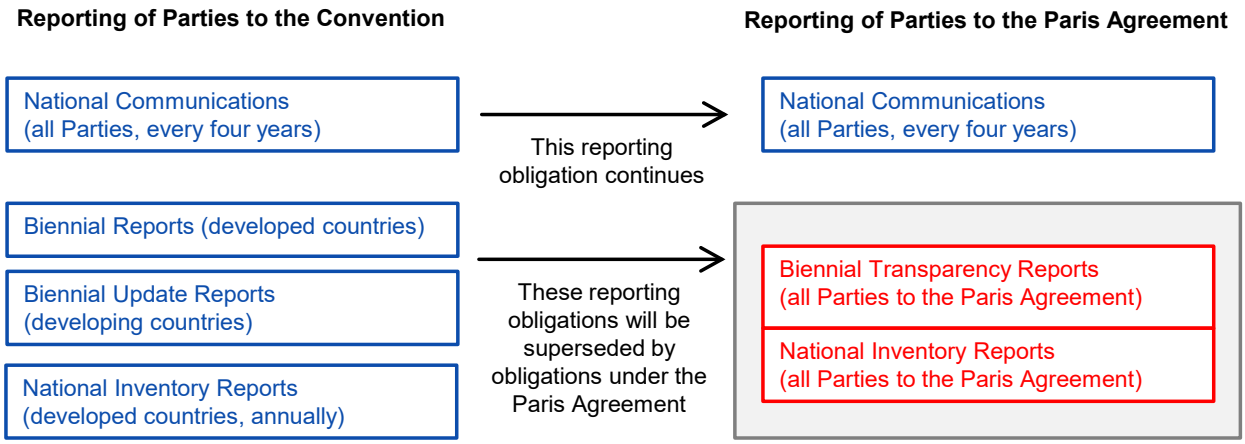
3.6. Transparency, implementation and compliance

3.6.1. Outcomes of COPs 25-27

While the modalities, procedures and guidelines (MPGs) for the enhanced transparency framework had already been agreed at COP24 in 2018 (UNFCCC 2018b), an important additional milestone was achieved at COP26 with the adoption of the 'guidance for operationalizing the MPGs for the enhanced transparency framework' (UNFCCC 2021b). This guidance provides reporting tables for GHG inventory information, for tracking progress in implementing and achieving NDCs, and for support. It also provides the outlines for the biennial transparency report and the national inventory document. These documents and reporting tables need to be submitted by all Parties to the Paris Agreement by the end of 2024 at the latest. Figure 7 provides an overview of the reporting obligations under the Convention and the Paris Agreement.

[61] The Capacity-building initiative for transparency (CBIT), https://www.thegef.org/sites/default/files/documents/2022-11/GEF_CBIT_2022_11.pdf

Figure 7: Overview of reporting obligations under the Convention and Paris Agreement



Source: UNFCCC (1992), UNFCCC (2010), (UNFCCC 2018a; 2018b)

Note: Under the Paris Agreement, the National Inventory Reports may be submitted together with the Biennial Transparency Report or as a stand-alone report. For developed country Parties, the obligation remains to report a national inventory annually. Developed country Parties report their national inventory biennially.

At COP27 in 2022, Parties agreed on the 'voluntary reviews of information on climate change impacts and adaptation' (UNFCCC 2022e). While the review of adaptation-related information is not foreseen under the Paris Agreement, several developing countries had requested such a review as a way of facilitating the reporting and recognition of their adaptation efforts. Training courses for these reviews are currently being developed by the UNFCCC Secretariat. Training courses for the review of the mandatory elements of the transparency framework have recently been completed by the UNFCCC secretariat[62].

On compliance (Article 15 of the Paris Agreement), the 'modalities and procedures for the effective operation of the committee to facilitate implementation and promote compliance' had already been agreed at COP24 in 2018 (UNFCCC 2018d). While there have been no recent negotiations, the Paris Agreement Implementation and Compliance Committee (PAICC) has met regularly since 2020 and notified Parties that were late in submitting mandatory reports under the agreement[63].

3.6.2. Issues at stake at COP28

With one more year to go until all Parties to the Paris Agreement have to submit their first biennial transparency reports, the preparation of these reports will be an area of discussion at COP28. During the session, UNFCCC secretariat will report on its progress with the development of reporting tools under the transparency framework. National reporting experts are currently testing the first version of these tools which was provided in August 2023.

[62] Training programmes for expert reviewers, https://unfccc.int/process-and-meetings/transparency-and-reporting/training-programmes-for-expert-reviewers#PA-review-training-programme

[63] Information on the work of the PAICC and its meeting reports are available at https://unfccc.int/PAICC

As shown in Figure 7, above, the reporting obligation for national communications continues under the Convention. At the Subsidiary Bodies meeting in Bonn in June 2023, Parties pointed out the importance of these reports, and related issues will continue to be discussed under the SBI in Dubai. It can be expected that the topics will include the timeliness of reports and how to increase the completeness and overall quality of the reported information.

3.7. The Global Stocktake

The Sixth Assessment Report of the IPCC made it clear that the world is not on track towards meeting the goals of the Paris Agreement, and that more ambitious action is urgently needed. The Global Stocktake is the key mechanisms under the Paris Agreement for increasing ambition, and the first Global Stocktake will be concluded at COP28. For COP28 to be regarded as a success, it is essential that the Global Stocktake provides clear guidance for Parties and non-Party stakeholders on how to enhance ambition – and that this guidance is turned into concrete action in response to the Global Stocktake.

3.7.1. Components of the Global Stocktake

According to Article 14 of the Paris Agreement, the CMA shall periodically assess the collective progress towards achieving the purpose of this Agreement and its long-term goals (UNFCCC 2015b, Article 14). The Paris Agreement set the dates of the Global Stocktake to 2023 and every five years thereafter. This timing allows the Global Stocktake to inform Parties in updating their NDCs, with the next new NDCs due in 2025.

While the first Global Stocktake will be concluded at COP28 in December 2023, it already started in 2021 with an information collection phase (UNFCCC 2018c). The collected information comprised, inter alia, the contributions of the IPCC Sixth Assessment cycle, reports by constituted bodies under the Convention and submissions by Parties and non-Party Stakeholders.

Now that these inputs have been synthesized by the UNFCCC secretariat and discussed by Parties during 'technical dialogues' at the Subsidiary Bodies sessions in 2022 and 2023, the Global Stocktake concludes with a 'consideration of outputs' phase during COP28. This phase consists of high-level events where Parties discuss the findings of the technical dialogues. The aim of the consideration of outputs phase is to summarise key political messages for strengthening action and enhancing support. These outputs should be referenced in a CMA decision and/or a declaration (UNFCCC 2018c).

3.7.2. Outputs of the technical dialogue (2022-2023)

The technical dialogue, which took place at the Subsidiary Bodies sessions in June 2022, November 2022 and June 2023, consisted of plenary sessions, world café formats and roundtables, organised along the following main topics: 'mitigation, including response measures', 'adaptation, including loss and damage', 'means of implementation and support', and

'integrated and holistic approaches'. It also provided for input from Party and non-Party stakeholders through poster sessions and creative spaces.[64]

The outputs of the technical dialogue have been summarised in a synthesis report by its co-chairs (UNFCCC 2023c). Table 3 provides selected key findings from this report.

Table 3: Selected key findings from the technical dialogue of the first Global Stocktake

Thematic area	Selected key findings
Overall findings	The Paris Agreement has driven near-universal climate action; […] much more is needed now on all fronts.
	[…] governments need to support systems transformations; […] actions by non-Party stakeholders are needed to strengthen efforts […]
	[…] A focus on inclusion and equity can increase ambition in climate action and support.
Mitigation, including response measures	There is a rapidly narrowing window to raise ambition and implement existing commitments in order to limit warming to 1.5 °C […]
	Much more ambition in action and support is needed in implementing domestic mitigation measures and setting more ambitious targets in NDCs […]
	Economic diversification is a key strategy to address the impacts of response measures […]
Adaptation, including loss and damage	As climate change threatens all countries, communities and people around the world, increased adaptation action as well as enhanced efforts to avert, minimize and address loss and damage are urgently needed […]
	Support for adaptation and funding arrangements for averting, minimizing and addressing loss and damage need to be rapidly scaled up from expanded and innovative sources […]
Means of implement-ation and support	Scaled-up mobilization of support for climate action in developing countries entails strategically deploying international public finance […]
	Making financial flows […] consistent with a pathway towards low GHG emissions and climate-resilient development entails creating opportunities to unlock trillions of dollars and shift investments to climate action […]

Source: Authors' own compilation of key findings from the synthesis report by the co-facilitators of the technical dialogue, https://unfccc.int/documents/631600

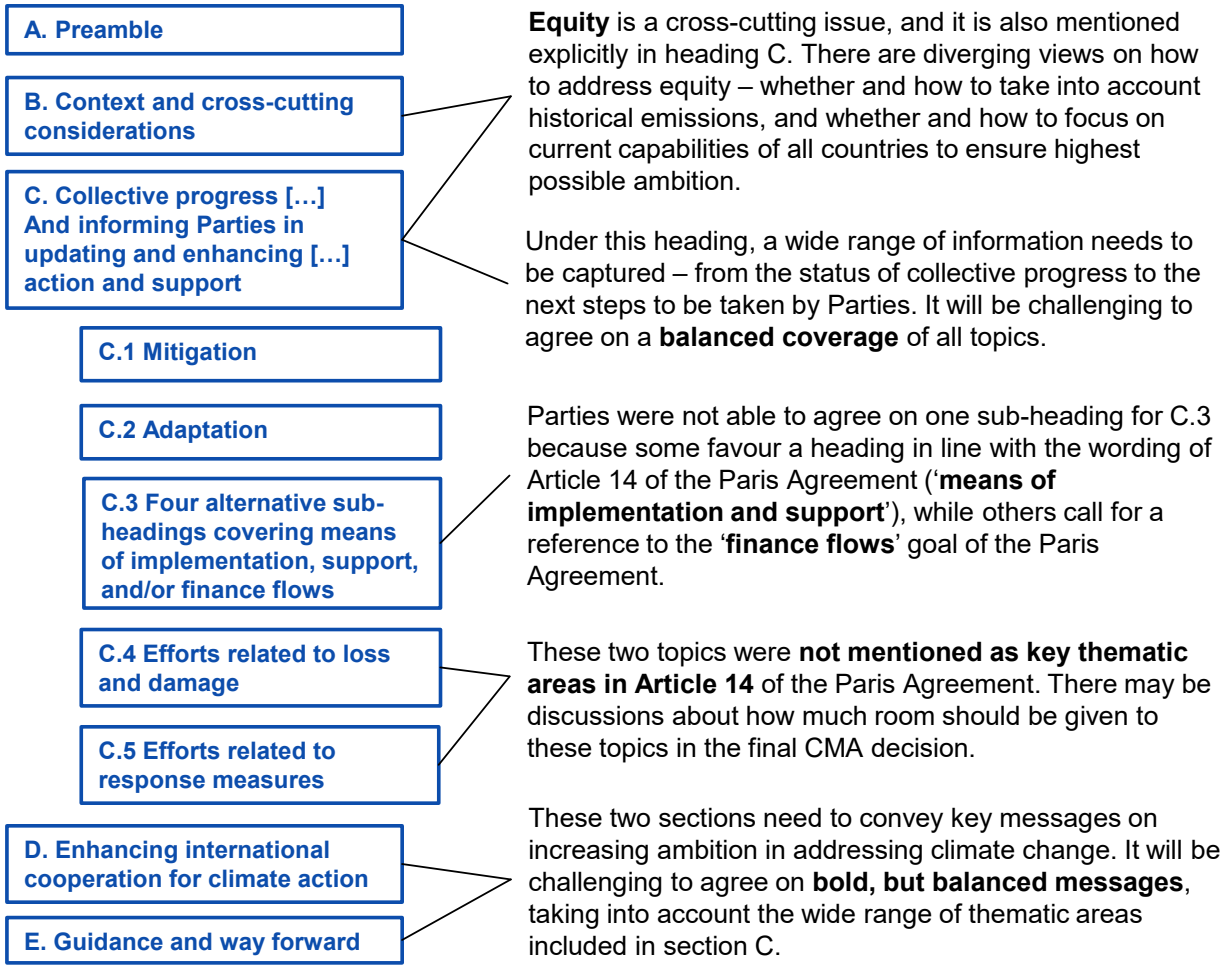
[64] Global Stocktake, https://unfccc.int/topics/global-stocktake

3.7.3. The consideration of outputs phase (COP28)

The challenge of the consideration of outputs phase of the Global Stocktake is to turn the key findings of the technical dialogue into specific commitments by Parties. The deliberations in this phase will be chaired by a high-level committee consisting of the presidencies of the CMA and the chairs of the SBSTA and SBI.

A key output of the Global Stocktake will be a decision of the CMA which comprises the main messages on progress achieved so far and on ways to increase ambition. This output may be complemented by declarations, which groups of Parties or non-Party stakeholders can subscribe to. An indicative draft structure for the CMA decision on the Global Stocktake was discussed at the Subsidiary Bodies session in Bonn in June 2023. Figure 8 provides an overview of this draft structure and some of the main challenges associated with it.

Figure 8: Indicative draft structure for a CMA decision, and related challenges

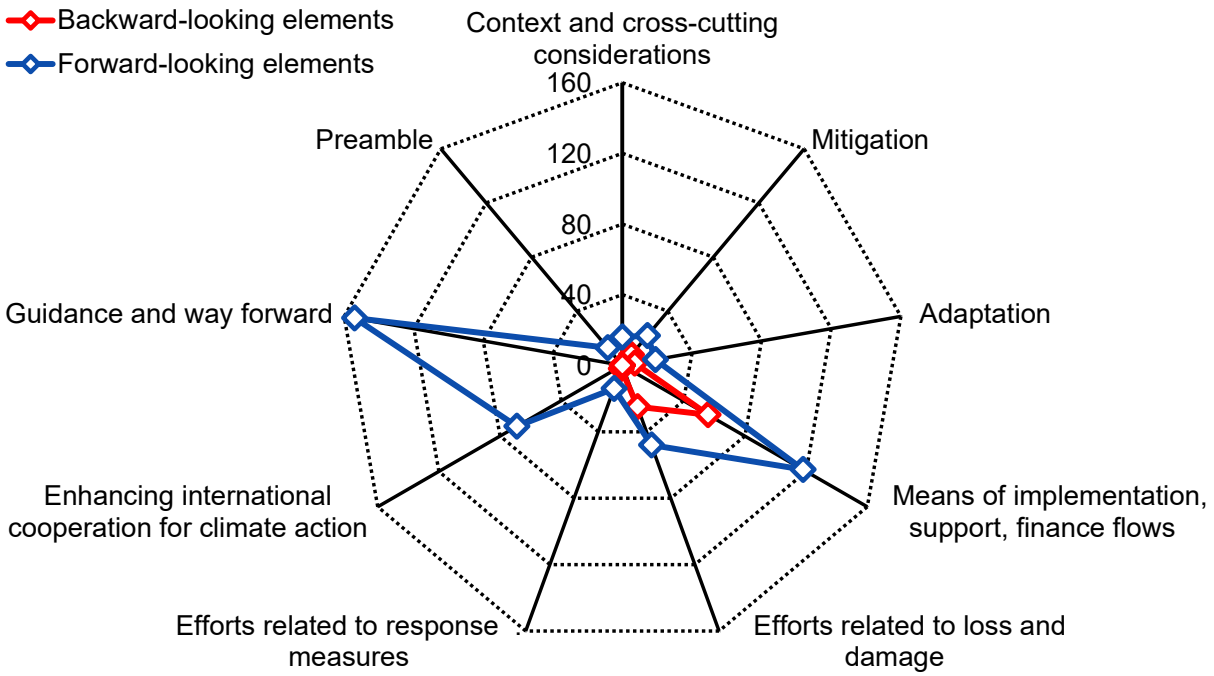


Source: Authors' compilation, based on: Informal note by the co-chairs – Indicative draft structure for GST1 CMA5 decision, https://unfccc.int/documents/630104

The specific contents or elements which should populate this draft structure are still subject to debate. In September 2023, Parties and non-Party stakeholders submitted their 'views on the elements for the consideration of outputs component of the first Global Stocktake'. The UNFCCC

secretariat provided a synthesis of all views which were received by the beginning of October 2023 (UNFCCC 2023b). In the 68 submissions which were considered for this report, the UNFCCC secretariat identified over 500 distinct elements. The proposed elements were arranged according to the headings of the indicative draft structure (cf. Figure 8). Where relevant, a distinction was made between 'backward looking' (i.e. looking at collective progress) and forward-looking (i.e. informing Parties in updating and enhancing their NDCs). Figure 9 illustrates the number of elements identified under the various headings.

Figure 9: Number of distinct elements identified in submissions on the consideration of outputs component of the Global Stocktake



Source: Views on the elements for the consideration of outputs component of the first global stocktake, synthesis report by the secretariat, https://unfccc.int/documents/632292

Note: For this overview figure, it was assumed that each paragraph under the heading 'possible elements' corresponds to one distinct element.

As can be seen in Figure 9, the identified elements are distributed very unevenly. While for topics such as mitigation and adaptation, relatively few distinct elements were identified, almost 160 elements were identified for 'guidance and way forward', and a large number of elements were identified for 'means of implementation, support, and finance flows' – both forward-looking and backward-looking. The number of elements is by no means an indication how diverging the views of Parties are. Nevertheless, it illustrates the difficulty of the task ahead – to find agreement on all thematic areas, while ensuring that all key elements are retained in the CMA decision which is to be adopted by the end of COP28.

As the purpose of the Global Stocktake is to inform Parties in increasing their action and support, it will be crucial for its outputs to be as comprehensive as possible, in order guide Parties in developing new NDCs, and non-Party stakeholders in pursuing ambitious climate action.

3.8. Other topics in the negotiations

Besides the main negotiation topics under the Paris Agreement, several other topics are negotiated at each COP. Many of them have a long history under the Convention, such as the impacts of the implementation of response measures. Others have been introduced more recently, such as the gender action plan. In the following, a brief background and an overview of current issues are provided for each of these topics.

3.8.1. Agriculture and food security

Across the globe, agriculture and food systems are affected by the adverse impacts of climate change. Agriculture is also an important source of greenhouse gas emissions, such as methane from livestock, nitrous oxide from agricultural soil, and CO_2 from the conversion of forest or wetlands into agricultural land.

