

# FROM PARIS TO GLASGOW

In Search of Policies for Climate  
Negotiations and their Implementation

Majid Asadnabizadeh





Majid Asadnabizadeh

# From Paris to Glasgow

In Search of Policies for Climate Negotiations  
and their Implementation

Logos Verlag Berlin



Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available on the Internet at <http://dnb.d-nb.de> .



This work is licensed under the Creative Commons license CC BY-NC-ND (<https://creativecommons.org/licenses/by-nc-nd/4.0/>). Creative Commons license terms for re-use do not apply to any content (such as graphs, figures, photos, excerpts, etc.) not original to the Open Access publication and further permission may be required from the rights holder. The obligation to research and clear permission lies solely with the party re-using the material.

Cover image by Alexandrum79, iStock

Logos Verlag Berlin GmbH 2025

ISBN 978-3-8325-5764-5

Logos Verlag Berlin GmbH  
Georg-Knorr-Str. 4, Geb. 10,  
12681 Berlin, Germany

Tel.: +49 (0)30 / 42 85 10 90

Fax: +49 (0)30 / 42 85 10 92

<http://www.logos-verlag.com>

# Foreword

For more than two decades, climate change has been the subject of international negotiations in order to reach a common global decision. We experience and observe these debates year after year, the ups and downs, the successes, and failures of states to reach a better global decision to tackle climate change come to the negotiating table. These debates are extremely complex, not only scientifically but also practically, as they pose major challenges to countries around the world. In the author's view, the most important reason for this situation is that states need to take effective national and international measures to tackle the global problems of climate change and can discuss these later at the international climate conferences. In this book, I focus on the trends in the politics of global climate negotiations and the associated implementation measures. By using the term Intergovernmental Integrated Decision-making (IID) as a theoretical framework instead of cooperative approaches, I aim to draw attention to the changes in the politics of global climate negotiations related to decision-making since the Paris Agreement entered the international debates. While countries took some steps before the Paris Agreement, the Paris Agreement and the post-Paris period have created a new pattern and new trends for climate negotiation politics among a variety of governments to make better decisions. In this book, I argue that global decision-making on climate change under the Paris Agreement is to make nationally determined contributions and avoid dangerous climate change by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C. This requires differentiated and effective regulation by different actors. This requires different and effective regulation through different options supported by a large number of governments. By using the term – IID – I would like to draw attention to the fact that the Paris Agreement contains various intergovernmental integrated rules and measures (policies). Above all, I want to show that the politics of global climate change negotiations from Paris to COP26 have undergone a real transformation.

## Foreword

The title of the book suggests that the author is interested in understanding how decisions about global climate politics were made in the past. I also show that the main point of the analysis is the politics of the negotiations in Paris and after Paris specifically the politics of implementing that decision.

I have read and analysed that nowhere more than in Paris-Glasgow were intergovernmental integrated decisions (i.e., intergovernmental decisions showing consensus between (and/or by) governments and integrating decisions on the global climate negotiations) taken. This book therefore summarises some of the key rules and regulations of the Paris and post-Paris decisions. At the centre of these rules was the task of regulating international cooperation between governments, for example in comparison to the Kyoto Protocol (KP) and developing a new framework for dealing with the global problems of climate change, the so-called reduction of greenhouse gas emissions. I use the period between Paris and Glasgow for this book in order to better analyse and understand the differences between the agreement before and after Paris. One of the outstanding features of the Paris Agreement is that it has developed different policies and regulations for governments around the world as part of global negotiation politics. This agreement relies heavily on increasing government contributions, but in practise it also promotes global climate policy through integrated action by governments. I have taken up this particular aspect in writing this book and have specifically analysed the decision-making and implementation process. Different rules and strategies are needed to solve the problems of global climate change. In this book, I show that the Paris Agreement attempted to handle the politics of negotiating decisions on global climate change differently from previous agreements, through the politics of the implementation process with intergovernmental integrated action between governments to address the challenges of global climate politics. This was the point at which I started thinking about reading and writing this book.

# Contents

<b>Introduction.....</b>	<b>1</b>
<b>Chapter 1: Global climate change situation.....</b>	<b>7</b>
1.1 Overview of the factors leading to global climate change .....	7
1.1.1 Natural causes .....	9
1.1.2 Anthropogenic causes.....	18
1.1.3 The science of climate change: What it is scientific evidence.....	25
1.1.4 The political background to global climate change: 6 years before the Paris Agreement .....	29
<b>Chapter 2: Global climate change decision-making         center .....</b>	<b>47</b>
2.1 Global climate change centre for decision making PA .....	47
2.2 Understanding decision-making in international relations .....	48
2.3 Prologue on the nature of the global climate change centre: From Kyoto to Copenhagen .....	50
2.4 Prologue on the nature of the global climate change centre: Linking NDC, mitigation and adaptation.....	53
2.5 A multi-criteria assessment framework for the decision-making hub: Putting actors and organizations at the heart of decision-making .....	57
2.5.1 Actors at the centre of global climate change decision-making: Insights from regime theory .....	57
2.5.2 The anatomy of institution: The influence of organizations at the decision-making centre .....	66
2.5.3 The decision-making centre of the climate change instrument: Transboundary organizations.....	95