The negotiations on agriculture have a long history at COPs. At the COP in 2017, which was presided by Fiji, the 'Koronivia Joint Work on Agriculture' (KJWA) was adopted. Under this work programme, workshops and expert meetings were convened in which Parties discussed issues such as methods for assessing adaptation, adaptation co-benefits and resilience, or improved livestock management systems.[65]

At COP27 in 2022, a successor programme to the KJWA was adopted. Under the four-year 'Sharm El-Sheikh joint work on implementation of climate action on agriculture and food security', which will address the implementation of the KJWA outcomes (IISD 2022a). During COP28 in Dubai, Parties will discuss which elements to address under this new work programme, and how to operationalise an online portal which will support this work.[66]

3.8.2. The local communities and indigenous peoples' platform

Local communities and indigenous peoples are particularly affected by the adverse impacts of climate change, as they often live in areas where they have limited options to adapt. Many indigenous peoples conduct lifestyles which are sustainable and associated with low GHG emissions. Hence, they play an important role in contributing to the mitigation of climate change and in providing valuable knowledge.

[65] Koronivia joint work on agriculture, https://unfccc.int/topics/land-use/workstreams/agriculture/KJWA

[66] Issues related to agriculture and food security, https://unfccc.int/topics/land-use/workstreams/agriculture

The local communities and indigenous peoples' platform (LCIPP) was established at COP23 in 2017. Under this platform, representatives of indigenous peoples exchange experiences and good practice, build capacity for engagement and discuss climate change policies and actions.[67]

At COP28, several mandated events under the LCIPP will take place, namely the 'annual gathering of knowledge holders', the 'annual round-table dialogue on indigenous curricula', the 'multi-stakeholder dialogue' and the 'annual youth round table'.[68]

3.8.3. The gender action plan

In many countries, women are disproportionally affected by climate change, while they face barriers to involving themselves in the search for solutions in addressing climate change. The gender action plan, which was adopted in 2017, aims to advance knowledge and understanding of gender-responsive climate action and to mainstream it in the work under the UNFCCC.[69] The gender action plan includes five priority areas, namely capacity-building, knowledge management and communication; gender balance, participation and women's leadership; coherence; gender-responsive implementation and means of implementation; and monitoring and reporting.

At COP27 in Sharm el-Sheikh, the intermediate review of the implementation of the gender action plan was concluded. This review resulted in amendments to some deliverables and new activities, such as the raising awareness of support available to developing country Parties for reporting on the implementation of the gender action plan.

At the upcoming COP28, the SBI will consider reports from the UNFCCC secretariat on a recent on progress in integrating a gender perspective into the processes of the constituted bodies under the Convention.[70]

3.8.4. Impacts of the implementation of response measures

The implementation of mitigation actions can have important negative impacts on individuals and communities. As an example, the phaseout of fossil fuels affects workers in fossil fuel production and in fossil-fuel intensive industries, and it affects countries whose economy is centred on fossil fuel production.

While the Paris Agreement speaks of mitigation actions or measures, the Convention uses the term 'response measures', and its Article 4 addresses, inter alia, the 'impact of the implementation of response measures'. The 'forum on the impact of the implementation of response measures' convenes regularly during the sessions of the Subsidiary Bodies. It is supported by the 'Katowice

---

67 Local Communities and Indigenous Peoples Platform, https://lcipp.unfccc.int/

68 LCIPP Mandated Evens at COP28, https://lcipp.unfccc.int/node/775

69 The gender action plan, https://unfccc.int/topics/gender/workstreams/the-gender-action-plan

70 Dialogue among the Chairs of UNFCCC constituted bodies on progress in integrating a gender perspective into their processes, https://unfccc.int/documents/631567

Committee of Experts on the Impacts of the Implementation of Response Measures' (KCI), which provides knowledge resources on just transition and economic diversification.

At the upcoming COP in Dubai, the KCI will hold its 9th meeting, and the forum will convene two in-session technical events. The first event will address case studies and approaches relating to economic diversification and transformation, and to just transition of the workforce. The second event will discuss best practices in engaging the private sector to facilitate the creation of decent work and quality jobs in low greenhouse gas emission sectors.[71]

3.8.5. Research and systematic observation

The observation of land, oceans and the atmosphere is critical for understanding current climate change, and research provides insights into how climate change will evolve and how it can be mitigated and adapted to. Research and systematic observation are regularly addressed under the SBSTA, with the session at the end of each year focusing on systematic observation.

At the upcoming session during the COP in Dubai, the secretariat of the Global Climate Observing System and the World Meteorological Organization, among others, will provide updates on their work, which will then be discussed by the SBSTA.

While research will not be addressed under a specific agenda item in Dubai, it received much attention at the last SBSTA session in Bonn in June 2023. In the conclusions from Bonn, the SBSTA noted significant advances in scientific understanding of climate change as well as knowledge gaps and research needs. The SBSTA also recommended draft COP and CMA decisions that recognize the comprehensiveness and robustness of the IPCC's Sixth Assessment Report.[72] These draft decisions also encourage the scientific community to continue expanding the scientific knowledge base on climate change.

It can be expected that these decisions will be adopted by the COP and CMA, respectively, in Dubai. However, it has to be noted that the text in these draft decisions is rather general. In the closing plenary of the June 2023 SBSTA session, several groups and Parties pointed out their concern about efforts by some Parties to downgrade the importance of the IPCC and stressed the importance of the work of the IPCC and its Sixth Assessment Report (IISD 2023).

3.8.6. Action for climate empowerment

In order to empower people to address the challenges associated with climate change, they need to be provided with knowledge and skills. The term 'action for climate empowerment' (ACE) encompasses six elements: Education, public awareness, training, public participation, public access to information, and international cooperation.

At COP27 in Sharm El-Sheikh, Parties adopted a four-year action plan, which focuses on immediate action through short-term activities, guided by priority areas which had been agreed

[71] SBI 59 – provisional agenda and annotations, https://unfccc.int/documents/631634

[72] Report of the SBI, Addendum, Draft decisions, https://unfccc.int/documents/630917

the year before in Glasgow. These priority areas are policy coherence; coordinated action; tools and support; and monitoring, evaluation and reporting.

At the upcoming COP in Dubai, the SBI will consider the summary report on progress in implementing activities under the ACE work programme.[73] Main activities covered by this report include the ACE Dialogue, which was held in conjunction with the SBI session in Bonn in June 2023. This dialogue addressed monitoring, evaluation and reporting and included a workshop with experts, youth representatives and other stakeholders.

3.8.7. International aviation and maritime transport

Policies to mitigate GHG emissions from international aviation and maritime transport are mainly addressed by the specialised agencies ICAO and IMO (cf. section 2.4), and the scope of most NDCs does not include the emissions from international aviation or shipping. The NDC of the EU is an exception, as it covers CO_2 emissions from international flights, as far as they are covered by the EU ETS.[74]

In the climate negotiations under the UNFCCC, there is an agenda item under the SBSTA on 'emissions from fuel used for international aviation and maritime transport'. Under this agenda item, Parties discuss reports by ICAO and IMO on their activities to mitigate these emissions. At COP27, Parties agreed on procedural conclusions which noted that ICAO and IMO representatives were present at the discussions and provided some answers to questions. Parties usually do not adopt substantive conclusions under the SBSTA, because they cannot agree on a common position: Some point out that the issues are addressed under the specialised agencies outside the UNFCCC while others highlight that the policies adopted there need be aligned with development under the UNFCCC.

At the SBSTA session in Bonn in June 2023, Parties were not able to resolve their differences on the wording in the proposed draft conclusions, and hence no SBSTA conclusions were adopted (IISD 2023). Negotiations will continue at the COP in Dubai, and it can be expected that Parties will work towards procedural conclusions.

[73] Progress in implementing activities under the Glasgow work programme on Action for Climate Empowerment, https://unfccc.int/documents/631670

[74] The scope of the updated NDC of the EU which was communicated in October 2023 (cf. section 4.6) covers CO_2 emissions from flights under the EU ETS within the European Economic Area (i.e. flights between EU Member States, Norway and Iceland) and outgoing flights to the United Kingdom and to Switzerland. It also covers emissions from international shipping between EU countries.

4. CLIMATE POLICIES OF MAIN PARTIES

For the results of the climate change negotiations to have an impact, they need to be translated into ambitious national policies. Such policies are in the spotlight at climate change conferences, and the outputs of this year's Global Stocktake should provide clear guidance on how Parties can step up their national efforts.

As pointed out by the IPCC (2023), rapid and far-reaching transitions across all sectors and systems are necessary to achieve deep and sustained emissions reductions. Actions taken by the members of the Group of 20 (G20) will be particularly important because they are responsible for 78% of total GHG emissions (Gütschow and Pflüger 2023).

This chapter provides an overview of the climate policies of G20 members. The policies of the G20 members Germany, France and Italy are not presented separately. Instead, the climate policies of the European Union are summarised, which are implemented at the level of the EU and its Member States, including Germany, France and Italy.

Each G20 member recently communicated a new NDC or updated its current NDC under the Paris Agreement, and many members also communicated long-term strategies. Table 4 provides an overview of the NDCs communicated by the G20 members. More information on each NDC can be found in the country sections below.

Table 4: NDCs communicated by G20 members by the end of October 2023

Member	NDC submitted	Date	Increased mitigation ambition	Type of mitigation target(s)
Argentina	Updated 2nd NDC	2/11/2021	Yes	Economy-wide emissions cap
Australia	Updated NDC	16/6/2022	Yes	Economy-wide emissions reduction target
Brazil	NDC 2023 adjustment	3/11/2023	Yes	Economy-wide emissions reduction target
Canada	Updated NDC	12/7/2021	Yes	Economy-wide emissions reduction target
China	Updated NDC	28/10/2021	Yes	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.

Member	NDC submitted	Date	Increased mitigation ambition	Type of mitigation target(s)
European Union	NDC 2023 update	19/10/2023	No	Economy-wide emissions reduction target Note: Mitigation ambition was increased in the 2020 update. In the 2023 update, mitigation ambition remains at the same level as in the 2020 update.
India	Updated NDC	26/8/2022	Yes	Emissions intensity target; target for the installed capacity of non-fossil fuel based power generation; increase of carbon sink.
Indonesia	Updated NDC	23/9/2022	Yes	Economy-wide emissions target compared to a business-as-usual scenario
Japan	Updated NDC	22/10/2021	Yes	Economy-wide emissions reduction target
Mexico	Updated NDC	17/11/2022	Yes	Economy-wide emissions target compared to a business-as-usual scenario
Republic of Korea	Updated NDC	23/12/2021	Yes	Economy-wide emissions reduction target
Russian Federation	First NDC	25/11/2020	No	Economy-wide emissions reduction target Note: Target within the range already provided in the intended NDC.
Saudi Arabia	Updated NDC	23/10/2021	Yes	Emissions target compared to a business-as-usual; target for the renewable energy share Note: The business-as-usual scenario is not specified.
South Africa	Updated NDC	27/9/2021	Yes	Economy-wide emissions reduction target
Türkiye	Updated NDC	13/04/2023	Yes	Emissions target compared to a business-as-usual scenario Note: Targets unchanged from intended NDC.

Member	NDC submitted	Date	Increased mitigation ambition	Type of mitigation target(s)
United Kingdom	Updated NDC	22/09/2022	Yes	Economy-wide emissions reduction target
United States	First NDC	22/4/2021	Yes	Economy-wide emissions reduction target

Source: NDC registry, https://unfccc.int/NDCREG; Climatewatch, https://www.climatewatchdata.org/2020-ndc-tracker
Note: The Russian Federation and the United States joined the Paris Agreement relatively recently. Their current NDCs are technically 'first NDCs'. Here their mitigation ambition is compared to the ambition of the intended NDCs submitted in 2015.

The long-term strategies communicated by G20 members are shown in Table 5.

Table 5: Long-term strategies communicated by G20 members by the end of October 2023

Member	Date	Climate neutrality goal	Description of goal
Argentina	6/11/2022	Yes	Climate neutrality by 2050
Australia	29/10/2021	Yes	Net-zero emissions by 2050
Brazil	No long-term strategy communicated under the Paris Agreement		
Canada	31/10/2022	Yes	Net-zero emissions by 2050
China	28/10/2021	(Yes)	Carbon neutrality before 2060 (not all GHGs covered)
European Union	6/3/2020	Yes	Climate neutrality by 2050
India	14/11/2022	Yes	Net-zero emissions by 2070
Indonesia	22/7/2021	No	Emissions of 540 Mt CO_2eq by 2050
Japan	29/10/2021	Yes	Carbon neutrality by 2050, reducing GHGs to net-zero
Mexico	16/11/2016	No	50% emissions reduction by 2050 compared to 2000
Republic of Korea	30/12/2020	(Yes)	Carbon neutrality by 2050 (not all GHGs covered)
Russian Federation	5/9/2022	Yes	Balance of emissions and removals no later than 2060
Saudi Arabia	No long-term strategy communicated under the Paris Agreement		
South Africa	23/9/2020	No	Emissions of 212 to 428 Mt CO_2eq by 2050
Türkiye	No long-term strategy communicated under the Paris Agreement		

Member	Date	Climate neutrality goal	Description of goal
United Kingdom	19/10/2021	Yes	Net-zero emissions by 2050
United States	1/11/2021	Yes	Net-zero emissions by 2050

Source: Communication of long-term strategies, https://unfccc.int/process/the-paris-agreement/long-term-strategies; ClimateWatch, https://www.climatewatchdata.org/lts-explore

As can be seen in Table 5, three G20 members have not yet communicated a long-term strategy under the Paris Agreement. Some announced long-term goals independently of a long-term strategy submission. Information on these announcements can be found in the country sections below.

4.1. Argentina

Argentina is the world´s 27th largest GHG emitter as of 2020. In 2020, total emissions reached approximately 395 $MtCO_2eq$ (0.8% global share). Emissions are mainly distributed in energy (45%) and agriculture (34%). The remaining emissions are distributed among the LULUCF (8.5%), industrial processes and product use (7.3%) and waste sectors (5.6%)[75]. Although GHG emissions increased by 52% between 1990 and 2016, current trends indicate a gradual decrease in annual GHG emissions after reaching a peak in 2008 at 455 $MtCO_2eq$. However, current emissions are still significantly higher than NDC targets for 2030.

The government of Argentina submitted its second NDC in December 2020, and an update to this NDC in October 2021. It sets the absolute, economy-wide and unconditional goal of limiting annual GHG emissions to 349 $MtCO_2eq$ in 2030. In 2022, Argentina submitted its LTS, in which the Government confirmed a net-zero target and set a framework for action which will be developed in more detail in conjunction with the domestic National Climate Change Adaptation and Mitigation Plan[76].

Currently, the 2015 Renewable Energy Law[77] mandates a 20% share of renewable electricity consumption by 2025, whilst the National Programme for Distributed Generation[78] of 2017 established a national framework for the distribution of renewable energy and established a trust fund to finance projects. In October 2021, the Ministry of Economy approved Resolution

[75] ClimateWatch: Argentina, https://www.climatewatchdata.org/countries/ARG?end_year=2020&start_year=1990#ghg-emissions

[76] Ministerio de Ambiente y Desarrollo Sostenible : Segundo Plan Nacional de Adaptación y Mitigación Al Cambio Climatico - April 2023, https://www.argentina.gob.ar/normativa/nacional/resolución-146-2023-382506

[77] Ministerio de Economía y Finanzas Públicas, Argentina: Renewable Energy Law 27191, https://climate-laws.org/documents/law-27191_656d

[78] Ministerio de Justicia y Derechos Humanos, Argentina: National Programme for Distributed Generation of Renewable Energy, Law 27424, https://climate-laws.org/documents/law-no-27424-creating-the-promotion-regime-for-distributed-generation-of-renewable-energy-integrated-in-the-public-electricity-grid_27af

1036/2021[79] which calls for a structural change in energy supply systems to ensure sustainable energy practices (*which however also incorporates natural gas infrastructure*) and in July 2023, the National Energy Transition Plan to 2030[80] was approved and aims to install 5,000 km of new transmission lines, with renewable energy production reaching 57% by 2030. Still, the National Energy Transition Plan also includes a 30% to 57% increase in natural gas production (174 to 209 Mm^3/d – million cubic meters per day) – by 2030 and 2050 respectively. This increased exploitation of national fossil fuel reserves (Lallana and Bravo, G., Le Treut, G. 2021) is politically sensitive, with environmental groups highlighting the incompatibility of such policies with the country's efforts to reduce GHG emissions. In 2020, the national government allocated approx. 90 times more funds to fossil fuels programmes than renewable energy projects (Climate Action Tracker 2023). Moreover, Argentina implemented a carbon tax (1-10 USD/tCO_2eq) for liquid fuels in 2018 which covers 5-20% of GHG emissions[81], whilst fossil fuel subsidies have increased and cover approx. 30% of GHG emissions as of 2021[82]. Notably, natural gas is exempt from the carbon tax, as is fuel for international aviation, shipping and fuel exports (Giovanni et al. 2022).

The 2007 Forest Law[83] aims at preventing deforestation of native forest areas by setting minimum budgets for forest protection and establishing a capacity building scheme and requirements for provinces to comprehensively monitor and track forest areas. The law established the National Fund for Enriching and Conserving Native Forests that disburses funds to provinces that protect native forests. However, to date, the Forest Law has only been partially implemented, only a small portion of the available budget allocated (Climate Action Tracker 2023) and recent studies have shed light on the lack of effectiveness at preventing deforestation when implemented (Sans et al. 2018).

Argentina has taken some positive steps to mitigate GHG emissions, such as setting renewable energy targets and implementing a carbon tax on some fossil fuels. However, significant inconsistencies, ineffective implementation, and lack of ambition have limited progress. Stronger policies, improved enforcement, increased ambition, and continuity following any future leadership changes will be critical for Argentina to effectively mitigate its high emissions and contribute meaningfully to global climate action.

---

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

80 Ministerio de Economía, Argentina: Plan Nacional de Transición Energética a 2030, https://www.energiaestrategica.com/wp-content/uploads/2023/07/Plan-Transicion-Energetica-ARG-2030.pdf

81 Law 26,331 for the Environmental Protection of Native Forests Argentina (2007), https://www.climate-transparency.org/wp-content/uploads/2020/11/Argentina-2020-WEB2.pdf

82 OECD, 2022, Pricing Greenhouse Gas Emissions, Country Notes, Argentina, https://www.oecd.org/tax/tax-policy/carbon-pricing-argentina.pdf

83 Ley de Presupuestos Minimos de Proteccion Ambiental de los Bosques Nativos, Ley 26.331, http://servicios.infoleg.gob.ar/infolegInternet/anexos/135000-139999/136125/norma.htm

4.2. Australia

Australia is currently a major exporter of both fossil fuels and several minerals that are required in many clean energy technologies. According to a recent report by the IEA,[84] a 'successful clean energy transition would support the country's economic diversification and industrial growth while providing long-term resilience against global energy market shocks.'

Australia is the world's 16th largest emitter of GHG and reached 585 $MtCO_2eq$ in 2020. The energy sector accounts for the highest emissions (75%, 439 $MtCO_2eq$), followed by agriculture (104 $MtCO_2eq$), industrial processes (16 $MtCO_2eq$), LULUCF (14 $MtCO_2eq$) and waste (12 $MtCO_2eq$).[85] Australia submitted its updated NDC in 2022 and LTS in 2021. In its updated NDC, Australia commits to reducing its greenhouse gas emissions 43% below 2005 levels by 2030 (Australia 2022). The LTS states that Australia will reach net-zero emissions by 2050 (Autralia 2021).

The Australian Government announced in their updated NDC that it is implementing a 'substantial and rigorous' suite of new policies across the economy to drive the transition to net zero. For example, the updated NDC refers to an AUD 20 billion investment in the country's electricity grid to increase the share of renewables in electricity generation. This aims to address the major driver of Australia's recent GHG emission trends i.e. its reliance upon fossil fuels in the energy mix. For example, coal still accounts for around 55% of electricity generation in the country.[86] A further AUD 3 billion will be assigned to a 'National Reconstruction Fund' to facilitate the decarbonisation of industry via the deployment of low emissions technologies and to support renewables manufacturing. In addition, the Australian government will introduce an electric car tax discount to help incentivise a switch towards the use of electric vehicles that will be accompanied with investments from a new 'Driving the Nation Fund' that will upgrade the charging and refuelling infrastructure.

The level of political ambition in Australia has increased considerably in recent years with regards to climate change mitigation. However, to achieve the net zero target by 2050 the country will need to considerably step up its efforts for decarbonising the power sector with 'accelerated implementation of renewable energy zones, faster permitting of grid related projects and additional coal retirements'.[87] Furthermore, the rate at which Australia deploys low carbon technologies and supporting supply chains is likely to have global repercussions as the country produces critical minerals for decarbonisation such as cobalt, rare-earth elements and lithium (of which it is the single largest producer).[88]

---

84 Australia has raised its climate targets and now needs to accelerate its clean energy transition, says new IEA review, https://www.iea.org/news/australia-has-raised-its-climate-targets-and-now-needs-to-accelerate-its-clean-energy-transition-says-new-iea-review

85 ClimateWatch - Australia, https://www.climatewatchdata.org/countries/AUS?end_year=2020&start_year=1990

86 ibid

87 Australia has raised its climate targets and now needs to accelerate its clean energy transition, says new IEA review, https://www.iea.org/news/australia-has-raised-its-climate-targets-and-now-needs-to-accelerate-its-clean-energy-transition-says-new-iea-review

88 ibid

4.3. Brazil

Brazil has been among the top seven greenhouse-gas emitting countries for over 30 years. In 2019, total emissions reached 1.45 $GtCO_2eq$ (2.17% global share). The emissions were mainly distributed in three sectors: Agriculture (35%), energy (30%) and land use, land-use change and forestry (27%). The remaining emissions were emitted in the Waste sector (5%) and the Industrial Processes and Product Use (IPPU) sector (2%).[89]

In September 2023, Brazil reinstated its stronger GHG mitigation commitment of 2015, which had been weakened under the Bolsonaro presidency[90], and on 3 November 2023 Brazil submitted an updated NDC[91]. In this NDC, Brazil commits to an absolute net GHG emissions target of 1.32 Gt CO_2eq in 2025 and 1.20 Gt CO_2eq in 2030. The target for 2030 corresponds to a reduction of 53.1% compared to 2005, according to the latest GHG inventory data. This target is among the strongest emission reduction targets of all NDCs. Its achievement will be facilitated by the fact that GHG emissions from the LULUCF sector have already strongly decreased in the years after 2005. Nevertheless, further emission reductions will be needed in the coming years in order to achieve Brazil's NDC target.

Brazil has not yet submitted any LTS, but their NDC includes a long-term objective to achieve climate neutrality by 2050 (down from 2060 in the 2020 NDC).[92]

The energy mix of Brazil is primarily oil (35.5%), hydropower (27%) and gas (12%).[93] Brazil has consistently ranked among the leaders of clean energy with a high share of renewables in its energy mix since 1980.[94] It is the world's second largest hydropower producer by installed capacity and has the largest installed hydropower capacity in South America, with 60 % of the continent's total capacity.[95] While almost 50% of primary energy demand comes from renewables (three times the world average), the remaining half is derived from fossil fuels. Brazil is the ninth-largest producer of fossil fuel-based energy.[96] Almost half of the total fossil-fuel based energy (47%) is consumed by the transport subsector, followed by industry power consumption and electricity generation.[97]

---

89 ClimateWatch – Brazil, https://www.climatewatchdata.org/countries/BRA

90 Interministerial Committee on Climate Change: Brazil Commitments 2023, https://www.gov.br/mma/pt-br/comite-interministerial-sobre-mudanca-do-clima-aprova-cinco-resolucoes

91 Nationally Determined Contribution (NDC) to the Paris Agreement under the UNFCCC, https://unfccc.int/sites/default/files/NDC/2023-11/Brazil%20First%20NDC%202023%20adjustment.pdf

92 Support for adaptation to Climate Change (ProAdapta), https://www.giz.de/en/worldwide/66671.html

93 British Petroleum (BP) & the Energy Institute (EI) : Statistical Review of World Energy, https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html

94 Share of renewables in electricity production, https://yearbook.enerdata.net/renewables/renewable-in-electricity-production-share.html

95 International Hydropower Association : Country Profile Brazil, https://www.hydropower.org/country-profiles/brazil

96 Our World in Data : Country Profile Brazil, https://ourworldindata.org/energy/country/brazil

97 Observatório do Clima - GHG Emissions in Brazil SEEG, 2021, Análise das emissões brasileiras de gases de efeito estufa e suas implicações para as metas climáticas do Brasi, 1990-2020, https://www.oc.eco.br/wp-content/uploads/2021/10/OC_03_relatorio_2021_FINAL.pdf

Agriculture plays a crucial role in the Brazilian economy and accounts for 35% of the country's total GHG emissions. Illegal deforestation, often in the form of fires, mostly for the expansion of agricultural areas, remains a significant issue in Brazil. It is mainly driven by cattle ranching and crop production, particularly soy for livestock feed. Brazil is the second largest producer of cattle meat and the country with fourth highest cattle per capita in 2021.[98] During 2021 alone, approx. 3 Mha were deforested[99].

The start of President Lula da Silva's term in 2023 and the return of Marina Silva as Minister of the Environment and Climate Change, who previously achieved significant reductions in deforestation rates in the early 2000s, is expected to improve the current environmental situation of Brazil. That includes preventing further damage done to the Amazon Basin during the years of President Bolsonaro, preventing the largest carbon sink from turning into a carbon source.[100] The government has reactivated the Amazon Fund[101] (initially established in 2008 but abandoned under Bolsonaro) and updated the deforestation control and prevention plans. Despite President Lula's pledge to halt deforestation by 2030[102], data indicates that deforestation has continued to rise during the first months of his mandate.[103] New approaches focusing on halting deforestation, and on sustainable agricultural practices will be critical for Brazil to correct its course, since those are the main emissions sources.

4.4. Canada

Canada is among the largest oil and gas producers worldwide. It is the country with the third largest forest cover, and many of its forests were affected by large-scale wildfires in the summer of 2023.

Canada is the world's 10th largest emitter of GHG and reached 732 $MtCO_2eq$ in 2020. The energy sector accounts for the highest emissions (78%, 574 $MtCO_2eq$), followed by agriculture (63 $MtCO_2eq$), LULUCF (54 $MtCO_2eq$), industrial processes (22 $MtCO_2eq$), and waste (19 $MtCO_2eq$).[104] Canada submitted its updated NDC in 2021 and its LTS in 2022. In its updated NDC, Canada commits to reducing its greenhouse gas emissions by at least a 40-45% compared to 2005 levels (Canada 2021). The LTS states that Canada will reach net-zero emissions by 2050 (Canada 2022).

The Pan-Canadian Framework on Clean Growth and Climate Change (PCF) was adopted in 2016 and outlined a strategic plan for the pricing of carbon pollution and complementary actions to

98 Our World in Data: Number of Cattle per Country, 2021, https://ourworldindata.org/grapher/cattle-livestock-count-heads

99 Global Forest Watch: Brazil Deforestation Data, Brazil Deforestation Rates & Statistics | GFW (globalforestwatch.org)

100 The New York Times - Amazon Tipping Point - April 2023, https://www.nytimes.com/2023/01/04/magazine/amazon-tipping-point.html?action=click&module=RelatedLinks&pgtype=Article

101 Reactivation of Amazon Fund - April 2023, https://www.gov.br/secom/pt-br/assuntos/obrasilvoltou/desenvolvimento/fundo-amazonia-e-reativado-apos-anos-de-inatividade

102 Reuters - Stopping Deforestation by 2030 - June 2023, https://www.reuters.com/world/americas/brazils-lula-launches-plan-stop-deforestation-amazon-by-2030-2023-06-05/

Reuters: Increased Deforestation in Brazil - April 2023, https://www.reuters.com/business/environment/deforestation-brazils-amazon-rises-march-2023-04-07/

104 ClimateWatch – Canada, https://www.climatewatchdata.org/countries/CAN?end_year=2020&start_year=1990

reduce emissions, support adaptation and climate resilience and promote clean technology, innovation and jobs. As a consequence of the measures implemented under this strategic plan, Canada's projected emissions for 2030 declined from 815 Mt prior to the PCF to 468 Mt afterwards (Canada 2021).

In light of the adoption of a net-zero emissions target by 2050, the Canadian government released their Strengthened Climate Plan in December 2020 that included federal policies, programmes and investments targeted at the following five pillars (Canada 2021):

- Improving energy efficiency such as via the creation of a CAD 2.6 billion Canada Greener Homes Grant initiative, and investing CAD 4.4 billion to help homeowners complete deep home retrofits through interest-free loans (Government of Canada 2020).
- Decarbonising power and transport, with a focus on reducing transport emissions that account for around a quarter of total emissions (e.g. by requiring 100% of new light-duty vehicles and passenger trucks sold in Canada to be zero-emissions by 2035) and ensuring that the already low carbon power mix in Canada is prepared for the accelerated electrification of key sectors.
- Pricing carbon will continue with the Government of Canada increasing the benchmark price by CAD 15 per tonne per year, starting in 2023, rising to CAD 170 per tonne in 2030.
- Encouraging innovation in industry through, for example, decarbonization projects with large emitters and scaling up clean technology through the Strategic Innovation Fund's CAD 8 billion Net-Zero Accelerator Fund.
- Supporting carbon sequestration via, for example, an investment in excess of CAD 3 billion over 10 years to plant two billion trees.

4.5. China

China has been a forceful advocate for the principle of 'common but differentiated responsibilities' in the UNFCCC negotiations (refer to Article 3.1 of the Convention) noting that several other Parties have significantly higher cumulative emissions since the start of the industrial revolution and this greater level of responsibility for the climate emergency should be reflected by greater obligations. During the technical dialogues under the Global Stocktake, China advocated the use cumulative historic emissions as a basis for the discussion on equity between countries.

China is the world's largest emitter of GHG and reached 12.3 $GtCO_2eq$ in 2020. The energy sector accounts for the highest emissions (88%, 10.82 $GtCO_2eq$), followed by industrial processes (1.26 $GtCO_2eq$), agriculture (654 $MtCO_2eq$) and waste (210 $MtCO_2eq$). The LULUCF sector is a net sink (-647 $MtCO_2eq$).[105] China submitted its updated NDC in 2022 and its LTS in 2021. In its updated NDC, China aims to have CO_2 emissions peak before 2030 and will lower its CO_2 emissions per

[105] ClimateWatch - China, https://www.climatewatchdata.org/countries/CHN

unit of gross domestic product (GDP) by over 65% from the 2005 level. The LTS states that China will reach carbon neutrality by 2060 (China 2021).

Over the 14th Five-year Plan period between 2021 and 2025, China intends to 'strictly control coal consumption' and will be more ambitious in the 15th Five-year Plan between 2026 and 2030 when the country 'will phase down coal consumption'. However, the government's Work Report 2023 confirmed that coal is set to remain the backbone of the energy system and indeed, coal production reached record levels in 2022.[106] With regards to the deployment of renewables in the country, the 14th Five-year Plan pledges that 33% of electricity will be generated from renewable resources in 2025.[107] Total renewable capacity reached more than 1,150 gigawatt (GW) in 2022 and it is very likely to exceed the targets set for renewable capacity. It is envisaged that China's national ETS, which started operation in 2021 for the power sector, will be an important policy measure to achieve China's targets to peak emissions by 2030 and the scope will be extended to include key industrial sectors to help achieve carbon neutrality by 2060.[108]

According to the Climate Action Tracker,[109] 'high-level political signals including President Xi Jinping's speech at the 20th CPC National Congress, the 2023 Government Work Report from the "Two Sessions" (annual plenary sessions of two of China's major political bodies), and strategies from national planning and energy institutions, all emphasise China's energy security as the first order concern.' Indeed, the coal power capacity in the pipeline remains the largest in the world.[110] Given that the NDC and LTS targets do not cover non-CO_2 greenhouse gases, almost 18% of China's total emissions are not subject to targets and ambition could be further enhanced by transparently extending the scope of the NDC and LTS targets in subsequent updates.[111]

4.6. European Union

The European Union is a Party to the UNFCCC and the Paris Agreement, and so are its Member States. The NDC communicated by the EU covers all Member States, and its target has to be achieved by all Member States collectively. Legislation has been put in place to help achieve the EU target; Member States implement this legislation as well as additional, national policies. After the withdrawal of the UK in 2020, the EU consists of 27 Member States. In some policy areas, such as the ETS, the EU collaborates with neighbouring countries (Iceland, Liechtenstein, Norway and Switzerland). The GHG emissions reduction target in the Kyoto Protocol's second commitment period was achieved jointly by the EU and Iceland, and some of the EU's submissions in the UNFCCC process were supported by EU candidate countries such as North Macedonia and Serbia.

The EU-27 is the world's 4th largest emitter of GHG and reached 2.96 $GtCO_2eq$ in 2020. The energy sector accounts for the highest emissions (88%, 2.47 $GtCO_2eq$), followed by agriculture (392

[106] China, https://climateactiontracker.org/countries/china/

[107] ibid

[108] China national ETS, https://icapcarbonaction.com/en/ets/china-national-ets/

[109] China, https://climateactiontracker.org/countries/china/

[110] ibid

[111] ibid

$MtCO_2eq$), industrial processes (151 $MtCO_2eq$), waste (106 $MtCO_2eq$). The LULUCF sector is a net sink (-161 $MtCO_2eq$).[112] The EU-27 submitted its updated NDC in 2023 and its LTS in 2020. In its updated NDC, the EU-27 commits to at least a 55% reduction in greenhouse gas emissions by 2030 compared to 1990. The NDC target is a net target, i.e. emissions as well as removals from LULUCF are included. The LTS states that the EU-27 will reach carbon neutrality by 2050 (EC 2020).

The updated NDC which was submitted in October 2023 for the EU-27 has not changed the level of ambition since the previous submission in 2020. Rather, the NDC was updated in 2023 to provide additional information on the policies and measures that will be implemented in order for the EU-27 to achieve its target (European Union 2023). The annex to the NDC also provides further details on the scope, methods and assumptions, and on fairness considerations. The main domestic policies adopted in view of the EU's climate target include (European Union 2023):

- ETS: The EU has set a new target to reduce GHG emissions from the existing EU ETS sectors and, in addition, from maritime of 62% by 2030, compared to 2005 levels.
- ETS2: A separate carbon pricing framework for fuel combustion in road transport and buildings and additional sectors is to be introduced from 2027 onwards and is designed to price emissions without the provision of free allocation and intends to contribute to emission reductions of 42% by 2030 compared to 2005 in the sectors covered.
- Effort sharing between Member States: Under the Effort Sharing Regulation, which applies to greenhouse gas emissions not covered by the existing EU ETS, Member States have been set individual and binding reduction targets that collectively set an overall target for the EU-27 of a 40% reduction by 2030 below 2005 levels.
- LULUCF target: The EU has adopted a removal target for the LULUCF sector of 310 $MtCO_2eq$ for 2030, which is calculated as the sum of the reported greenhouse gas net emissions and removals in the sector.
- CO_2 emissions from cars and vans: Legislation has been adopted by the EU in order to reduce 55% of CO_2 emissions for new cars and 50% for new vans from 2030 until 2034, and for 100% CO_2 emissions reductions from 2035 for new cars and vans.

In response to the Russian Federation's war on Ukraine, the EU has responded to the subsequent energy crisis by adopting further policies to enhance the bloc's energy independence. The RePowerEU Plan was launched in May 2022 with three key aims to save energy, to produce clean energy and to diversify its energy supplies.[113] Indeed, the EU has agreed to an enhanced target to reduce final energy consumption at EU level by 11.7% in 2030 and a more ambitious target for increasing renewable energy in final energy consumption of at least 42.5% by 2030, with an additional 2.5% indicative top up that would allow to reach 45% (European Union 2023). The diversification of fuel supplies away from the Russian Federation is already evident by the fact

[112] ClimateWatch - EU-27, https://www.climatewatchdata.org/countries/EUU?end_year=2020&start_year=1990

[113] REPowerEU at a glance, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/repowereu-affordable-secure-and-sustainable-energy-europe_en

that Russian gas only accounted for 8% of all pipeline gas imported into the EU in September 2022 compared to 41% of EU imports from the Russian Federation in August 2021. [114]

According to the European Commission's estimates it is possible that the full implementation of the 'Fit for 55' legislative framework could lead to the overachievement of the EU's target of at least 55 % by 2030 below 1990 levels.[115] However, the 2023 State of the Energy Union Report calls upon the EU and its Member States to 'significantly step up their implementation efforts and accelerate emissions reductions to stay on track' to reach the 2030 target and climate neutrality by 2050.[116]

4.7. India

India's total GHG emissions in 2020 are estimated to be 3.17 $GtCO_2$ eq, 70% of these emissions result from fossil fuel use in the energy sector, 23% from agriculture, 5% from the industrial process sector and ca. 3% from the waste sector[117]. CO_2 emissions from the power generation sector represent 46% of CO_2 emissions of the energy sector, industry 30%, transport 13% and buildings 6%[118]. In 2020, total primary energy demand was dominated by coal (44%), oil (25%), natural gas (6%) with the remaining 25% being biomass and renewable energy [119].