<b>Chapter 3: Global decision-making process on climate change: Paris Agreement.....</b>	<b>99</b>
3.1 A framework for diagnosing the structure of the global decision-making process.....	100
3.1.1 Two-stage structure for the global decision-making process: Application to PA .....	102
3.1.1.1 The rationale for the political stages of the decision-making process .....	102
3.1.1.2 Rationale for the economic phases of the decision-making process.....	129
3.2 Summary in plain language .....	150
<b>Chapter 4: Global decision on climate change: The Paris Agreement .....</b>	<b>153</b>
4.1 The Paris Agreement on climate change: Critical choice, nature, and structure of analysing an international decision .....	154
4.2 Advancing decision-making on climate change under the Paris Agreement: A guide to principles, rules .....	154
4.3 Summary in plain language .....	196
<b>Chapter 5: Implementation of mega-conferences such as Paris.....</b>	<b>201</b>
5.1 The importance of implementation politics for decision-making on global climate change.....	201
5.2 The lessons of global decision-making on climate change: From Marrakech to Glasgow.....	202
5.3 Implementation of the Paris Agreement: Guidance for the implementation of global decision-making on climate change.....	208
5.4 Summary and conclusion in plain language: Is the decision-making architecture of the Paris Agreement a mirage, a dummy or reality.....	242
Bibliography .....	247

# List of Illustrations

Figure 1	Decision-making process for the structure of Paris Agreement .....	7
Figure 2	The most important natural causes of climate change .....	10
Figure 3	Transport carbon emissions.....	18
Figure 4	The logic of decision-making center of Paris Agreement...	48
Figure 5	Epistemic communities role in decision-making center of Paris Agreement .....	83
Figure 6	Decision-making process for the structure of Paris Agreement.....	100
Figure 7	Overview of the 3-axis model for intergovernmental integrated decision .....	245



# List of Tables

Table 1	The scope of the political stages of decision-making process .....	104
Table 2	The scope of the economic stages of decision-making process .....	130
Table 3	Decision-making process of Paris Agreement and summary of analysis.....	150
Table 4	Identifications decision of Paris Agreement.....	197
Table 5	COP22 features .....	203
Table 6	COP23 features .....	205
Table 7	COP24 features .....	206
Table 8	COP25 features .....	207
Table 9	COP26 features .....	208
Table 10	Major provisions of Implementation.....	243



# List of Abbreviations

ACE	Action for Climate Empowerment
ACP	African, Caribbean, and Pacific Group of States
AWG-LCA	Ad Hoc Working Group on Long-term Cooperative Action
ADB	Asian Development Bank's
ADP	Adopts the Durban Platform
AF	Adaptation Fund
ALBA	Bolivarian Alliance for the Peoples of Our America
AR5	Fifth Assessment Report
AAU	Assigned Amount Units
BAP	Bali Action Plan
BASIC	Brazil, South Africa, India, and China
BINGO	Business and Industry NGO
BMUB	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
BNEF	Bloomberg New Energy Finance
CAN	Climate Action Network
CBDR	Common but Differentiated Responsibilities
CCN	Cloud Condensation Nuclei
CCWG	Climate Change Working Group
CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
CFRN	Coalition for Rainforest Nations
CH1	Chapter 1
CH2	Chapter 2
CH3	Chapter 3
CH4	Chapter 4

## List of Abbreviations

CH5	Chapter 5
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
CMP	Conference of Parties serving as the meeting of Parties to the Kyoto Protocol
CO2	Carbon dioxide
COP	Conference of the Parties
CGE	Consultative Group of Experts
COP22	Conference of Parties in the Marrakech
COP23	Conference of Parties in Bonn
COP24	Conference of Parties in Poland
COP25	Conference of Parties in Spain
COP26	Conference of Parties in Glasgow
CTCN	Climate Technology Centre and Network
DC	Developed Countries
DCS	Developing Countries
DDC	Deep DE Carbonization
DES	Durban Economic Stage
DESA	Department of Economic and Social Affairs
DOES	DOha Economic Stage
DOPS	DOha Political Stages
DO-RC	Distinguished Obligations and Respective Capabilities
DPS	Durban Political Stages
ADP	Action for Durban Platform
EBRD	European Bank for Reconstruction and Development
EEAS	European External Action Service
ENGO	Environmental NGOs
EIG	Environmental Integrity Group
ES-DMP	Economic Stages of the Decision-Making Process
ESRB	European Systemic Risk Board
ETC	Energy Transitions Commission

## List of Abbreviations

ETF	Enhanced Transparency Framework
ETS	Emissions Trading Scheme
EU FAC	EU Foreign Affairs Council
FAO	Food and Agriculture Organization
FMCP	Facilitative, Multilateral Consideration of Progress
FOLU	Food and Land Use Coalition
FPC	Financial Policy Committee
GAP	Gender Action Plan
GCECA	Global Centre of Excellence on Climate Adaptation
GCF	Green Climate Fund
GDN	Green Diplomacy Network
GEF	Global Environment Facility
GGA	Global Goal of Adapting
GGGI	Global Green Growth Institute
GHG	Greenhouse Gases
GMBM	Global Market-Based Measures
GPC	Global Protocol for Community
GST	Global Stocktake
HDI	Human Development Index
ICAO	International Civil Aviation Organization
IEA	International Energy Agency
IGOs	Intergovernmental organizations
ILO	International Labor Organization
IMF	International Monetary Fund
IMO	International Maritime Organization
IMP-PA	Implementation of the Paris Agreement
IOCL	Indian Oil Corporation Ltd
IP/LCs	Indigenous Peoples and Local Communities
IPAT	It is an equation that expresses the idea that environmental impact (I) is the product of three factors: Population (P), Affluence (A), and Technology (T).

## List of Abbreviations

IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
IID	Intergovernmental Integrated Decision-making
ISFL	Initiative for Sustainable Forest Landscapes
ITMOs	Internationally Transferred Mitigation Outcomes
JMAM	Joint Mitigation and Adaptation Mechanism
KJWA	Koronivia Joint Work on Agriculture
KP	Kyoto Protocol
L&D	Loss and Damage
LDCF	Least Developed Countries Fund
LDCs	Least Developed Countries
LEDS	Low-Emission Development Strategies
LES	Lima Economic Stage
LGMA	Local Governments and Municipal Authorities
LPAA	Lima-Paris Action Agenda
LPS	Lima Political Stages
LTF	Long-Term Climate Finance
LT-LEDS	Long-Term Low-Emission Development Strategies
LULUCF	Land Use, Land Use Changes, and Forest
MCS	Mid-Century Strategies
MEF	Major Economies Forum
MEPC	Marine Environment Protection Committee
MPGs	Modalities, Procedures, and Guidelines
MRV	Monitoring Reporting and Verification
N <sub>2</sub> O	Nitrous Oxide
NAZCA	Non-state Actor Zone for Climate Action
NBF	Needs-Based Finance
NDC	Nationally Determined Contributions
NGOs	Non-Governmental Organizations
NMAs	Non-Market-based Approaches

## List of Abbreviations

NMM	New Market Mechanism
NOAA	National Oceanic and Atmospheric Administration
ODI	Overseas Development Institute
OECD	Organization for Economic Cooperation and Development
PAH	Polycyclic Aromatic Hydrocarbons
PNG	Papua New Guinea
PPS	Paris Political Stages
PS-DMP	Political Stages of the Decision-Making Process
RBF	Rockefeller Brothers Fund
REDD	Reducing Emissions from Deforestation and Forest Degradation
RINGO	Research and Independent NGOs
RTS	Regime Theory Scholarship
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technological Advice
SCF	Standing Committee on Climate Finance
SDM	Sustainable Development Mechanism
SED	Structured Expert Dialogue
SIDS	Small Island Developing States
SO <sub>2</sub>	Sulfur Dioxide
TEC	Technology Executive Committee
TER	Technical Expert Review
TUNGO	Trade Unions and Non-Governmental Organizations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	UN Reducing Emissions from Deforestation and Degradation
USTDA	US. Trade and Development Agency
WCCB	World Conference Center Bonn

## List of Abbreviations

WCP	World Climate Program
WES	Warsaw Economic Stage
WHO	World Health Organization
WIM	Warsaw International Mechanism
WMO	World Meteorological Organization
WPS	Warsaw Political Stages
WRI	World Resources Institute
WTO	World Trade Organization
YOUNGO	Youth NGOs

# Introduction

Climate change is one of the most complex issues in the world today and in global decision-making. International negotiations on climate change are the best way to find an effective solution to the problems of global climate change. The negotiations started more than 20 years ago with the aim of reducing greenhouse gas emissions, i.e., carbon dioxide (CO<sub>2</sub>) emissions. In order to find a solution to this problem and other related climate issues, the international negotiations experienced many ups and downs until the Paris Agreement was agreed. The Paris Agreement is the most important global decision on climate change and, compared to previous debates, contains policies and strategies for all governments. Copenhagen, for example, was one of the most unsuccessful negotiations to reach a common global decision (see Asadnabizadeh, 2020).

The 2015 Paris Agreement is a breakthrough in international diplomacy and global decision-making on climate change. It represents the most ambitious outcome possible in a deeply divisive political context. The Paris Agreement breaks new ground in international climate policy by recognizing the primacy of national climate policies and allowing countries to determine their own level of commitment to mitigating climate change. It provides a mechanism to make voluntary commitments that can be measured and verified globally, in the hope of increasing the global integrated ambition of governments. The most important question, then, is how the Paris Agreement is actually structured as a global decision on the politics of climate negotiations and what the politics of implementing the Paris decision will look like in the future phase. Therefore, the author has decided to look at this agreement differently and develop a new approach, namely IID. To define IID, the author points out that the Paris Agreement consists of a set of rules and policies for all governments that integrate the decisions of governments based on the inter-consensus for the politics of global climate negotiations. This approach consists of a set of thematic categories comprising 5 types of criteria, namely: decision

## Introduction

situation, decision centre, decision process, decision, and implementation, which are interlinked. The application of this approach enables the author to systematically analyze the content of the above category (e.g. using rules, policies from the Paris Agreement and post-Paris).

The discussion of the main approach of this book, namely IID, has not been precisely, but somewhat hinted at in the literature. In order to clarify this approach in the context of decision-making for the politics of global climate negotiations, the author would like to take a look at the literature here and make a comparison. Some classic authors such as Richard C. Snyder, H. W. Bruck and Burton Sapin (1963–2002) have identified the decision-making approach as an approach to the study of international politics that seeks to explain the importance of states in empirical work that captures the vision of participation in global decision-making, as the field of international politics is not just an idea from the past. Feldman (1991) discussed decision-making on global climate change issues. He argued that practical international co-operation is the result of a gradual and iterative learning process between scientists, environmental groups and policy makers who have different views and interests on resource controversies. Todd Sandler (1992) analyzed the logic of collective behavior and discussed the issues of international regimes in relation to international environmental cooperation and decision-making, including the international regime and process of climate change. Parson and Fisher-Vanden (1997) highlighted integrated assessment modelling of global climate change. Integrated assessment models aim to combine knowledge from different disciplines in formal, integrated representations, inform policy, structure knowledge, prioritize key uncertainties and improve knowledge of broad system linkages and feedback, particularly between socio-economic and biophysical processes.