India submitted its updated (and strengthened) NDC in August 2022 (India 2022a) with a strengthened target for the reduction in emissions intensity of GDP of 45% by 2030 compared to 2005. A target to achieve about 50% electric power installed capacity from non-fossil fuel-based energy sources by 2030 is also included in the NDC. In 2022, India also communicated its LTS (India 2022b) which is a framework outlining the roadmap to net-zero by 2070 and which will be the basis for a detailed action plan to operationalize this commitment.

The LULUCF sector in India acts as a net sink, which absorbed an average of 46 Mt CO_2eq yearly between 2011 and 2019. However, in the last 20 years, India has lost 5.3% of its tree cover. India hasn't signed the pledge to halt deforestation at COP26, but still maintains their NDC plan to create an additional 2.5-3 $GtCO_2$ eq carbon sink by 2030 through additional forest cover[120]. In the Parliament session of July 2023, the Indian government has approved the Forest Conservation (Amendment) Bill 2023 which is viewed as diluting the existing Act by allowing for greater and easier exemptions for non-forest activities which is likely to lead to greater deforestation as well

[114] ibid

[115] Preparations for the 28th Conference of the Parties (COP28) of the United Nations Framework Convention on Climate Change (UNFCCC) (Dubai, 30 November – 12 December 2023), Council conclusions, https://data.consilium.europa.eu/doc/document/ST-14285-2023-INIT/en/pdf

[116] State of the Energy Union 2023: Further action needed to accelerate climate action, https://climate.ec.europa.eu/news-your-voice/news/climate-action-progress-report-2023-2023-10-24_en

[117] ClimateWatch India, https://www.climatewatchdata.org/countries/IND?end_year=2020&start_year=1990

[118] International Energy Agency - Energy Sector CO2 Emissions in India, https://www.iea.org/data-and-statistics/charts/co2-emissions-from-the-indian-energy-sector-2019

[119] International Energy Agency - 2021 Energy Outlook India, https://iea.blob.core.windows.net/assets/1de6d91e-e23f-4e02-b1fb-51fdd6283b22/India_Energy_Outlook_2021.pdf

[120] Global Forest Watch – India, https://globalforestwatch.org/dashboards/country/IND

as violate the rights of forest dwelling communities which were protected under the original Act[121].

In May 2023, India adopted the National Electricity Plan[122] which targets an increase in installed renewable energy (e.g., 31 GW solar) capacity as well as coal (25.5 GW) capacity. India is planning to increase domestic coal consumption up to 2032 (reaching 1,026 million tonnes of annual domestic coal consumption) as well as become a net exporter of coal by 2026, as per the Minister for Coal[123]. Moreover, the fiscal year ending in March 2023 saw the fastest growth in power generation in three decades, primarily fuelled by a 12.3% increase in coal consumption[124].

In April 2023, the Indian Government approved modifications to domestic gas pricing guidelines[125] to strengthen the national target of more than doubling the share of natural gas in the energy sector (15%) by 2030 compared to 2022, expanding the National Gas Grid by an additional 12,000 km and setting up Liquefied Natural Gas Terminals[126].

The 2023-2024 National Budget contains funding support for 4 GWh of battery storage projects totalling approx. USD 455 million[127]. Moreover, the Government assigned funding to three companies for a total of 30 GWh of domestic battery production in mid-2022 through Production Linked Incentives in Advanced Chemistry Cell Batteries. In addition, production linked incentive schemes in the automotive industry are targeting the growth of domestic manufacturing of clean vehicles through incentives worth USD 3.2 billion[128]. In 2022, India issued the Battery Waste Management Rules in order to recycle and reuse batteries and increase recycled components of electric vehicle batteries by 20% by 2030[129] and decrease its dependence on battery imports from China.

In January 2023, India approved the National Green Hydrogen Mission[130] which aims for 5 Mt of green hydrogen production per year, 50 Mt in annual GHG abatement, and aims to develop a Standards and Regulations framework as well as a public-private partnership framework

---

121 The Forest Conservation Amendment Bill - India 2023, https://prsindia.org/billtrack/the-forest-conservation-amendment-bill-2023

122 National Electricity Plan - India 2023, 31 MAY 2023, Ministry of Power, Central Electricity Authority notifies the National Electricity Plan for the period of 2022-32, https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1928750

123 Mining Technology - India Exporting Coal in 2026, https://www.mining-technology.com/news/india-to-start-exporting-coal/#:~:text=India%27s%20coal%20minister%20Pralhad%20Joshi,to%20begin%20exportation%20by%202026

124 Reuters April 2023 - Increase in Coal Consumption, https://www.reuters.com/business/energy/indias-power-output-grows-fastest-pace-33-years-fuelled-by-coal-2023-04-05/

125 India Press Information Bureau - Natural Gas Pricing, Revisions to the Domestic Natural Gas Pricing Guidelines, 2014 https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1914450

126 India Press Information Bureau 2022 – Increasing Natural Gas Consumption, Ministry of Petroleum & Natural Gas, 2022, (Release ID: 1844630) https://pib.gov.in/PressReleasePage.aspx?PRID=1844630

127 India National Budget 2023 : Energy Storage, https://www.energy-storage.news/indias-national-budget-includes-viability-gap-funding-for-4gwh-of-energy-storage/

128 International Energy Agency, Global EV Outlook 2023, https://www.iea.org/reports/global-ev-outlook-2023/policy-developments

129 Ministry of Environment, Forest and Climate Change: Battery Waste Management Rules, 2022, https://moef.gov.in/wp-content/uploads/2022/08/BWMR-2022.pdf

130 India Press Information Bureau: Green Hydrogen Press Release, January 2023, National Green Hydrogen Mission, January 2023, https://pib.gov.in/PressReleasePage.aspx?PRID=1888547

(Strategic Hydrogen Innovation Partnership). Green hydrogen production will be instrumental for the transition of India's steel sector to near zero emission steel production, which will be critical as growing industrial emissions, particularly in the steel and cement subsectors, are a main driver of India's overall growing emissions.

In 2022, the Indian Government announced a plan to issue sovereign green bonds to mobilize investments in public sector green infrastructure. This was followed in February 2023 by the issuance of the first tranche of USD 980 million in sovereign green bonds earmarked for solar, wind, small hydro, solar water pumps for agriculture, green hydrogen, metro lines and afforestation[131].

India is still relying significantly on coal. To achieve its goals, India will need to accelerate its transition across the energy sector and implement supporting policies. BloombergNEF has recently developed a Net Zero 2050 scenario, pointing out that India can do affordably better than its NDC and reach Net Zero emissions by 2050[132]. With the right strategies, investments and political will, India can transform its economy to reach net-zero emissions while also meeting its development needs. Realizing India's full climate potential will require mobilizing finance, spurring innovation, and ensuring a just transition for affected communities. If India can overcome hurdles and unlock its vast renewable resources, it can not only meet its climate targets but also emerge as a model for other developing countries to follow. India's position towards phasing out fossil fuels will be pivotal for G20 and global climate action.

4.8. Indonesia

Indonesia is the world's 5th largest emitter of GHG and reached 1,48 $GtCO_2eq$ in 2020. A decrease in emissions from the LULUCF sector between 2019 and 2020 led to the energy sector having the highest emissions (44%, 650 $MtCO_2e$), followed by LULUCF (39%, 500 $MtCO_2e$), agriculture (10.5%), waste (7%) and industrial processes (2%)[133]. Indonesia submitted its updated NDC and LTS in 2021, as well as submitting an enhanced NDC in November 2022 (Indonesia 2022). The enhanced NDC has increased the unconditional target for a reduction in GHG emissions from 29% to 32% below the business-as-usual scenario and slightly increased the conditional target from 41% to 43%, with emission reduction targets primarily achieved through the forestry sector. The LTS states that Indonesia will reach peak GHG emissions in 2030, with the forest and land use sectors becoming net emissions sinks and will reach a net-zero target by 2060 or sooner, although an explicit net-zero target year is still missing (Indonesia 2021).

Indonesia has been the largest global coal exporter since 2005 but has pledged to phase-out domestic coal use by 2040 subject to sufficient international financing. In November 2022, the

[131] World Bank: Green Bonds Strategy, India, https://blogs.worldbank.org/climatechange/india-incorporates-green-bonds-its-climate-finance-strategy

[132] Bloomberg NEF - Rapid Deployment of Clean Energy India – August 2023, https://about.bnef.com/blog/faster-deployment-of-clean-power-such-as-solar-wind-and-evs-can-enable-india-to-peak-emissions-before-2030/

[133] Climate Watch Indonesia, CLIMATEWATCHDATA 2020

EU and leaders of the International Partners Group (IPG) launched a Just Energy Transition Partnership (JETP) with Indonesia aiming to mobilize USD 20 billion of public and private financing over 3 to 5 years to decarbonise the energy sector[134]. In 2022, a Presidential Regulation (Regulation No. 112) was issued which mandates the state electricity company to prioritize the purchase of renewable energy, simplifies procurement processes, and instructs the Minister of Energy and Mineral Resources to develop a roadmap for the acceleration of retirement of coal plants. However, this decree does outline specific exemptions whereby coal power plants could still be built. Finally, it is worth emphasizing that current incentives for renewable energy are still being undermined by the significant tax exemptions and other subsidies that remain geared towards fossil fuel energy, coal and gas[135].

In February 2023, the Ministry of Energy and Mineral Resources launched a mandatory emissions trading system (ETS) for the power generation sector and facilities above 100 MW, which will cover 81.4% of national power generation capacity. Initially covering coal power plants, the ETS will further expand to incorporate from 2025 to 2030 oil and gas-fired power plants as well as additional coal power plants not connected to the grid.

The Ministry of Energy and Mineral Resources announced in early 2023 the development of fuel economy standards for trucks[136], an important step towards emission reductions considering that heavy trucks represent close to 40% of total energy consumption in Indonesia´s road transport sector[137]. The Government unveiled in December 2022 incentives for the purchase of electric motorbikes and electric cars produced in Indonesia as well as for the conversion of a combustion engine motorbike to an electric one[138]. This commitment towards battery electric vehicles was strengthened in April 2023 at the Major Economies Forum on Energy and Climate[139] where Indonesia joined Canada, the European Union, the United Kingdom, the United States and Norway in announcing a collective zero-emissions vehicles goal that, by 2030, over 50% of light-duty vehicles sold globally, and at least 30% of medium- and heavy-duty vehicles sold globally, will be zero-emission vehicles.

While Indonesia has pledged to reduce emissions under the Paris Agreement and has initiated some measures towards decarbonization, such as renewable energy promotion and coal phase out plans, its overall climate ambition and progress remain insufficient. Deforestation rates remain high, coal still makes up the majority of the electricity mix, and transport emissions are increasing. For Indonesia to align with Paris Agreement goals and contribute its share to global

---

134 Just Energy Transition Partnership (JETP): Indonesia, https://ec.europa.eu/commission/presscorner/detail/en/ip_22_6926

135 Indonesia's Energy Support Measures, https://www.iisd.org/system/files/2022-06/indonesia-energy-support-measures.pdf

136 Direktorat Jenderal Energi Baru Terbarukan dan Konservasi Energi - 2023 - Development of fuel economy standards, https://simebtke.esdm.go.id/sinergi/page/content/59/ministry-of-energy-and-mineral-resources-of-indonesia-to-develop-fuel-economy-standards-for-trucks

137 IEA (2022), An Energy Sector Roadmap to Net Zero Emissions in Indonesia, IEA, Paris, https://www.iea.org/reports/an-energy-sector-roadmap-to-net-zero-emissions-in-indonesia

138 International Council on Clean Transportation - electric vehicle policies Indonesia – March 2023, https://theicct.org/asean-indonesia-evs-mar23/

139 The White House: Summary of the Major Economies Forum on Energy and Climate – April 2023, https://www.whitehouse.gov/briefing-room/statements-releases/2023/04/21/chairs-summary-of-the-major-economies-forum-on-energy-and-climate-held-by-president-joe-biden-2/

climate efforts, stronger policies, improved enforcement, and more ambitious targets and actions will be critical to substantially reduce emissions from deforestation, transition the energy mix away from coal, and decarbonize the transport sector.

4.9. Japan

Japan is highly dependent on energy imports. After the significant disruption to the country's energy supply due to earthquake in 2011 and resulting nuclear accident at Fukushima, Japan started a diversification of the country's energy mix with the gradual expansion of renewable energy sources and the restart of some nuclear power plants while improvements in energy efficiency have reduced the need for imported fossil fuels. As a consequence, GHG emissions are currently below 2009 levels.[140]

Japan is the world's 8th largest emitter of GHG and reached 1.06 $GtCO_2eq$ in 2020. The energy sector accounts for the highest emissions (94%, 1.00 $GtCO_2e$), followed by industrial processes (62 $MtCO_2eq$), agriculture (22 $MtCO_2eq$) and waste (7 $MtCO_2eq$). The LULUCF sector is a net sink (-32 $MtCO_2eq$).[141] Japan submitted its updated NDC and its LTS in 2021. In its updated NDC, Japan commits to reducing its greenhouse gas emissions by 46% compared to 2013 levels (Japan 2021a). The LTS states that Japan will reach carbon neutrality by 2050 (Japan 2021b).

Japan outlines in their updated NDC that their mitigation targets will be achieved through 'energy efficiency measures, maximum introduction of renewable energy as well as decarbonization of public sectors and local communities' (Japan 2021a). The government announced in 2020 their intention to phase out its inefficient coal-fired power plants by 2030, which could result in around 100 out of the 140 currently in operation being required to close.[142] The Environment Innovation Strategy was launched in 2020 and sets out innovation paths and cost targets of the key technologies required to achieve the carbon neutrality target by 2050. Indeed, Japan expects hydrogen and carbon capture, use and storage technologies to play an important role in its decarbonisation of the economy.[143]

Most recently, the Green Transformation (GX) Basic Policy was adopted by the Japanese government in February 2023 and is a strategy that aims to accelerate decarbonisation efforts in key industrial sectors through the GX League (i.e. a voluntary group of industries who individually set their own decarbonisation targets to align with the national reduction targets and take part in an emissions trading scheme to achieve them). As part of the GX Basic Policy, idled nuclear reactors are proposed to be re-started and a new generation of reactors are proposed to be built. However, there has been criticism that the GX Basic Policy prioritises economic growth and energy security over efforts to decarbonise due to the absence of emission reduction targets for 2030 or 2050. Moreover, there are concerns that the strategy maintains the country's dependence

[140] Japan 2021: Energy Policy Review, https://www.iea.org/reports/japan-2021

[141] ClimateWatch - Japan, https://www.climatewatchdata.org/countries/JPN

[142] Japan 2021: Energy Policy Review, https://www.iea.org/reports/japan-2021

[143] ibid

on coal through the need to develop carbon capture and storage technologies, and ammonia and hydrogen co-firing as measures for lowering emissions from coal power plants.[144] Indeed, Japan remains the only G7 country planning to build new coal-fired power plants.[145]

4.10. Mexico

Mexico is the second largest economy in Latin America and one of the largest 15 economies in the world.[146] It is also an important oil producer. Mexico has 65 million hectares of forest spread across 33% of its total land area and according to the Food and Agriculture Organization (FAO) has done 'reasonably well' at lowering deforestation rates over the last decade.[147]

Mexico is the world's 15th largest emitter of GHG and reached 609 $MtCO_2eq$ in 2020. The energy sector accounts for the highest emissions (66%, 401 $MtCO_2e$), followed by agriculture (99 $MtCO_2e$), waste (48 $MtCO_2e$), industrial processes (43 $MtCO_2e$) and LULUCF (17 $MtCO_2e$).[148] Mexico submitted its updated NDC in 2022 and its LTS in 2016. In its updated NDC, Mexico commits to reducing its emissions by 35% (unconditional), and by 40% (conditional) by 2030 compared to a BAU scenario. The LTS states that Mexico will achieve a 50% reduction from 2000 levels by 2050 (Mexico 2016).

Mexico was the first developing country to adopt a law on climate change (referred to as the General Climate Change Law), which translated their overarching climate targets into strategies and policies as part of an implementation framework. The country has also been a leader in the adoption of emissions trading in Latin America with the pilot phase of Mexico's national carbon market starting its operation in 2020.[149] However, Mexico's updated NDC that was submitted in 2020 was deemed less ambitious than the previous submission in 2016 and therefore against the NDC principle of continuous progression of ambition. Whilst another update of the NDC that was submitted in 2022 was an improvement in terms of ambition, it removed reference to a peak year for emissions or net-zero emissions target.[150]

Recent political developments have also brought into question the extent to which the GHG emission reduction targets set for Mexico can be achieved. For example, Mexico has set targets for 'clean' energy shares in its power sector of 35% by 2024, 40% by 2033 and 50% by 2050, however the current administration has prioritised fossil fuel extraction and thermal plants, further locking in the use of fossil fuels for electricity generation.[151] Under the current administration, Mexico has also stopped issuing permits and cancelled auctions for solar projects

144 Japan, https://climateactiontracker.org/countries/japan/policies-action/

145 ibid

146 Mexico Overview, Mexico Overview: Development news, research, data | World Bank

147 Counting the Carbon in Mexico's Forests, https://earthobservatory.nasa.gov/images/86695/counting-the-carbon-in-mexicos-forests

148 ClimateWatch – Mexico, https://www.climatewatchdata.org/countries/MEX?end_year=2020&start_year=1990

149 Mexico, https://icapcarbonaction.com/en/ets/mexico

150 How Mexico came to have the weakest climate policy in the G20, How Mexico came to have the weakest climate policy in the G20 (energymonitor.ai)

151 ibid

that has in effect cut off the flow of private sector investment in solar projects.[152] Furthermore, Mexico have committed to the reduce GHG emissions from the forestry sector yet the country still experiences forest loss annually with 'insufficient budget made available to turn targets and pledges into practical actions.'[153]

4.11. Republic of Korea

The Republic of Korea is part of the Environmental Integrity Group, which is a diverse group of countries that work together during the UNFCCC negotiations to advocate progressive climate policies and aim to bridge the gap between emerging and developed economies.[154]

The Republic of Korea is the world's 14th largest emitter of GHG and reached 614 $MtCO_2eq$ in 2020. The energy sector accounts for the highest emissions (90%, 554 $MtCO_2eq$), followed by industrial processes (82 $MtCO_2eq$), agriculture (14 $MtCO_2eq$) and waste (9 $MtCO_2e$). The LULUCF sector is a net sink (-46 $MtCO_2e$) (Republic of Korea 2021). The Republic of Korea submitted its updated NDC in 2021 and its LTS in 2020. In its updated NDC, the Republic of Korea commits to reducing its emissions by 40% by 2030 compared to 2018 levels. The LTS states that the Republic of Korea will achieve carbon neutrality by 2050 (Republic of Korea 2020).

In 2016, the Korean government adopted the Basic Plan for Climate Change Response and the Road Map to Achieve National Greenhouse Gas Reduction Goals, in order to set up domestic framework to implement the Paris Agreement.[155] In order to achieve the increased level of ambition for 2030, as set out in the Republic of Korea's updated NDC, the following key mitigation strategies have been proposed in their updated NDC:

- The rapid phase down of coal-fired power generation while simultaneously increasing renewable power (especially from solar and wind);
- Driving a low-carbon transition in emission-intensive sectors (i.e. an increase in the use of electric furnaces for steel making and an increase in the use of bio naphtha as a feedstock for petrochemical crackers);
- Promoting the construction of zero-energy building solutions for new buildings and the retrofitting of energy efficiency measures on existing buildings; and
- Setting of a 2030 target for the deployment of zero emission vehicles.

The Carbon Neutrality Act was enacted in September 2021 in order to strengthen mitigation and adaptation measures, which specifies 2050 as the target year for neutrality. The act provides the legislative basis for the continuation of the Korea Emissions Trading Scheme, which is now in the

[152] Why Is Mexico's President So Hostile To Solar Energy Investment? https://www.forbes.com/sites/nathanielparishflannery/2023/05/23/why-is-mexicos-president-so-hostile-to-solar-energy-investment/

[153] Mexico, https://www.iniciativaclimatica.org/wp-content/uploads/2023/01/CT2022-Mexico-Web.pdf

[154] The Carbon Brief Profile: South Korea, https://www.carbonbrief.org/the-carbon-brief-profile-south-korea/.

[155] Korea's efforts to address climate change, https://www.mofa.go.kr/eng/wpge/m_5655/contents.do

third phase of trading (i.e. 2021-25) covering sub-sectors such as steel, cement, petrochemicals, refinery, power, buildings, waste and aviation. In addition to the use of carbon pricing, the Korean government have committed to invest around USD 50 billion via the New Deal 2.0 that aims to contribute to the achievement of the NDC (Republic of Korea 2021).

However, recent political developments have in some respects resulted in policies less ambitious that what was previously announced in the updated NDC for the Republic of Korea. For example the 10th Basic Electricity Plan has abandoned the previous decision to phase out nuclear power and sets a lower target for renewable energy power generation for 2030. Furthermore, although the country is a signatory to the Global Coal to Clean Power Transition Statement at COP26, coal is expected to continue playing an important role beyond 2030. Indeed, the Republic of Korea will increase its Liquefied Natural Gas (LNG) power generation target to produce LNG based blue hydrogen and ammonia for coal co-firing and this will potentially lock in high carbon infrastructure.[156]

4.12. Russian Federation

The Russian economy is strongly dependent on the exploitation of energy-intensive industries and fossil fuels. The Russian Federation has been at best a passive player in the UNFCCC negotiations in previous years, however the country did announce a net zero target for 2060 as part of a wider climate framework in November 2021. The Russian war on Ukraine, which started in February 2022, has underlined the urgent need for many European economies to become less reliant on the fossil fuels imported from the Russian Federation in order to improve upon their energy security. The impact of the war led initially to a shock to energy prices that exacerbated the cost of living crisis currently being experienced across the world due to rising levels of inflation. The implications of the energy price shock should lead to accelerated efforts to decarbonise; however the cost of living crisis may also result in more short term decisions in order to lower energy costs that could lock in more high carbon infrastructure.

The Russian Federation is the world's 5th largest emitter of GHG and reached 2.3 $GtCO_2eq$ in 2020 (excluding LULUCF). The energy sector accounts for the highest emissions (88%, 1.8 $GtCO_2eq$), followed by waste (119 $MtCO_2eq$), agriculture (104 $MtCO_2eq$) and industrial processes (54 $MtCO_2eq$). The LULUCF sector is an important net sink (-532 $MtCO_2eq$).[157] The Russian Federation submitted its first NDC in 2020 and its LTS in 2022. In its NDC, the Russian Federation commits to reducing its emissions by 70% by 2030 compared to 1990 levels (taking into account the maximum possible absorptive capacity of forests and other ecosystems, and subject to sustainable and balanced socio-economic development of the Russian Federation) (Russian Federation 2020). The LTS states that the Russian Federation will achieve an 80% emissions reduction by 2050 compared to 1990 levels and that the country will achieve 'a balance between

[156] South Korea, https://climateactiontracker.org/countries/south-korea/policies-action/

[157] ClimateWatch – Russia, Russia Climate Change Data | Emissions and Policies | Climate Watch (climatewatchdata.org)

anthropogenic emissions of greenhouse gases and their absorption no later than 2060' (Russian Federation 2022).

In 2021, the Russian Federation adopted its laws aimed at limiting GHG emissions only after removing important proposals for measures that would have led to significant emission reductions. Indeed, the Energy Strategy to 2035 almost exclusively focuses on the extraction of fossil fuels and their consumption both domestically and abroad which is incompatible with the Paris Agreement's 1.5°C temperature goal. The most critical element of the climate pledges proposed by the Russian Federation is the assumption that the carbon absorbed from the forestry sector will double by 2050 allowing emission reductions from other sectors of the economy to be more modest and not fully decarbonised.[158]

4.13. Saudi Arabia

Saudi Arabia is the world's largest oil exporter and an important producer of natural gas. With progressing decarbonisation in the coming years and decades, Saudi Arabia will have to diversify its economy away from the current focus on fossil fuels. In the climate negotiations, Saudi Arabia actively points out the social and economic consequences of a global shift away from fossil energy sources. It shows particular interest in the negotiations on the impacts of the implementation of response measures and in the just transition work programme (chapter 3.8).

Saudi Arabia's greenhouse gas emissions (excluding LULUCF) peaked in 2016 and have decreased slightly in recent years. They amounted to approx. 713 Mt CO_2eq in 2020.[159] Methane is the second most important greenhouse gas after CO_2, accounting for about 14% of total GHG emissions in 2020.

Saudi Arabia's NDC was submitted in 2021. It consists of an emissions reduction target of 278 Mt CO_2eq compared to a baseline, and a target of 50% renewable energy in the electricity sector (Saudi Arabia 2021). While the baseline for the emission reduction target was not specified at the time of submission of the NDC, such a baseline was developed by researchers at the King Abdullah Petroleum Studies and Research Centre in 2023 (Gasim et al. 2023). According to these baseline projections, CO_2 emissions will increase from 540 Mt in 2019 to 651 Mt by 2030. Assuming that CO_2 reductions account for 80% of total GHG emission reductions, the NDC target level would correspond to approx. 429 Mt of CO_2e in 2030, i.e. to a - 21% reduction compared to 2019. Hence, CO_2 emissions need to continue their moderate decline in the coming years for Saudi Arabia to achieve its NDC target.

The reduction of CO_2 emissions in recent years can be attributed to factors such as energy price reforms and energy efficiency improvements (Gasim et al. 2023). The recent energy price reforms were part of 'Saudi Vision 2030', the main development agenda, which aims to diversify the economy and limit the reliance on fossil fuels as the main revenue source (Saudi Arabia 2022).

[158] Russia, https://climateactiontracker.org/countries/russian-federation/targets/

[159] ClimateWatch – Saudi Arabia, https://www.climatewatchdata.org/countries/SAU

Under the 'Saudi Green Initiatives', Saudi Arabia is pursuing a wide range of mitigation actions ranging from afforestation to renewable energy and energy efficiency.[160]

The 'Saudi Green Initiatives' and the GHG emission reduction target for 2030 is seen by Saudi Arabia in the context of its aim to reach net zero emissions by 2060[161]. However, Saudi Arabia has not yet communicated a long-term strategy under the Paris Agreement. It should be noted that carbon capture plays an important role among the initiatives to reduce CO_2 emissions. Saudi Arabia is pursuing a circular carbon economy programme, which is based on the reduction, reuse, recycling and removal of CO_2, rather than a phaseout of fossil fuels.

4.14. South Africa

South Africa's GHG emissions reached approx. 562 Mt CO_2eq in 2019. GHG emission for 2020 decreased to approx. 508 Mt CO_2eq due to the global COVID-19 pandemic[162]. Current annual emissions remain significantly above the 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. South Africa's per capita CO_2 emissions are relatively high for a developing country (at 7.3 tonnes per inhabitant as of 2021[163]) due to an over-reliance on coal for electricity production (>80% of the total system load) and high transport sector emissions (South Africa 2021).

In 2021, France, Germany, the United Kingdom, the United States and the European Union launched a Just Energy Transition Partnership with South Africa[164] aimed at decarbonising the energy sector by mobilizing an initial commitment of USD 8.5 billion in the next 3 to 5 years. Recommendations from the Presidential Climate Commission published in May 2023 have highlighted critical issues to be addressed for the effective Just Energy Transition Investment Plan (JET-IP), including a lack of details on which projects will be funded, lack of clarity on financing plans, lack of integration into national budget processes and national industrial policies (e.g. e-mobility strategies and national incentives) and a lack of focus on social justice issues, skills development and rehabilitation of mines[165]. It should be noted that the coal mining sector employs over 92,000 workers typically in poorer regions, which remains a significant challenge for a just energy transition[166], whilst unreliable electricity generation is leading to extensive load

[160] Saudi & Middle East Green initiatives – SGI initiatives, https://www.greeninitiatives.gov.sa/sgi-initiatives/

[161] SGI target, https://www.greeninitiatives.gov.sa/about-sgi/sgi-targets/reducing-emissions/reduce-carbon-emissions/

[162] ClimateWatch - South Africa https://www.climatewatchdata.org

[163] Statistisches Bundesamt, CO_2 emissions per inhabitant: https://www.destatis.de/EN/Themes/Countries-Regions/International-Statistics/Data-Topic/Environment-Energy/Environment/G20_CO2.html%20

[164] Just Energy Transition Partnership - South Africa, https://ec.europa.eu/commission/presscorner/detail/cs/ip_21_5768

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

[166] Minerals Council South Africa, 2021: Facts and Figures 2021; Changing mines, changing lives, https://www.mineralscouncil.org.za/downloads/send/16-featured/1875-facts-and-figures-2021

shedding. Installed renewable energy capacity increased to 6.2 GW in 2022, up from 4 GW in 2019 and provides 7.3% of the total energy mix[167].

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[168], targeting up to double-digit yearly growth in the mid-2020s in order to reach 1.89 trillion cubic feet (tcf) of natural gas by 2040, up from 0.15 tcf in 2019. Such targets are inconsistent with a net-zero energy transition.

South Africa aims at shifting freight transport from road to rail, and passenger transport from private cars to public transport[169]. Shifting towards rail transport will be a significant challenge as long-term underinvestment in rail infrastructure has led to decreases in transport by rail and increasing freight transport by road in recent years[170].

South Africa is the first African country to implement a carbon tax (2019) covering 37.3% of GHG emissions[171]. Currently, the price is set at USD 8.3 per tonne CO_2eq and is expected to rise to USD 20 per tonne CO_2eq 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, whilst certain coal-intensive sectors and utilities, such as electricity producing and state-owned Eskom (responsible for the majority of electricity production and heavily reliant on coal powered electricity generation), are not expected to be liable for the carbon tax before 2026[172].

Although South Africa commits to the vision of climate neutrality by 2050 in its Low Emissions Development Strategy (Government of South Africa 2020), current mitigation 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.

4.15. Türkiye

In the Convention, Türkiye is included in Annex I, which lists those countries which were considered as developed countries at the time when the Convention was drafted. Over the years, Türkiye has pointed out that it sees itself as a developing country – similar to other countries which are typically regarded as emerging economies and are not included in Annex I to the Convention. As Türkiye is listed in this Annex, it is not eligible for receiving support under the international climate regime. When Türkiye ratified the Paris Agreement, it declared that it will implement the Paris Agreement as a developing country (United Nations 2023b).

---

167 The Council for Scientific and Industrial Research (CSIR) - 2022 Power Generation Statistics in South Africa, https://www.csir.co.za/csir-releases-statistics-on-power-generation-south-africa-2022#:~:text=Coal%20still%20dominates%20the%20South,of%20the%20total%20energy%20mix.

168 Gas Infrastructure and Utilization – South Africa, Department of Mineral Resources and Energy, South Africa, https://www.energy.gov.za/files/media/explained/Gas_Master_Plan_Basecase_Report.pdf :

169 Government of South Africa, Green Transport Strategies, https://www.transport.gov.za/documents/11623/89294/Green_Transport_Strategy_2018_2050_onlineversion.pdf .

170 The Economist - Rail infrastructure South Africa, https://www.economist.com/middle-east-and-africa/2023/01/17/south-africas-disintegrating-freight-railway-is-crippling-firms

171 OECD Carbon Pricing in South Africa 2022, https://www.oecd.org/tax/tax-policy/carbon-pricing-south-africa.pdf

172 South Africa Carbon Pricing and Climate Mitigation Policy, https://www.elibrary.imf.org/view/journals/002/2023/195/article-A003-en.xml

GHG emissions in Türkiye follow the general trend of many emerging economies, with significant emission increases in most years after 1990. Increases were also observed in 2020, the year of the COVID-19 pandemic. In 2021, total GHG emissions (without LULUCF) amounted to 564 Mt CO_2eq. CO_2 accounts for approx. 80% of total emissions, followed by CH_4 with 11% and N_2O with 8%. The LULUCF sector constitutes a carbon sink (Türkiye 2023c).

Türkiye communicated an updated NDC in April 2023 (Türkiye 2023b). Its target for 2030 is to reduce its GHG emissions by 41% in 2030 compared to the business-as-usual scenario provided in its first NDC (Republic of Turkey 2015). In that NDC, business-as-usual emissions in 2030 are projected to be approx. 1.2 Mt CO_2eq. Hence, a 41% reduction below this business-as-usual level would translate into roughly 0.7 Mt CO_2eq. This constitutes a substantial emission increase between present levels and the target year. Indeed, Türkiye states in its updated NDC that it intends to peak its emissions at the latest in the year 2038.

The updated NDC also refers to Türkiye's long-term objective of achieving a net zero target by 2053. However, Türkiye has not yet communicated a long-term strategy under the Paris Agreement.

Turkiye's climate change mitigation actions are guided by its National Climate Change Strategy. Many mitigation actions have been harmonised with EU legislation, for example in the areas of energy efficiency, fluorinated gases and waste management (Türkiye 2023a).

4.16. United Arab Emirates (COP Presidency)

The United Arab Emirates is not a G20 member, but it is included here as the host country of COP28. According to its latest NDCs, net GHG emissions in 2019 amounted to 225 Mt CO_2eq in 2019 (United Arab Emirates 2023). The United Arab Emirates' most recent GHG emission inventory submitted under the UNFCCC (United Arab Emirates Ministry of Energy & Industry 2018) shows that LULUCF constitutes a sink of approx. 8 Mt CO_2eq. According to independent data sources which provide annual GHG emission estimates[173], total emissions peaked in 2016 and showed a downward trend thereafter. Besides CO_2, methane constitutes an important GHG emission source, with approx. 22% of total emissions, originating mostly from the energy and waste sectors. GHG emissions per capita are the highest among the Parties presented here, at approx. 25 t CO_2eq per capita.

In July 2023, the United Arab Emirates submitted the third update of its second NDCs (United Arab Emirates 2023). Its target is a net GHG emission level of 182 Mt CO_2eq in 2030, which corresponds to an emission reduction of 19% compared to the 2019 level. This net emissions reduction target is supported by sector-specific emission intensity and emission reduction targets.

[173] ClimateWatch – United Arab Emirates, https://www.climatewatchdata.org/countries/ARE

The United Arab Emirates has not yet communicated a long-term strategy under the Paris Agreement, but it has set a net-zero emissions target by 2050 and plans to launch its long-term strategy before COP28 (United Arab Emirates 2023).

To reduce GHG emissions from the electricity sector, the United Arab Emirates is constructing large-scale solar power plants. A considerable share of its electricity production is covered by a nuclear power plant which started operating in 2020 and will be further expanded by 2025. In the industry sector, various initiatives have been set up to reduce the carbon intensity of industrial production, including carbon capture and storage and low-carbon hydrogen (United Arab Emirates 2023).

Besides the reduction of GHG emissions domestically, it is important for a major exporter of fossil fuels to address the GHG emissions associated with fossil fuels overall. The president-designate of COP28, Sultan Ahmed Al Jaber, pointed out in his message on the COP28 vision the importance of fast-tracking renewable energies and reducing emissions from the oil and gas industry (Al Jaber 2023b). However, in the area of fossil fuel consumption, the vision's focus in on a phase-down of unabated coal power, on low-carbon technologies and on carbon capture and storage – rather than on an overall phase-out of fossil fuels.

The United Arab Emirates has also been criticised strongly for appointing Mr. Al Jaber as COP president-designate considering that he heads the Abu Dhabi National Oil Company. In May 2023, over 100 members of the European Parliament and the U.S. Congress voiced their profound concern over the fact that the managing director of an oil company has been appointed to preside the COP[174].

4.17. United Kingdom

The United Kingdom has taken on a leading role in the UNFCCC negotiations having hosted the previous COP 26 and setting a net-zero emissions target for 2050. After its withdrawal from the European Union, the United Kingdom was no longer associated with a negotiating group. However, it joined the Umbrella Group in 2023 (UNFCCC 2023a).