In Climate change, decision-making: science, policy, and economics study, the strands of the literature have changed somewhat since 2000. Mohan Munasinghe (2001) noted that predictions about climate change, its impacts and the costs of its mitigation are essential to the policy dimension and decision-making, as climate change issues are integrated into the broader issues of better decision-making and sustainable development. van den Hove (2000) looked at participatory approaches to environmental decision-making. The essence of this process

is to create interfaces between four criteria, such as 1 the research community, 2 the EC climate negotiation team and through it the representatives of the EU Member States, 3 other stakeholders of the Commission (the ‘internal stakeholders’), 4 a range of ‘external’ stakeholders including industry, finance and trade, employment, environment, consumers and citizens’ interests. Adger and colleagues (2003) consider the environmental policy decisions of individuals, civil society, and the state. Four criteria, namely economic efficiency, environmental effectiveness, equity, and political legitimacy have become the dominant rhetorical tools of environmental decision-making and governance.

Dernbach (2003) also deals specifically with environmental policy decisions. Dernbach, a law professor at Widener University Law School, argues that integrated decision-making is the foundation for environmental problems and sustainable development. It is a response to policy failures that cause and contribute to unsustainable development. Due to the complexity of environmental issues, Kiker et al. (2005) consider the method of multi-criteria decision analysis (MCDA) as a scientific-theoretical approach. This method is used for contaminated sites, land-use planning, and official procedures. Delreux (2006) found that most international environmental agreements are mixed. The internal decision-making process between EU states in relation to mixed agreements is somewhat complicated and the framework of the EU decision-making process must be considered. Antto Vihma (2014) explores ideas for reforming decision-making at the UN-FCCC Conference of the Parties (COP) and the importance of COP decisions for the 2015 PA, arguing for improving consensus building through presidency leadership, expectation management and transparency to achieve more systematic and efficient decision-making at the COP. One of the most recent studies – *From Integrated to Integrative: Delivering on the Paris Agreement* – suggests that the Paris Agreement represents a truly integrative approach to supporting climate change policymaking (Doukas et al., 2018). Another recent study suggests that the Paris Agreement has improved the global governance of climate change through the Nationally Determined Contributions (NDCs) of participating governments (Sun et al., 2022).

The author compares these bundles of literature and approaches that can help evaluate IID as an original robust approach. These approaches and IID share some

## Introduction

similarities. Some of the literature focuses either on integration or on collective action in the process of decision-making or policymaking. Both IID and these approaches include the concept of a state function. These studies had sought to explore strategies and models that maximize the performance of decision-making in the context of the Paris Agreement, which is not exactly the subject of the global climate change process and decision-making. Thus, the IID and most of these approaches use a qualitative method to link the decision-making process of the Paris Agreement to global climate change issues. However, in terms of key differences, both the IID and these approaches differ in their analytical approach: they mainly analyze environmental decision-making and not specifically the politics of global climate negotiations in the context of decision-making since the Paris Agreement entered the international debates and the process of policy implementation, and they use different models (e.g. MCDA) to gather information. There is a gap in the literature on IID and other models of decision making. From 1970 (classical literature) to somewhat more modern work (e.g. Vihma (2014) and the most recent (Sun, Gao, Deng & Wang, 2022), no one has attempted to examine the politics of global decision-making on climate change using the Paris Agreement and the 5 key analytical steps (i.e., situation, centre, process, decision, and implementation). Decision-making in the context of global climate policy is truly complex, and the literature to date has not fully captured this analysis. However, another difference is that IID is an adaptive approach to look at the policy process of global decision-making on climate change under the Paris Agreement and the way forward, because this approach supports the global decision-making process to define the best pathways for politics of implementation. Another difference is that IID links national and international politics and governance under the Paris Agreement. For this reason, this approach is also referred to as integrated inter-governmental decision-making. Therefore, the book contains a separate chapter on the perception of decisions and intergovernmental integrated rules and policies. To briefly explain the structure of this book, Chapter 1 describes the factors that are important for understanding the global climate change situation and why global decisions need to be made.

This chapter was compiled from climate science research information, the National Oceanic and Atmospheric Administration (NOAA), and other related

sources. As an example of a centre, Chapter 2 analyses the center's key national and international actors. In this chapter, the epistemic community approach, regime theory, cited by Peter M. Haas and Young, Keohane and Nye, is discussed and explained. Based on the IID approach, Chapter 3 presents the process of global decision-making under the Paris Agreement. This chapter is prepared by the two-stage structure for the global decision-making process with political and economic phases. Chapter 4 is prepared by the idea of decision-making, focusing on the main rules of the Paris Agreement. And the last chapter explains and evaluates the most modern and important criterion for the global climate change decision from Paris to Glasgow, the future path, namely implementation.

*“Climate change is a huge and dramatic event that requires collective thinking and collective action.”*  
*-Majid Asadnabizadeh-*



# 1

## Global climate change situation

### 1.1 Overview of the factors leading to global climate change

In this chapter, the author deals with the decision situation of the primary approach, namely IID. The decision situation involves the observation, monitoring and evaluation of the pragmatic and affective variables considered in the specific situation. It contains the identified options as well as the principles that are typical for the decision situation approach. Considering the decision-making situation (DMS) in the context of the Paris Agreement (PA) means understanding and following the decision-making situation of the Paris Agreement. Effective international decisions on climate change such as the PA have many perspectives and angles. To ensure the effectiveness of the DMS for PA, the author monitors the gradual situation that has emerged at this stage in the global climate change arena. This includes defining challenges such as the following.