The United Kingdom is the world's 22nd largest emitter of GHG and reached 411 $MtCO_2eq$ in 2020. The energy sector accounts for the highest emissions (77%, 315 $MtCO_2eq$), followed by agriculture (50 $MtCO_2eq$), waste (17 $MtCO_2eq$), industrial processes (16 $MtCO_2eq$) and LULUCF (13 $MtCO_2eq$).[175] The United Kingdom submitted its updated NDC in 2022 and its LTS in 2021. In its updated NDC, the United Kingdom commits to reducing its emissions by 68% by 2030 compared to 1990 levels (United Kingdom 2022). The LTS states that the United Kingdom will achieve net-zero emissions by 2050 (United Kingdom 2021).

The Climate Change Act, which was adopted in 2008, initially committed the United Kingdom to reduce its GHG emissions by at least 80% below 1990 levels by 2050. In 2019, the ambition of the

[174] US, EU lawmakers push to depose UAE's Jaber from climate talks, https://www.reuters.com/business/environment/us-eu-lawmakers-push-depose-uaes-jaber-climate-talks-2023-05-23/

[175] ClimateWatch – United Kingdom, https://www.climatewatchdata.org/countries/GBR?end_year=2020&start_year=1990

Climate Change Act was enhanced to include a net-zero emissions target by 2050. Carbon budgets were introduced as part of the Climate Change Act and involve capping emissions over successive five-year periods that must be set 12 years in advance. The first six carbon budgets cover the time period 2008 until 2037 (United Kingdom 2022). The UK has already met, and overachieved, its first (2008- 2012) and second (2013-2017) carbon budgets and is on track to meet the third (2018-2022).[176]

The updated NDC outlines a list of specific policies and measures (as of September 2022) intended to support the delivery of the NDC up until 2050 that include a phase out of unabated coal by 2024 and a fully decarbonised power system by 2035. It will be supported by investments in clean energy such as GBP 1.7 billion to increase nuclear energy production and over GBP 1.6 billion to meet the United Kingdom's 50 GW target for offshore wind capacity by 2030. Three investor roadmaps for automotive, hydrogen and carbon capture usage and storage have been published as efforts are also underway to decarbonise key industrial sectors.

However, despite the progress made by the United Kingdom over the first three carbon budgets up until 2020 there is concern about the delivery of future carbon budgets due to a shift in policy by the current government. Indeed, it was recently announced by the Prime Minister, Rishi Sunak, that several key pledges on climate change would be reversed or slowed down with the cost of living crisis as well as the country's previous progress in reducing GHG emissions used as a political justification. For example, the ban on the sale of new petrol and diesel cars will now be postponed from 2030 to 2035, the phase out of new gas-fired boilers for heating homes that was intended to start in 2030 will now also be delayed until 2035. In addition, the government announced a new round of exploration licences for oil and gas companies,[177] with energy security advocated as the reason for the decision in light of volatile energy markets following the Russian war on Ukraine.

4.18. United States

At the start of the Biden administration, the climate policies of the US were significantly reversed after the country previously withdrew from the Paris Agreement under the Trump administration. The US is now, once again, a more collaborative Party within the UNFCCC negotiations and the country has shown a willingness to lead with more ambition on climate action and a pledge to decarbonise their economy. However, with an upcoming election in 2024 and the likelihood of Donald Trump once again being the Republican candidate there remains uncertainty over the long-term ambition of the US at least at the federal level.

The United States is the world's 2nd largest emitter of GHG and reached 5.29 $GtCO_2eq$ in 2020. The energy sector accounts for the highest emissions (90%, 4.74 $GtCO_2eq$), followed by agriculture (382 $MtCO_2eq$), industrial processes (244 $MtCO_2eq$) and waste (135 $MtCO_2e$). The

[176] Carbon Budget Delivery Plan, Carbon Budget Delivery Plan (publishing.service.gov.uk)

[177] Shock delay to net-zero pledges turns UK from climate leader to laggard, Shock delay to net-zero pledges turns UK from climate leader to laggard (nature.com)

LULUCF sector is a net sink (-216 $MtCO_2e$).[178] The United States submitted its first NDC after re-joining the Paris Agreement and its LTS in 2021. In its updated NDC, the United States commits to reducing its emissions by 50-52% by 2030 compared to 2005 levels (United States 2021). The LTS states that the United States will achieve net-zero emissions by 2050.[179]

The Inflation Reduction Act (IRA) was signed into law by President Biden on 16 August 2022 to help set the emissions of the US on a trajectory towards meeting its climate commitment. The IRA is designed to encourage investment in clean energy through tax incentives, grants, and other funding mechanisms. Key measures from the IRA include:[180]

- The IRA modifies and extends the current Production Tax Credit (PTC) and Investment Tax Credit (ITC) for renewable energy through 2023 and 2024 after which they will be replaced in favour of a technology-neutral, emissions-based credits (i.e. Clean Electricity PTC and Clean Electricity ITC);
- The IRA provides the Environmental Protection Agency (EPA) with 'USD 27 billion to award competitive grants to mobilize financing and leverage private capital for clean energy and climate projects that reduce greenhouse gas emissions';
- The IRA provides the Department of Energy Loan Programs Office with 'USD 40 billion in loan authority supported by USD 3.6 billion in credit subsidy for loan guarantees for innovative clean energy technologies, including renewable energy systems, carbon capture, nuclear energy, and critical minerals processing, manufacturing, and recycling.'

The Biden administration have also acted quickly to reverse several key decisions of the Trump presidency such as re-establishing stricter fuel economy and GHG emissions standards for passenger vehicles. A bill has also been enacted by the Biden administration to phase down the use of HFCs over the next 15 years. President Biden has set a goal to decarbonise the power sector by 2035, which is consistent with a Paris Agreement pathway.[181]

Despite the progress of the Biden administration with regards to the setting of more ambitious policies to reduce their GHG emissions, short-term decisions in order to respond to rising levels of inflation, in part driven by higher oil and gas prices after Russia's war on Ukraine, could offset some of the progress achieved in recent years. For example, in order to compensate for the loss of Russian oil supply after the US banned imports from the country, the Biden administration released a million barrels of oil per day from the nation's strategic reserve for six months and is encouraging oil and gas producers to drill and increase production.[182] Such short-term responses may have longer term implications with regards to achieving net-zero emissions by 2050.

[178] ClimateWatch – USA, https://www.climatewatchdata.org/countries/USA?end_year=2020&start_year=1990

[179] The long-term strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050, https://unfccc.int/sites/default/files/resource/US-LongTermStrategy-2021.pdf

[180] Inflation Reduction Act Guidebook, https://www.whitehouse.gov/cleanenergy/inflation-reduction-act-guidebook/

[181] USA, https://climateactiontracker.org/countries/usa/

[182] ibid

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, and the COP presidency rotates between them. In the negotiations under the UNFCCC there are groups of Parties formed by shared interest instead of the geographical location. These groups regularly coordinate their positions and are represented by one speaker in the negotiations. Although there is some fluctuation and groups are not active at the same level at each conference, we can distinguish between the following groups, as depicted in Figure 10 and discussed below.

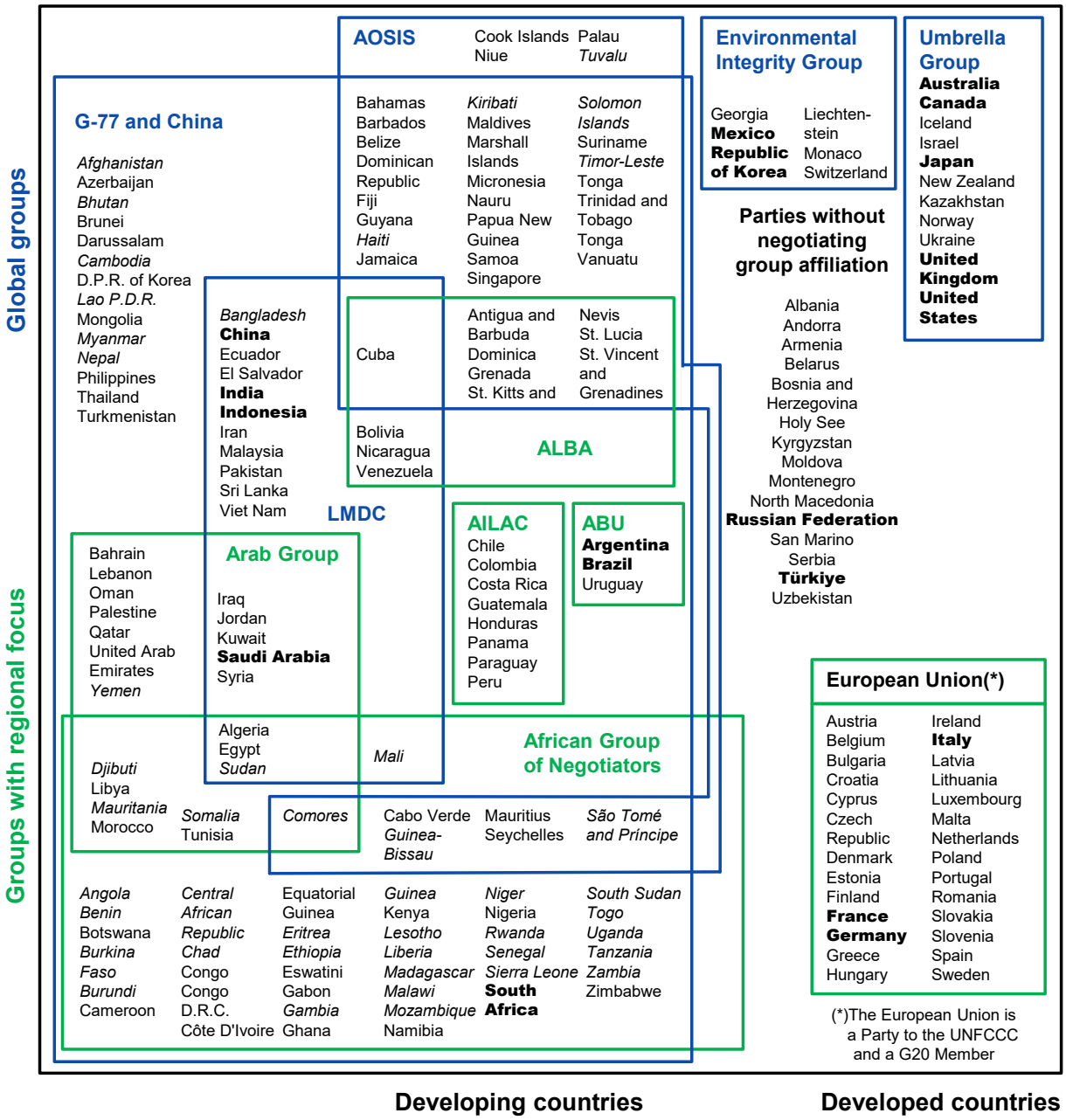
As far as the influence of the various negotiating groups is concerned, it is important to note that all COP, CMP and CMA decisions and all conclusions of Subsidiary Bodies are made unanimously. Hence, every single Party can influence the outcome of the negotiations. Nevertheless, the larger groups have 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, Belarus, Canada, Iceland, Israel, Japan, New Zealand, Kazakhstan, Norway, Ukraine and the US. The United Kingdom joined the Umbrella Group in 2023 (UNFCCC 2023a). 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.

Figure 10: Parties to the UNFCCC, and group affiliations



Source: AGN (2023), AOSIS (2023), UNFCCC (2023a), Moosmann et al. (2022).

Note: Members of the Group of Twenty (G20) are shown in bold. Members of the Group of Least Developed Countries (LDC) are shown in italics.

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, 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 plan 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, Paraguay and Peru (AILAC 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 2023). 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 goal 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 to adapt to effects 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 associated with the impacts of climate change.

5.1.5. Least Developed Countries (LDCs)

The Least Developed Countries (LDCs) are a group of 46 low-income countries; the 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 (AGN 2023). 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 of Argentina, Brazil and Uruguay (ABU)

The group of Argentina, Brazil and Uruguay (ABU) comprises three 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, ABU has shown a specific interest in the discussion on global warming potentials (GWPs) of various greenhouse gases.

Another area in which ABU (mostly Brazil) is vocal is the discussion on 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. 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 over the 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 them are important oil and gas producers, the Arab Group pays particular attention to 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 (cf. section 3.8.4). 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 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 (CBDR/RC) 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 (from a Member State or from the European

Commission) is selected 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 need to be granted observer status by the UNFCCC Secretariat. Thereafter, they can register delegates on behalf of their organisation. As of November 2022, 3,024 NGOs and 154 IGOs are registered as observer organisations to the UNFCCC. They cover a broad variety of topics, interests and types of organisations.[183] The number of observer organisations has been steadily growing since COP1 with 229 new admissions for COP27.[184]

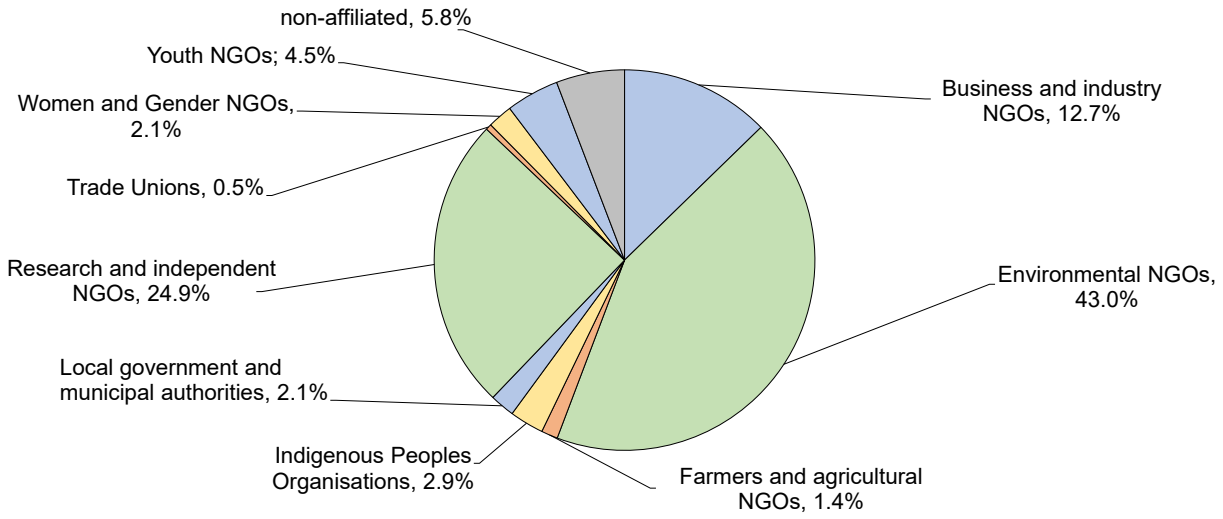
NGOs in the UNFCCC process organise themselves in constituencies in which they are clustered according to common interests or perspectives. They mirror the 9 'Major Groups' which were established in the Agenda 21 and re-confirmed by the Rio+20 summit: business and industry NGOs (BINGO), environmental 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 and capacity building and outreach NGOs (ECONGO) and parliamentarians are recognised as informal NGO groups by the Secretariat since 2016.[185] Figure 11 shows the breakdown of admitted NGOs per constituency.

[183] Observer organisations, https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/overview/observer-organizations

[184] Statistics on non-Party stakeholders, https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/statistics#Statistics-on-admission

[185] Admitted NGOs, https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/side-events-and-exhibits/admitted-ngos#eq-2

Figure 11: Breakdown of admitted NGOs per constituency



Source: UNFCCC 2023, https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/statistics#Statistics-on-admission

In the following, we describe the activities of the various observer organisations. We distinguish between (a) civil society, (b) local and regional governments (although they are also a constituency under the UNFCCC), and (c) international organisations.

5.2.1. Civil society

The current list of admitted NGOs[186] denotes more than 1,300 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).[187] 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 which 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 136 admitted NGOs. They elect two focal points (one for the global north and one for the global south) to coordinate communication with the

[186] List of admitted NGOs, https://unfccc.int/process/parties-non-party-stakeholders/non-party-stakeholders/admitted-ngos/list-of-admitted-ngos

[187] Climate Action network, https://climatenetwork.org/

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.[188]

More than 85 indigenous peoples NGOs are included in the constituency of indigenous peoples' organisations.[189] Through the International Indigenous Peoples Forum on Climate Change, they elaborate common strategies for the UNFCCC process. The Local Communities and Indigenous Peoples Platform (LCIPP, cf. chapter 3.8.2) 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 60 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 in (cf. chapter 3.8.3).

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 750 organisations belong to the RINGO constituency under the UNFCCC. 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 the more than 380 business and industry NGOs 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 2019, the Chambers Climate Coalition was launched, providing a platform for chambers to demonstrate their commitment to an effective global response to climate change.[190]

The International Trade Union Confederation (ITUC) as the umbrella organisation for trade unions, 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

[188] YOUNGO, https://unfccc.int/topics/education-youth/youth/youngo

[189] Admitted NGOs, https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/overview/admitted-ngos#Constituencies-in-the-UNFCCC

[190] International Chamber of Commerce (ICC) Climate Collective, https://racetozero.unfccc.int/team_member/international-chamber-of-commerce-icc-climate-collective/

industrial transformation'.[191] 16 NGOs are listed as part of the trade unions' constituency under the UNFCCC.

The farmers' constituency comprises more than 40 NGOs. In 2017, COP23 initiated the Koronivia Joint Work on Agriculture which requested the SBSTA and SBI to jointly address issues related to agriculture (cf. chapter 3.8.1). The farmers' constituency as well as a number of individual NGOs with a stake in agriculture have regularly expressed their views in submissions on topics discussed under the KJWA and its successor work programme.