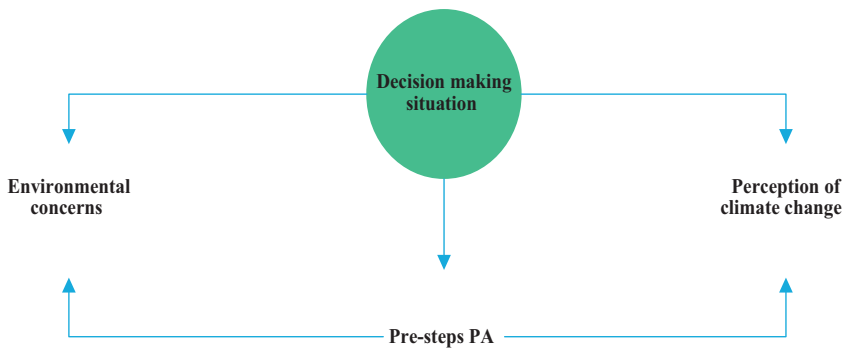
1. Natural causes
2. Anthropogenic
3. Science (perception) of climate change: what it is and scientific evidence
4. The politics behind the global climate change situation (precursors): 6 years before the Paris Agreement (i.e., Asadnabizadeh, 2022). These points will help the author to speed up the process of verification. The application of this evidence is useful for the DMS-PA and to achieve the objective of this chapter. Decision makers need to understand the DMS in the first step. At this stage, valuable and timely information about the criteria and consequences of climate change threats, the perception of these threats, and the preliminary stages of global decision-making related to

## 1 Global climate change situation

climate change (Figure 1) is essential. To better understand the situation of global decision-making before the PA, the author will go through the natural and anthropogenic causes of climate change. Expand new ways of thinking about what is known about climate change and the possibilities for negotiating climate change before the final decision is made.

This chapter provides a global overview of the situation category that international decision-makers could use to address the combination of rudimentary problems and information that climate change brings. I use the term situation to describe the underlying principles that form the general basis for other decision-making steps. To be even clearer, the situation of global climate change is better understood in the climate change negotiations. The DMS encompasses the vulnerable issues of climate change that arise from the lack of transparent knowledge and the need to establish guidelines that allow us to understand the imprecision of global climate change measurements. These issues, which play a role in climate change debates, make up the global DMS.

Our planet is affected by environmental problems that deplete natural resources and put a strain on livelihoods. Environmental issues related to climate change are a notable variable in global research and projects and continue to increase as environmental changes and problems (e.g. air and water pollution) are recognised as the world's most important problems.



**Figure 1.** Decision-making process for the structure of Paris Agreement.

*Source:* Author own-constructed.

## 1.1 Overview of the factors leading to global climate change

Global climate change has already had an impact and the effects of climate change are now materializing. These impacts go far beyond a rise in temperature and are affecting ecosystems and communities around the world. In other words, ecosystems are affected, and habitats are changing due to climate change. The factors that trigger climate change can be divided into two categories: natural processes and man-made factors (i.e., anthropogenic factors). Natural causes of climate change lie within the climate system, such as variability.

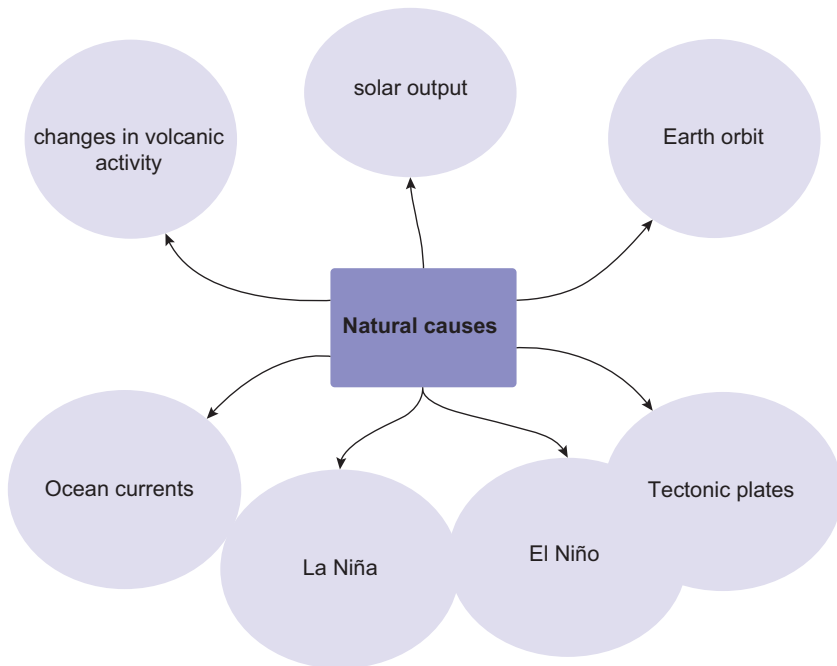
### 1.1.1 Natural causes

Natural variables outside the climate system, such as changes in volcanic activity, solar output and the Earth's orbit around the Sun, tectonic plates, and El Niño, La Niña and ocean currents, can influence the Earth's climate (Figure 2). Simply put, natural weather influences include changes in solar energy, naturally occurring atmospheric water vapour and CO<sub>2</sub>, volcanic aerosol and cyclical ocean fluctuations. These factors affect climate by influencing the amount of solar radiation that reaches the Earth's surface, by changing how much heat reaches the atmosphere, and by altering ocean and atmospheric circulation. The Earth's rotational motion and its rotation around the Sun also affect the trend of incoming solar radiation over centuries to tens of thousands of years and influence climate on geological time scales (Leggett, 2018).

#### ***Changes in volcanic activity***

Some of the most significant short-term climatic and social upheavals in human history have been volcanic eruptions. Massive eruptions release ash, dust, sulphur gases (e.g. SO<sub>2</sub>, H<sub>2</sub>S), halogens (e.g. HCl) and water vapour into the Earth's atmosphere. Sulphur-containing emissions mainly affect the climate by transforming into sulphate aerosols, which reduce incoming solar radiation, warm the stratosphere, and alter ozone formation, lower the global mean surface temperature, and suppress the hydrological cycle (Allegra et al., 2015). Ash clouds can block sunlight and visibly darken the sky, leading to reduced solar heating. However, these effects are generally short-lived and geographically limited, as the ash disappears quickly and locally from the atmosphere due to gravity. Water vapour, carbon dioxide,

## 1 Global climate change situation



**Figure 2.** The most important natural causes of climate change.

*Source:* Author own-constructed.

reduced sulphur chemicals (mostly SO<sub>2</sub>), nitrogen and halogen compounds make up the majority of gaseous emissions. They become components of the atmosphere and their residence time in the atmosphere is subject to the biogeochemical cycles of the elements (O, C and S). The amounts of water vapour and carbon dioxide emitted by volcanoes are negligible compared to the size of the atmospheric reservoir of these gases, and therefore their impact on climate is insignificant (Cole-Dai, 2010). After the devastating explosion of Mount Tambora in Indonesia, the year 1816 took place, also known as the “year without a summer”.

The explosion of Mount Tambora was perhaps the most significant known event in the memory of human civilization. In June, snow fell in the northeastern United States and Canada, causing regional crop failures, food shortages and increased mortality. Many prominent weather events are accompanied by relatively

## 1.1 Overview of the factors leading to global climate change

cold years (such as the eruption of Krakatau in Indonesia in 1883 and the eruption of Mount Pinatubo in the Philippines in 1991). (Causes of climate change, 2019). The eruption of Mount St. Helens in May 1980, a huge lateral explosion in the state of Washington in the north-west of the United States, also caused a large local tropospheric volcanic ash load. In Yakima, Washington, 135 kilometers to the east, it was so gloomy that Yakima's automatic lights were switched on in the middle of the day. This thick aerosol layer effectively isolated the Earth's surface from the upper part of the atmosphere (see e.g. Robock, 2000; Cashman & Rust, 2019).

The surface air temperature in Yakima was 15°C for 15 hours at a time, regardless of the daily standard period. Robock and Mass [1982] examined the inadequacies of the National Weather Service System Performance Statistics forecasts. Since the System Performance forecasts did not include volcanic aerosols as predictors, these errors could be interpreted as a volcanic effect. They found that the aerosols cooled the ground by 8°C during the day but warmed the surface by 8°C at night. The reduction in the diurnal cycle lasted only a few days before the aerosol cloud dissipated. While the eruption of Mount St Helens had a significant localized impact on temperature, no other effects on precipitation or atmospheric circulation were reported (Robock, 2000).

### ***Solar output***

The space probe has been tracking the absolute radiation intensity of the Sun since 1978 and has so far only recorded two of the sun's eleven-year cycles. During this period, solar production fluctuated within a range of 0.15%. Between the mediaeval maximum in the ninth century and the Maunder Minimum of 1645–1715 (the Little Ice Age), the brightness of the sun is said to have decreased by 0.5%. However, recent research suggests that this value may be too high (see e.g. Zharkova et al., 2019). There is also evidence that the Sun exhibits fluctuations in power with a periodicity of ~70–90 years, ~200 years and ~2500 years. These solar fluctuations can affect the climate system by influencing the Quasi-Biennial Oscillation and the El Niño Southern Oscillation (Marsh, 2007). There are primary sources of solar irradiance variations. Internal stellar processes affect the total radiant energy emitted by the Sun, i.e., solar activity. Sunspot activity is associated with annual or decadal differences in solar activity. Sunspot numbers are noted and recorded

## 1 Global climate change situation

over hundreds of years, as are records of other indices of solar activity, such as the aurora.

It is now possible to find decadal and centennial signs of solar variability in climate data using rigorous statistical analyses. From a global perspective, the processes that influence the temperature of the Earth's atmosphere and the ground climate through changes in incident solar radiation are well known (Haigh, 2011). Sunspots in the photosphere are darker, colder regions on the sun that are superficial during sunspot activity. The photosphere has a temperature of 5,800 degrees Kelvin. The temperatures of the sunspots are around 3,800 degrees K. Sunspots are temporary concepts on the photosphere of the sun which, compared to the surrounding regions, appear conspicuously like dark spots. They are associated with magnetic field concentrations that hinder convection and lead to a lower surface temperature than the photosphere around them. Sunspots typically occur in pairs, with the participants in the pair having opposite magnetic polarity. Individual sunspots can last from a few days to a few months, but eventually diminish.

Sunspots expand and contract as they move across the surface of the Sun. Their diameter can range from 16 kilometers to 160,000 kilometers. While the details of sunspot formation are still being researched, it appears that sunspots are the visible counterpart to the magnetic flux tubes in the convective region of the Sun that are "wrapped" by the differential rotation. They roll up and pierce the surface of the Sun when the pressure on the tubes reaches a certain threshold. Convection is inhibited at the puncture points; the energy flow from the interior of the Sun decreases and with it the temperature of the surface (Reddy & Reddy, 2016).