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, active in more than 125 countries.[192] 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.[193] ICLEI launched a Climate Neutrality Framework in 2020, aiming to accelerate climate action by local and regional governments[194], followed by the Malmö Commitment, which 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[195]. In June 2023, ICLEI and the Federal City of Bonn hosted a global forum on climate change to empower urban decision-makers to lead in the climate emergency. Daring Cities 2023 consisted of several events live-streamed during the months of July, August, and September and started with a hybrid two-day event alongside the Subsidiary Bodies session in Bonn in June 2023.[196]

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 12,780 cities and local governments from 138 countries, representing more than 800 million 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 – an initiative to collect data on cities' climate action and implement common ways of reporting among cities; 2) invest4cities initiative: 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: a research and innovation initiative to identify

[191] International Trade Union Confederation – Climate justice and industrial transformation, https://www.ituc-csi.org/climate-justice-and-industrial?lang=en
[192] ICLEI – Local Governments for Sustainability, https://iclei.org/
[193] ICLEI – Our approach, https://iclei.org/our_approach/
[194] The ICLEI Climate Neutrality Framework, https://iclei.org/en/climate_neutrality.html
[195] ICLEI in the urban area, https://iclei.org/publication/iclei-in-the-urban-era/
[196] CityTalk, https://talkofthecities.iclei.org/cities-and-subnationals-make-their-case-for-multilevel-climate-action-at-the-kickoff-of-daring-cities-2023/

specific data, information and technology priorities and drive investment in these areas.[197] The GCoM brings together the EU's Covenant of Mayors[198] 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.[199] Through networks on central climate-related topics, city practitioners exchange experiences about 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.[200]

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, states pursue common initiatives aimed at collaborating in combating climate change through e.g. enhancing carbon sinks, reducing hydrofluorocarbons, introducing energy efficiency standards and international cooperation, including with Mexico and Canada.[201]

5.2.3. International organisations

The UNFCCC provides that representatives of the United Nations system may be represented as observers at the negotiations. ICAO (cf. section 2.4.1), IMO (cf. section 2.4.2) and the IPCC (cf. section 2.5) are among these UN organisations.

In addition, intergovernmental organisations (IGOs) outside the UN system may be admitted by the COP as observers to the UNFCCC. 154 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.[202]

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.

[197] Global Covenant of Mayors - Our initiatives, https://www.globalcovenantofmayors.org/our-initiatives-new/.
[198] Covenant of Mayors, https://www.covenantofmayors.eu/.
[199] About C40, https://www.c40.org/about
[200] UN Habitat Cities and Climate Change Initiative, https://unhabitat.org/programme/cities-and-climate-change-initiative
[201] United States Climate Alliance, https://www.usclimatealliance.org/.
[202] Admitted NGOs, https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/side-events-and-exhibits/admitted-ngos#eq-2

6. OUTLOOK

6.1. Challenges at COP28

COP28 will be held at a time of multiple crises, including international conflicts and amid energy and food security concerns. It will be a challenge for COP28 to deliver the urgently needed commitments on climate action and support, and to ensure that these commitments will be turned into tangible results. This section discusses some overarching challenges of COP28, which go beyond the main negotiation topics which were discussed in chapter 3.

Many climate change conferences have a difficult start due to disagreements on the agenda. As all agreements have to be made unanimously, concerns of a Party (or a group of Parties) with an agenda item can delay the adoption of the agenda. The Subsidiary Bodies session in Bonn in June 2023 was characterised by lengthy disputes about a new agenda item on the mitigation work programme – which had been proposed by the EU and the EIG – and a new agenda item about scaling up financial support – which was proposed by the LMDCs after the start of the conference (IISD 2023). The negotiations in Bonn were conducted without an adopted agenda, and the SBI and SBSTA agendas were not adopted until the penultimate day of the conference.

At COP28 in Dubai, several items are on the agenda which did not find unanimous support at earlier conferences, such as a separate item on the special circumstances and needs of Africa. In addition, the LMDCs proposed three new CMA agenda items, namely on doubling adaptation finance, on urgently scaling up financial support and on operationalising the principles of equity and CBDR/RC. While there is general agreement on the importance of these topics, it can be expected that several Parties and groups will oppose a further expansion of the agenda and will argue that these topics are already addressed under other agenda items. It will be a key responsibility of COP President Al Jaber to consult with all groups ahead of the start of the conference, in order to find an agreement on the agenda by the time of its scheduled start.

The COP28 presidency has been criticized for its reliance on fossil fuels (cf. section 4.16), and some stakeholders see Dubai as an inadequate location for a climate change conference. Nevertheless, many civil society representatives, including from environmental organisations, research institutes and businesses, will see the COP as an opportunity to spread their messages on the need for climate action and to network with their peers. With the large conference and hotel facilities available in Dubai, it can be expected that COP28 will result in a new participation record.

The scale of today's COPs will pose a practical challenge already next year, when no candidate will be available with the facilities that Dubai offers. Moreover, the group of Eastern European Countries, which is scheduled to host COP29, is stricken by the war of the Russian Federation on Ukraine and the military operation by Azerbaijan against the Armenian population of Nagorno-Karabakh. Earlier this year, Bulgaria, Azerbaijan and Armenia expressed their interest in hosting

COP29[203]. Australia had shown interest in hosting COP29 – if the Eastern European group agrees to hosting its COP in another year. However, in November 2022 Australia announced that it would bid for hosting COP31 in 2026[204]. An agreement on a host for the next COP, which is typically found at the preceding COP at the latest, will be particularly difficult to achieve at COP28.

Overarching topics which go beyond a single agenda item will be discussed under the guidance of the COP presidency and will be included in the COP and CMA cover decisions. This year, the outcomes of the Global Stocktake will constitute a key part of the overarching CMA decision. Other topics on which the COP presidency will engage during the conference include the pledge endorsing the tripling of global renewables capacity and the doubling of the global energy efficiency improvement rate by 2030, and declarations hydrogen, on sustainable agriculture and on health (Al Jaber 2023a).

6.2. Challenges in 2024 and beyond

Climate action in 2024 will be shaped by the outcomes of the Global Stocktake. As Parties need to start updating their NDCs in 2024, it will be critical for them to take into account the messages from the Global Stocktake and to reflect the highest possible ambition in their new NDCs. Given that the new NDCs will have a time horizon up to 2035, it will be crucial to supplement them with additional short-term action.

The year 2024 will be important for the implementation of the Paris Agreement. Besides preparing new NDCs, all Parties are required to submit biennial transparency reports, which provide detailed information on each Party's climate action and support and are aimed at increasing transparency and building trust among Parties. In addition, cooperative approaches under Article 6 of the Paris Agreement will start to be implemented. While various details are still under discussion at COP28, several Parties are expected to submit initial reports for their engagement in cooperative approaches under Article 6.2 of the Paris Agreement in 2024.

As far as support to developing countries is concerned, Parties need to agree on a new collective quantified goal on climate finance in 2024. The failure of developed countries to meet their climate finance commitment for 2020 (cf. section 3.5.1), will make the discussions on this goal particularly difficult. At the same time, countries are faced with an increasing frequency and severity of natural disasters, which are associated with progressing climate change.

Against this background, it will be critical that climate action and support remain high on the political agenda, and that governments and civil society work on ambitious solutions in response to the risks and impacts of climate change.

[203] Bitter conflicts stop Eastern Europe from choosing next year's COP host, https://www.climatechangenews.com/2023/06/06/bitter-conflicts-stop-eastern-europe-from-choosing-next-years-cop-host/

[204] Australia will bid for 2026 climate summit, but will face pressure to do more this year at Cop27, https://www.theguardian.com/environment/2022/nov/05/australia-will-bid-for-2026-climate-summit-but-still-has-work-to-do-on-emissions-credentials-at-cop27

REFERENCES

- AGN, 2023, *About the AGN*. Online available at https://africangroupofnegotiators.org/about-the-agn/.
- AILAC, 2023, *About AILAC*. Online available at http://ailac.org/en/sobre/.
- Al Jaber, A., 2023a, *Letter from the President-Designate of COP28/CMP18/CMA5, and UAE Special Envoy for Climate Change,* 2023. Online available at https://unfccc.int/documents/632560.
- Al Jaber, A., 2023b, *Message from the President-Designate of COP28/CMP18/CMA5, and UAE Special Envoy for Climate Change - COP 28 Vision,* 2023. Online available at https://unfccc.int/documents/630572.
- AOSIS, 2023, *AOSIS Member States*. Online available at https://www.aosis.org/about/member-states/.
- ATAG - Air Transport Action Group, 2021, *Waypoint 2050: Balancing growth in connectivity with a comprehensive global air transport response to the climate emergency,* Second edition September 2021, 2021. Online available at https://aviationbenefits.org/environmental-efficiency/climate-action/waypoint-2050/.
- Australia, 2022, *Australia's Nationally Determined Contribution,* Communication 2022, 2022. Online available at https://unfccc.int/sites/default/files/NDC/2022-06/Australias%20NDC%20June%202022%20Update%20%283%29.pdf.
- Australia, 2021, *Australia's Long-Term Emissions Reduction Plan,* 2021. Online available at https://unfccc.int/sites/default/files/resource/Australias_LTS_WEB.pdf.
- Brazil, 2022, *Federative Republic of Brazil, Paris Agreement, Nationally Determined Contribution (NDC),* 2022. Online available at https://unfccc.int/sites/default/files/NDC/2022-06/Updated%20-%20First%20NDC%20-%20%20FINAL%20-%20PDF.pdf.
- Broekhoff, D., Schneider, L. et al., 2020, *Options for Improving the Emission Unit Eligibility Criteria under the Carbon Offsetting and Reduction Scheme for International Aviation,* 36/2020. Umweltbundesamt. Berlin, 2020.
- CAN - Climate Action Network, 2021, *The EU's climate finance. World's largest contributor needs to set the direction of travel*. Online available at https://caneurope.org/the-eus-climate-finance-worlds-largest-contributor-needs-to-set-the-direction-of-travel/.
- Canada, 2021, *Canada's 2021 Nationally Determined Contribution under the Paris Agreement,* 2021. Online available at https://unfccc.int/sites/default/files/NDC/2022-06/Canada%27s%20Enhanced%20NDC%20Submission1_FINAL%20EN.pdf.
- Canada, 2022, *Exploring Approaches for Canada's Transition to Net-Zero Emissions,* Canada's Long-Term Strategy Submission to the United Nations Framework Convention on Climate Change, 2022. Online available at https://unfccc.int/sites/default/files/resource/LTS%20Full%20Draft_Final%20version_oct31.pdf.

- CAT - Climate Action Tracker, 2022, *International Shipping/Aviation Assessment,* May 2022 Release, 2022. Online available at https://climateactiontracker.org/sectors/.
- CAT - Climate Action Tracker, 2023, *International Shipping/Aviation Assessment,* June 2023 Update, 2023. Online available at https://climateactiontracker.org/sectors/.
- China, 2021, *China's Mid-Century Long-Term Low Greenhouse Gas Emission Development Strategy,* 2021. Online available at https://unfccc.int/sites/default/files/resource/China%E2%80%99s%20Mid-Century%20Long-Term%20Low%20Greenhouse%20Gas%20Emission%20Development%20Strategy.pdf.
- Climate Action Tracker, 2023, *Argentina*. Online available at https://climateactiontracker.org/countries/argentina/.
- DNV GL, 2019, *Maritime Forecast to 2050,* Energy Transition Outlook 2019, 2019.
- EC - European Commission, 2023, *Fourth Annual Report from the European Commission on CO2 Emissions from Maritime Transport (period 2018-2021),* COMMISSION STAFF WORKING DOCUMENT (SWD(2023) 54 final). Brussels, 2023. Online available at https://climate.ec.europa.eu/system/files/2023-03/swd_2023_54_en.pdf.
- EC - European Council, 2020, *Long-term low greenhouse gas emission development strategy of the European Union and its Member States,* Submission to the UNFCCC on behalf of the European Union and its Member States (6612/20). Brussels, 2020. Online available at https://unfccc.int/documents/210328.
- Eckstein, D., 2023, *Mixed results on climate finance at COP27*, Germanwatch. Online available at https://www.germanclimatefinance.de/2023/02/22/mixed-results-on-climate-finance-at-cop-27/.
- EU, 2023, *Directive 2023/959 of the European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system*. In: *Official Journal of the European Union* (L 130/134). Online available at https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32023L0959&qid=1684218852261, last accessed on 16 May 2023.
- European Union, 2023, *The update of the nationally determined contribution of the European Union and its Member States,* 2023. Online available at https://unfccc.int/sites/default/files/NDC/2023-10/ES-2023-10-17%20EU%20submission%20NDC%20update.pdf.
- Fearnehough, H., Schneider, L. et al., 2021, *Analysis of options for determining OMGE, SOP and Transition within Article 6. Implications of policy decisions for international crediting under the Paris Agreement.* Climate Analytics, NewClimate Institute, Oeko-Institut, 2021. Online available at https://www.ldc-climate.org/wp-content/uploads/2021/05/Analysis-of-options-for-determining-OMGE-SOP-Transition-within-Article-6_May2021.pdf.

- Gasim, A. A., Hunt, L. C. et al., 2023, *Baseline Forecasts of Carbon Dioxide Emissions for Saudi Arabia Using the Structural Time Series Model and Autometrics*. King Abdullah Petroleum Studies and Research Centre, 2023. Online available at https://www.kapsarc.org/wp-content/uploads/2023/05/KS-2022-DP19-Baseline-Forecasts-of-Carbon-Dioxide-Emissions-for-Saudi-Arabia-Using-the-Structural-Time-Series-Model-and-Autometrics.pdf.
- Giovanni, E., Khalid, F. et al., 2022, *Case Study: Carbon Tax in Argentina,* 2022. Online available at https://gnarlytreesustainability.com/wp-content/uploads/2022/07/Case-3_Argentina.pdf.
- Government of Canada, 2020, *Clean Fuel Regulations, Canada Gazette, Part I, Volume 154, Number 51*. Government of Canada (ed.). Online available at https://canadagazette.gc.ca/rp-pr/p1/2020/2020-12-19/html/reg2-eng.html.
- Government of Canada, 2022, *Climate finance delivery plan progress report: advancing the ten collective actions,* 2022. Online available at https://www.canada.ca/en/services/environment/weather/climatechange/canada-international-action/climate-finance/delivery-plan/progress-report-2022.html.
- Government of South Africa, 2020, *South Africa's Low-Emission Development Strategy 2050,* 2020. Online available at https://www.environment.gov.za/sites/default/files/docs/2020lowemission_developmentstrategy.pdf.
- Gütschow, J., Pflüger, M., 2023, *The PRIMAP-hist national historical emissions time series (1750-2021) v2.4.2*. In collaboration with Günther, A. and Gieseke, R. et al., 2023. Online available at https://doi.org/10.5281/zenodo.7727475.
- ICAO - International Civil Aviation Organization, 2016, *Resolution A39-3: Consolidated statement of continuing ICAO policies and practices related to environmental protection – Global Market-based Measure (MBM) scheme,* 38th session of the Assembly. Montreal, 2016. Online available at http://www.icao.int/environmental-protection/Documents/Resolution_A39_3.pdf.
- ICAO - International Civil Aviation Organization, 2019, *Global Environmental Trends,* Present and Future Aircraft Noise And Emissions, 2019. Online available at https://www.icao.int/Meetings/a40/Documents/WP/wp_054_en.pdf.
- ICAO - International Civil Aviation Organization, 2022, *Report on the feasibility of a long-term aspirational goal (LTAG) for international civil aviation CO2 emission reductions,* ICAO committee on aviation environmental protection, 2022. Online available at https://www.icao.int/environmental-protection/LTAG/Pages/LTAGreport.aspx.
- ICF Consulting, Air Transportation Analytics et al., 2020, *Assessment of ICAO's global market-based measure (CORSIA) pursuant to Article 28b and for studying cost pass-through pursuant to Article 3d of the EU ETS Directive (*Ref. Ares(2021)1483539). European Commission (ed.), September 2020. Online available at https://www.transportenvironment.org/publications/eus-assessment-corsia-airline-co2-deal.

- IEA, 2023a, *Financing reductions in oil and gas methane emissions,* 2023. Online available at https://www.iea.org/reports/financing-reductions-in-oil-and-gas-methane-emissions.
- IEA, 2023b, *Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach,* 2023 Update, 2023. Online available at https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach.
- IISD, 2022a, *Earth Negotiations Bulletin - Summary of the Sharm El-Sheikh Climate Change Conference: 6-20 November 2022,* 2022. Online available at https://enb.iisd.org/sharm-el-sheikh-climate-change-conference-cop27-summary.
- IISD, 2022b, *Earth Negotiations Bulletin- Summary of the Sharm E-Sheikh Climate Change Conference: 6-20 November 2022,* 2022. Online available at https://enb.iisd.org/sharm-el-sheikh-climate-change-conference-cop27-summary.
- IISD, 2023, *Earth Negotiations Bulletin, Summary of the Bonn Climate Change Conference: 5-15 June 2023,* 2023. Online available at https://enb.iisd.org/bonn-climate-change-conference-sbi58-sbsta58-summary.
- IMO - International Maritime Organization, 2009, *Second IMO GHG Study 2009*. London, 2009. Online available at https://www.imo.org/en/OurWork/Environment/Pages/Greenhouse-Gas-Study-2009.aspx.
- IMO - International Maritime Organization, 2018, *Adoption of the initial IMO strategy on reduction of GHG emissions from ships and existing IMO activity related to reducing GHG emissions in the shipping sector,* Note by the International Maritime Organization to the UNFCCC Talanoa Dialogue - Resolution MEPC.304(72), 13 Apr 2018. Online available at https://unfccc.int/sites/default/files/resource/250_IMO%20submission_Talanoa%20Dialogue_April%202018.pdf.
- IMO - International Maritime Organization, 2020, *Fourth IMO GHG Study 2020,* Reduction of GHG Emissions from Ships (MEPC 75/7/15). London, 2020. Online available at https://docs.imo.org/Shared/Download.aspx?did=125134.
- IMO - International Maritime Organization, 2023, *2023 IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS,* RESOLUTION MEPC.377(80), July 2023. Online available at https://wwwcdn.imo.org/localresources/en/MediaCentre/PressBriefings/Documents/Resolution%20MEPC.377(80).pdf.
- IMO, 2015, *Reduction of GHG emissions from ships - Third IMO GHG Study 2014. Final report*. International Maritime Organisation. London, 2015. Online available at https://www.imo.org/en/ourwork/environment/pages/greenhouse-gas-studies-2014.aspx
- India, 2022a, *India's Updated First Nationally Determined Contribution Under Paris Agreement,* 2022. Online available at https://unfccc.int/sites/default/files/NDC/2022-08/India%20Updated%20First%20Nationally%20Determined%20Contrib.pdf.