The Sun currently exhibits low sunspot activity. Some researchers suggest that this could be the beginning of a regular solar event known as the "grand minimum", while others say that the evidence for this role is insufficient. In recent years, many experiments have investigated the effects of another grand minimum on global surface temperatures. These studies say that while a grand minimum could cool the planet by up to 0.3 degrees Celsius, this would at best slow (but not reverse) human-induced global warming. There would be a modest reduction in the energy entering the Earth's atmosphere, offset by only three years of increase in current carbon dioxide production. However, the exceptional low would be mild and temporary, and global temperatures would recover quickly after the

## 1.1 Overview of the factors leading to global climate change

event. Some people have related the temporary cooling of the Maunder Minimum to reduced solar activity. Nevertheless, this change is modified by increased volcanic activity and changes in ocean circulation (Change, 2019).

### ***The Earth's orbit around the Sun***

The planet flies around the Sun once a year in an almost circular orbit, although it is elliptical. Now the deviation between the elliptical orbit and a complete circle (the so-called eccentricity) is tiny. The corresponding average difference in the distance between the Sun and the Earth between 4 July, when the Earth is furthest from the Sun (aphelion, 151.2 million kilometres), and 4 January, when it is closest (perihelion, 146.2 million kilometres), is only 3 percent (see e.g. Vallado, 2001; Sidorenkov, 2009). Furthermore, the total radiation received by the Earth in its current elliptical orbit differs only slightly from the radiation it would receive in a circular orbit ( $0.05 \text{ W m}^{-2}$ ) during a whole year. The influence of the slight change in distance is not sufficient to create the seasons. If we compare the total amount of solar radiation that a hemisphere receives in summer and winter, it becomes clear that this tiny difference has a considerable influence on the severity of the seasons.

In comparison, the northern hemisphere now experiences relatively mild summers and warmer winters, while the southern hemisphere considerably exaggerates the seasons. The seasons result from the inclination of the Earth's axis (the obliquity) around its plane of motion around the Sun (23°). On the hemisphere facing the sun there is summer, although the days are generally shorter and colder. If the inclination were zero, there would be no seasons. On the other hand, a greater tilt angle would result in greater seasonality with hotter summers and colder winters. The eccentricity, obliquity and timing of the perihelion change over time. These secular variations in the Earth's orbit are caused by the gravitational pull of the other planets in the solar system. In general, the relative positions of Jupiter and Saturn affect the eccentricity and obliquity of the Earth's orbit. The effects on the orbital parameters are quasi-periodic, as they consist of several components (Schlaepfer, 2019).

On the other hand, astronomers and scientists have linked the Earth's climate to various changes related to the Earth's orbit around the sun and the amount of energy the planet receives. Milutin Milankovich proposed 60 years ago that

## 1 Global climate change situation

periodic variations in the Earth's orbital parameters influence local solar radiation and could be the key to understanding some of the most significant climatic changes of the last million years. According to Milankovich's hypothesis, these orbital mechanisms are the most important drivers of ice ages. According to the Milankovitch hypothesis, it is considered the decisive factor for ice age. The Milankovitch cycles were recently established and verified in the ice core samples from Antarctic Dome C, which record climate fluctuations over 800,000 years (Jouzel, 2007).

The Earth's eccentricity changes over time as the planet orbits the Sun. This orbit tends to alternate between a circular shape and an elliptical shape. Due to the Earth's proximity to the Sun during its orbit, changes in the Earth's eccentricity due to this process cause variations in the incoming solar radiation. The Earth's obliquity or tilt angle also goes through a cycle every 41,000 years. During this period, the increase in tilt shifts from 22 degrees to 24.5 degrees and back. When the axial tilt is greater, solar radiation increases in summer and decreases in winter. The result of this effect is greater seasonal variability due to warmer summers and colder winters. However, the seasonal variability is smaller when the axial tilt decreases, as solar radiation is lower in summer and too high in winter, resulting in cool summers and mild winters (Florides et al., 2019).

### ***Tectonic plates***

In the history of the earth there were long periods when glaciers (ice caps) enclosed large parts of the continents for millions of years, and other periods when the ice disappeared completely, even from the highest mountain peaks. We live in a time when the Earth has gradually warmed, and the ice caps have advanced over the last 50 million years. This is due to plate tectonic processes that have shifted continents and even controlled the amount of greenhouse gases (GHG) in the atmosphere over geological time scales (Solveig Seidenkrantz, 2017). Tectonics refers to the horizontal and vertical movements of the Earth's crust. The direct link between horizontal tectonics and climate is the change in latitudinal distribution of continental blocks and extensive terraces, as well as the opening and closing of gateways between major ocean basins and marginal seas. The way the Earth collects solar energy and the effects of orography on atmospheric circulation,

## 1.1 Overview of the factors leading to global climate change

hydrological and biological cycles establish an obvious relationship with vertical tectonic movements. (Hay, 1996).

### ***El Niño***

El Niño, Spanish for ‘the little boy’, is a recurring event in the tropical Pacific and is considered one of the most significant events in our climate system. The name is derived from ‘baby Jesus’, as it usually begins in December. Peruvian fishermen invented it in the early 1880s when they noticed that every few years the cold northerly current, they were fishing turned into a hot southerly current (Tsonis, 2017). El Niño is a warming of the tropical Pacific that occurs approximately every three to seven years and lasts 12–18 months. It is dynamically related to the Southern Oscillation, a fluctuation in atmospheric surface pressure between Australia-East Asia and the central tropical Pacific. During El Niño, the trade winds near the equator decrease as the air pressure rises in the western Pacific and falls in the eastern Pacific. The weakened trade winds allow hot surface water to migrate eastwards, which is normally restricted to the western part of the Pacific (McPhaden, 2001).