- India, 2022b, *India's Long-Term Low-Carbon Development Strategy,* 2022. Online available at https://unfccc.int/sites/default/files/resource/India_LTLEDS.pdf.
- Indonesia, 2021, *Long-Term Strategy for Low Carbon and Climate Resilience 2050,* 2021. Online available at https://unfccc.int/documents/299279.
- Indonesia, 2022, *Enhanced Nationally Determined Contribution,* 2022. Online available at https://unfccc.int/sites/default/files/NDC/2022-09/23.09.2022_Enhanced%20NDC%20Indonesia.pdf.
- INKA consult, 2021, *Setting the standard: Climate finance from EU and EFTA Member States*. ACT Alliance EU (ed.), 2021. Online available at https://actalliance.eu/wp-content/uploads/2021/01/ACT-Alliance_EU_SettingTheStandard.pdf.
- INKA consult, CARE, 2021, *Climate adaptation finance: Fact or fiction?*. CARE (ed.), 2021. Online available at https://www.care-international.org/files/files/CARE_Climate_Adaptation_Finance_Fact_or_Fiction.pdf.
- IPCC, 2022a, *Climate Change 2022 - Mitigation of Climate Change. Working Group III contribution to the Sixth Assessment Report of the IPCC,* 2022. Online available at https://www.ipcc.ch/report/ar6/wg3/.
- IPCC, 2022b, *Summary for Policymakers (*Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change). Cambridge and New York, 2022. Online available at https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SPM.pdf.
- IPCC, 2023, *Synthesis Report of the IPCC Sixth Assessment Report (AR6) - Summary for Policymakers,* 2023. Online available at https://www.ipcc.ch/report/ar6/syr/.
- Japan, 2021a, *Japan's Nationally Determined Contribution (NDC),* 2021. Online available at https://unfccc.int/sites/default/files/NDC/2022-06/JAPAN_FIRST%20NDC%20%28UPDATED%20SUBMISSION%29.pdf.
- Japan, 2021b, *The Long-Term Strategy under the Paris Agreement,* 2021. Online available at https://unfccc.int/sites/default/files/resource/Japan_LTS2021.pdf.
- Klöwer, M., Allen, M. et al., 2021, *Quantifying aviation's contribution to global warming*. In: *Environmental Research Letters. DOI:* 10.1088/1748-9326/ac286e.
- Lallana, F., Bravo, G., Le Treut, G., 2021, *Exploring deep decarbonization pathways for Argentina*. In: *Energy Strategy Reviews* 36 (100670). Online available at https://doi.org/10.1016/j.esr.2021.100670.
- Lee, D. S., Fahey, D. W. et al., 2021, *The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018*. In: *Atmospheric Environment* 244, p. 117834. DOI: 10.1016/J.ATMOSENV.2020.117834.
- Leipold, A., Aptsiauri, G. et al., 2021, *DEPA 2050: Development pathways for aviation up to 2050.* DLR, 2021. Online available at https://www.dlr.de/fw/Portaldata/42/Resources/dokumente/aktuelles/DEPA2050_StudyReport.pdf.

- Lloyd's Register, 2020, *Summary Report - IMO Marine Environment Protection Committee Seventy-Fifth Session (MEPC 75),* Briefing Note. Lloyd's Register, 2020.
- LSE; Grantham Research Institute on Climate Change and the Environment (ed.), 2022, *Finance for climate action: scaling up investment for climate and development.* Independent High-Level Expert Group on Climate Finance, 2022. Online available at https://www.lse.ac.uk/granthaminstitute/publication/finance-for-climate-action-scaling-up-investment-for-climate-and-development/.
- Malley, C. S., Borgford-Parnell, N. et al., 2023, *A roadmap to achieve the global methane pledge*. In: *Environ. Res.: Climate* 2 (1), p. 11003. DOI: 10.1088/2752-5295/acb4b4.
- Mexico, 2016, *Mexico's Climate Change Mid-Century Strategy,* 2016. Online available at https://unfccc.int/files/focus/long-term_strategies/application/pdf/mexico_mcs_final_cop22nov16_red.pdf.
- Millefiori, L. M., Braca, P. et al., 2021, *COVID-19 impact on global maritime mobility*. In: *Scientific reports* 11 (1), p. 18039. DOI: 10.1038/s41598-021-97461-7.
- Mitchell, I., Ritchie, E. et al., 2021, *Is Climate Finance Towards $100 Billion "New and Additional"? (*CGD Policy Paper 205). Center for Global Development, 2021. Online available at https://www.cgdev.org/publication/climate-finance-towards-100-billion-new-and-additional.
- Moosmann, L., Neier, H. et al., 2016, *Implementing the Paris Agreement - Issues at Stake in View of the COP 22 Climate Change Conference in Marrakesh*. Study for the ENVI Committee. Brussels, 2016. Online available at http://www.europarl.europa.eu/RegData/etudes/STUD/2016/587319/IPOL_STU(2016)587319_EN.pdf.
- Moosmann, L., Siemons, A. et al., 2022, *The COP27 Climate Change Conference - Status of climate negotiations and issues at stake,* Study for the Committee on the Environment, Public Health and Food Safety, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament. European Parliament. Luxembourg, 2022. Online available at https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU(2022)733989.
- Nasiritousi, N., Hjerpe, M. et al., 2014, *The roles of non-state actors in climate change governance: understanding agency through governance profiles*. In: *International Environmental Agreements: Politics, Law and Economics* 16, pages 109–126. Online available at https://link.springer.com/article/10.1007/s10784-014-9243-8.
- OECD, 2021, *Forward-looking Scenarios of Climate Finance Provided and Mobilised by Developed Countries in 2021-2025, Technical Note* (Climate Finance and the USD 100 Billion Goal). Paris: OECD Publishing.
- OECD, 2022, *Climate finance provided and mobilised by developed countries in 2016-2020: Insights from disaggregated analysis.* Paris, 2022. Online available at https://www.oecd-ilibrary.org/finance-and-investment/climate-finance-provided-and-mobilised-by-developed-countries-in-2016-2020_286dae5d-en.

- OECD, 2023, *IEA CO_2 Emissions from Fuel Combustion Statistics,* GHG Emissions from fuel combustion (summary), 2023. Online available at https://www.oecd-ilibrary.org/energy/data/iea-co2-emissions-from-fuel-combustion-statistics-greenhouse-gas-emissions-from-energy/ghg-emissions-from-fuel-combustion-summary_445ec5dd-en?parentId=http%3A%2F%2Finstance.metastore.ingenta.com%2Fcontent%2Fcollection%2Fco2-data-en.
- Republic of Korea, 2020, *2050 Carbon Neutral Strategy of the Republic of Korea,* 2020. Online available at https://unfccc.int/sites/default/files/resource/LTS1_RKorea.pdf.
- Republic of Korea, 2021, *The Republic of Korea's Enhanced Update of its First Nationally Determined Contribution,* 2021. Online available at https://unfccc.int/sites/default/files/NDC/2022-06/211223_The%20Republic%20of%20Korea%27s%20Enhanced%20Update%20of%20its%20First%20Nationally%20Determined%20Contribution_211227_editorial%20change.pdf.
- Republic of Turkey, 2015, *Intended Nationally Determined Contribution,* 2015. Online available at https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Turkey/1/The_INDC_of_TURKEY_v.15.19.30.pdf.
- Roberts, J. T., Weikmans, R. et al., 2021, *Rebooting a failed promise of climate finance*. In: *Nat. Clim. Chang.* 11 (3), pp. 180–182. DOI: 10.1038/s41558-021-00990-2.
- Roland Berger, 2023, *Destination unknown: The future of long-distance travel,* A study on the post-Covid recovery and consumer expectations, 2023. Online available at https://content.rolandberger.com/hubfs/07_presse/23_2015_WP_Long-haul_mobility-06.pdf.
- Russian Federation, 2020, *Nationally Determined Contribution of the Russian Federation,* 2020. Online available at https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Russian%20Federation%20First/NDC_RF_eng.pdf.
- Russian Federation, 2022, *Strategy of socio-economic development of the Russian Federation with low greenhouse gas emissions until 2050,* 2022. Online available at https://unfccc.int/sites/default/files/resource/Strategy%20of%20Socio-Economic%20Development%20of%20the%20Russian%20Federation%20with%20Low%20GHG%20Emissions%20EN.pdf.
- Sans, G., Aguiar, S. et al., 2018, *Assessing the effectiveness of a land zoning policy in the Dry Chaco. The Case of Santiago del Estero, Argentina*. In: *Land Use Policy* 70, 313-321. Online available at https://doi.org/10.1016/j.landusepol.2017.10.046.
- Saudi Arabia, 2021, *Updated First Nationally Determined Contribution,* 2021. Online available at https://unfccc.int/sites/default/files/resource/202203111154---KSA%20NDC%202021.pdf.

- Saudi Arabia, 2022, *Fourth National Communication (NC4) - Kingdom of Saudi Arabia,* 2022. Online available at https://unfccc.int/documents/461529.
- SCF - UNFCCC Standing Committee on Finance, 2021, *First report on the determination of the needs of developing country Parties related to implementing the Convention and the Paris Agreement,* 2021. Online available at https://unfccc.int/sites/default/files/resource/54307_2%20-%20UNFCCC%20First%20NDR%20technical%20report%20-%20web%20%28004%29.pdf.
- Schneider, L., Wissner, N., 2021, *Fit for purpose? Key issues for the first review of CORSIA*. Oeko-Institut, 2021. Online available at https://www.oeko.de/fileadmin/oekodoc/Key-issues-for-first-review-of-CORSIA.pdf.
- Shishlov, I., Censkowsky, P., 2022, *Definitions and accounting of climate finance: between divergence and constructive ambiguity*. In: *Climate Policy* 22 (6), pp. 798–816. DOI: 10.1080/14693062.2022.2080634.
- Siemons, A., Schneider, L. et al., 2021, *Options for regulating the climate impacts of aviation*. Oeko-Institut. Stiftung Klimaneutralität (ed.), 2021. Online available at https://www.oeko.de/fileadmin/oekodoc/Options-for-regulating-the-climate-impacts-of-aviation.pdf.
- Siemons, A., Schneider, L., 2022, *Averaging or multi-year accounting? Environmental integrity implications for using international carbon markets in the context of single-year targets*. In: *Climate Policy* 22 (2). DOI: 10.1080/14693062.2021.2013154.
- Smith, T., Shaw, A., 2023, *An overview of the discussions from IMO MEPC 80 and Frequently Asked Questions,* Read out from UMAS. UMAS, 2023. Online available at https://www.u-mas.co.uk/wp-content/uploads/2023/07/MEPC-80-overview-FAQs-UMAS-.pdf.
- South Africa, 2021, *South Africa´s 4th Biennial update report (BUR) to the United Nations Framework Convention on Climate Change,* 2021. Online available at https://unfccc.int/documents/307104.
- Türkiye, 2023a, *Eighth National Communication and Fifth Biennial Report of Türkiye under the UNFCCC,* 2023. Online available at https://unfccc.int/documents/628372.
- Türkiye, 2023b, *Republic of Türkiye - Updated First Nationally Determined Contribution,* 2023. Online available at https://unfccc.int/sites/default/files/NDC/2023-04/T%C3%9CRK%C4%B0YE_UPDATED%201st%20NDC_EN.pdf.
- Türkiye, 2023c, *Turkish Greenhouse Gas Inventory 1990-2021,* 2023. Online available at https://unfccc.int/documents/627786.
- UN Economic Analysis & Policy Division, 2023, *Least Developed Countries (LDCS)*. Online available at https://www.un.org/development/desa/dpad/least-developed-country-category.html.
- UN, 1992a, *Convention on Biological Diversity*. United Nations, 1992. Online available at https://www.cbd.int/doc/legal/cbd-en.pdf.

- UN, 1992b, *United Nations Convention to Combat Desertification,* 1992. Online available at https://www.unccd.int/sites/default/files/relevant-links/2017-01/UNCCD_Convention_ENG_0.pdf.
- UNEP, 2022, *Adaptation gap report 2022,* 2022. Online available at https://www.unep.org/resources/adaptation-gap-report-2022.
- UNFCCC - United Nations Framework Convention on Climate Change, 1998, *Kyoto Protocol to the United Nations Framework Convention on Climate Change,* 1998. Online available at http://unfccc.int/resource/docs/convkp/kpeng.pdf.
- UNFCCC, 1992, *United Nations Framework Convention on Climate Change (UNFCCC)*. Online available at http://unfccc.int/files/essential_background/convention/background/application/pdf/convention_text_with_annexes_english_for_posting.pdf.
- UNFCCC, 2010, *Decision 1/CP.16 - The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (*FCCC/CP/2010/7/Add.1), 2010. Online available at https://unfccc.int/documents/6527.
- UNFCCC, 2015a, *Decision 1/CP.21 - Adoption of the Paris Agreement* (FCCC/CP/2015/10/Add.1). Online available at https://unfccc.int/documents/9097.
- UNFCCC, 2015b, *Paris Agreement,* 2015. Online available at http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf.
- UNFCCC, 2018a, *Decision 1/CP.24: Preparations for the implementation of the Paris Agreement and the first session of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement*. Source of information: FCCC/CP/2018/10/Add.1, p.2. Online available at https://unfccc.int/documents/193360.
- UNFCCC, 2018b, *Decision 18/CMA.1 - Modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement*. Source of information: FCCC/PA/CMA/2018/3/Add.2, p.13. Online available at https://unfccc.int/documents/193408.
- UNFCCC, 2018c, *Decision 19/CMA.1 Matters relating to Article 14 of the Paris Agreement and paragraphs 99 – 101 of decision 1/CP.21*. Online available at https://unfccc.int/documents/193408.
- UNFCCC, 2018d, *Decision 20/CMA.1 Modalities and procedures for the effective operation of the committee to facilitate implementation and promote compliance referred to in Article 15, paragraph 2, of the Paris Agreement*. Online available at https://unfccc.int/documents/193408.
- UNFCCC, 2021a, *Decision 1/CMA.3 - Glasgow Climate Pact,* FCCC/PA/CMA/2021/10/Add.1, 2021. Online available at https://unfccc.int/documents/460950.
- UNFCCC, 2021b, *Decision 5/CMA.3 - Guidance for operationalizing the modalities, procedures and guidelines for the enhanced transparency framework referred to in Article*

13 of the Paris Agreement. FCCC/PA/CMA/2021/10/Add.2, 2021. Online available at https://unfccc.int/documents/460951.

- UNFCCC, 2022a, *Decision 1/CMA.4 - Sharm el-Sheikh Implementation Plan,* 2022. Online available at https://unfccc.int/documents/626569.
- UNFCCC, 2022b, *Decision 2/CMA.4 - Funding arrangements for responding to loss and damage associated with the adverse effects of climate change, including a focus on addressing loss and damage,* 2022. Online available at https://unfccc.int/documents/626569.
- UNFCCC, 2022c, *Decision 2/CP.27 Funding arrangements for responding to loss and damage associated with the adverse effects of climate change, including a focus on addressing loss and damage,* FCCC/CP/2022/10/Add.1, 2022. Online available at https://unfccc.int/documents/626564.
- UNFCCC, 2022d, *Decision 3/CMA.4 - Glasgow–Sharm el-Sheikh work programme on the global goal on adaptation referred to in decision 7/CMA.3,* 2022. Online available at https://unfccc.int/documents/626569.
- UNFCCC, 2022e, *Decision 9/CMA.4 - Reviews on a voluntary basis of the information reported pursuant to decision 18/CMA.1, annex, chapter IV, and respective training courses needed,* FCCC/PA/CMA/2022/10/Add.2, 2022. Online available at https://unfccc.int/documents/626570.
- UNFCCC, 2022f, *Reference Manual for the Enhanced Transparency Framework under the Paris Agreement,* 2022. Online available at https://unfccc.int/documents/268136.
- UNFCCC, 2023a, *Party Groupings,* 2023. Online available at https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/parties/party-groupings.
- UNFCCC, 2023b, *Synthesis Report: Views on the elements for the consideration of outputs component of the first global stocktake,* 2023. Online available at https://unfccc.int/documents/632292.
- UNFCCC, 2023c, *Technical dialogue of the first global stocktake - Synthesis report by the co-facilitators on the technical dialogue,* FCCC/SB/2023/9, 2023. Online available at https://unfccc.int/documents/631600.
- United Arab Emirates Ministry of Energy & Industry, 2018, *United Arab Emirates 4th National Communication,* 2018. Online available at https://unfccc.int/documents/192549.
- United Arab Emirates, 2023, *Accelerating Action Towards a Green, Inclusive and Resilient Economy - Third Update of Second Nationally Determined Contribution of the UAE,* 2023. Online available at https://unfccc.int/sites/default/files/NDC/2023-07/Third%20Update%20of%20Second%20NDC%20for%20the%20UAE_v15.pdf.
- United Kingdom, 2021, *Net Zero Strategy: Build Back Greener,* 2021. Online available at https://unfccc.int/sites/default/files/resource/UK%20Net%20Zero%20Strategy%20-%20Build%20Back%20Greener.pdf.

- United Kingdom, 2022, *United Kingdom of Great Britain and Northern Ireland's Nationally Determined Contribution,* 2022. Online available at https://unfccc.int/sites/default/files/NDC/2022-09/UK%20NDC%20ICTU%202022.pdf.
- United Nations, 2023a, *Status of Treaties - 7. United Nations Framework Convention on Climate Change,* 2023. Online available at https://treaties.un.org/Pages/ViewDetailsIII.aspx?src=IND&mtdsg_no=XXVII-7&chapter=27&Temp=mtdsg3&clang=_en.
- United Nations, 2023b, *Status of Treaties - 7.d Paris Agreement,* 2023. Online available at https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVII-7-d&chapter=27&clang=_en.
- United States, 2021, *The United States' Nationally Determined Contribution,* 2021. Online available at https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=USA.
- WMO, 2022, *Executive Summary. Scientific Assessment of Ozone Depletion: 2022,* GAW Report No. 278. WMO. Geneva, 2022. Online available at https://csl.noaa.gov/assessments/ozone/2022/.
- Zagema, B., Kowalzig, J. et al., 2023, *Climate finance shadow report 2023: Assessing the delivery of the $100 billion commitment.* Oxfam, 2023. Online available at https://www.oxfam.org/en/research/climate-finance-shadow-report-2023.

This study provides an overview of the status of international climate negotiations and issues at stake at the COP28 climate change conference which will take place in Dubai (United Arab Emirates) from 30 November to 12 December 2023. 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 754.191
IP/A/ENVI/2023-07

Print ISBN 978-92-848-1259-2 | doi:10.2861/40705 | QA-05-23-404-EN-C
PDF ISBN 978-92-848-1258-5 | doi:10.2861/118 | QA-05-23-404-EN-N