It is unclear whether the El Niño fluctuations will generally increase in the future with a warmer climate. Nevertheless, it is to be expected that the precipitation caused by El Niño will increase due to the increased moisture supply. To be precise, the impact of climate change on the frequency and intensity of El Niño events is uncertain. According to the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC), there is little consensus on which scientific studies are appropriate to determine whether the observed changes in El Niño frequency and intensity over the past centuries are due to climate change or natural variability, and simulations using general circulation models reinforce the assumption that the frequency of El Niño and La Niña events is due to natural climate variability rather than anthropogenic climate change.

On a global scale, El Niño events primarily contribute to more fantastic average ground and ocean temperatures through teleconnections. With the 5 most favourable temperature anomalies compared to the 20th century average from January to April 2016, the temperatures observed in the first seven months of 2016 exceed the record heatwave of 2015. This temperature is a cumulative effect of

## 1 Global climate change situation

climate change and El Niño, which shows how difficult it is to separate the effects of climate variability events such as ENSO and climate change (Frey et al., 2016).

### ***La Niña***

La Niña means the little girl in Spanish. La Niña is sometimes also called El Viejo, Anti-El Niño or simply “a cold event” Strong trade winds characterize La Niña, and hot water and rainstorms push Indonesia into the western Pacific. It leads to warmer seawater in the Pacific Ocean, dry weather on the South American Pacific coast and many climate zones in northern Australia and Southeast Asia. La Niña mainly affects the climate in the USA by shifting cooler weather to the north-west and warm weather to the south-east. However, not every occurrence of La Niña affects weather in the US in the same way as El Niño (What are El Niño and La Niña, 2019). The circumstances for La Niña began in autumn 2017, with conditions entering a weak La Niña phase when sea surface temperature anomalies exceeded  $-0.5^{\circ}\text{C}$  on the Oceanic Niño Index (ONI). The current La Niña phase is expected to last into the winter, with favorable weather patterns expected to return in the summer. La Niña has a global impact that can affect prices in the agricultural sector.

At a regional level, concerns in the agricultural sector are less pronounced, as La Niña has the greatest impact outside the main growing season in winter. Winters that correlate with La Niña are sometimes colder than usual and associated with above-average rainfall, which can affect the shedding of seeds that need to overwinter and perennial crops (e.g. alfalfa, orchards). The overall impact of ice cover is complex. A blanket of snow can cover the plant, although it is more problematic to have open conditions with severe cold. Severe winter conditions can be detrimental to livestock producers through increased operating costs, potential pressure on animals, and problems with snow removal (see e.g. Rosenzweig & Hillel, 2008; Battey & Hatcher, 2013).

The cold would support the large amount of corn deposited on the surface. Limiting other pests (insects and plants) and diseases would be another benefit of the more relaxed than average conditions. Cold and rainy winters can have a sector-specific impact on the economy if snowfall is above average. The profound negative impacts of La Niña are rising heating costs, snow removal costs and transport

## 1.1 Overview of the factors leading to global climate change

challenges. Sectors that rely on cold weather are expecting a renewed increase in snowfall. These sectors included companies that offered winter activities, snow clearing, towing services and the sale of road salt. More volatile and snowy situations could also complicate winter conditions in the region. Similar to potential problems with animals, harsher winter conditions can be dangerous for animals but beneficial for others due to freezing temperatures. Full access to water is problematic in the Midwest due to the highly variable ground conditions. Early winter precipitation on non-frozen soils would be helpful, although snow on moist soils could exacerbate potential heavy rainfall in the spring. With a slightly above average chance of precipitation in the upper Midwest this winter, precipitation will be carefully monitored to increase the chances of flooding this spring (Kluck, 2017).

### ***Ocean currents***

The oceans are an essential component of the global climate. They make up around 71 percent of the planet's mass and absorb almost twice as much solar energy as the atmosphere or the surface. Weather patterns transfer large amounts of heat across the entire Earth, about as much as the air. However, the oceans are covered by land masses, so there are pathways for energy transfer through the air. Winds act vertically against the ocean surface and force the existing ocean currents. Weather patterns affect some parts of the world more than others. The presence of the Humboldt Current along the coast of Peru moves the coast and other places nearby (see e.g. Nowlin & Klinck, 1986; McPhaden et al., 1998). The Pacific phenomenon El Niño can influence climate conditions around the world. The Pacific Ocean is another area that is strongly influenced by ocean currents. If we contrast Europe and North America at the same altitude, the difference becomes immediately apparent.

Take a closer look at this example – some areas on the Norwegian coast have an average temperature of  $-2^{\circ}\text{C}$  in January and  $14^{\circ}\text{C}$  in July, while the Pacific coast of Alaska at the same latitude is much colder:  $-15^{\circ}\text{C}$  in January and only  $10^{\circ}\text{C}$  in July. The warming current along the Norwegian coast keeps a large part of the Greenland-Norwegian Sea ice-free even in winter. The rest of the Arctic Ocean, although much further south, is still frozen. The ocean currents change direction or slow down. Much of the air that escapes from the oceans is the most

## 1 Global climate change situation

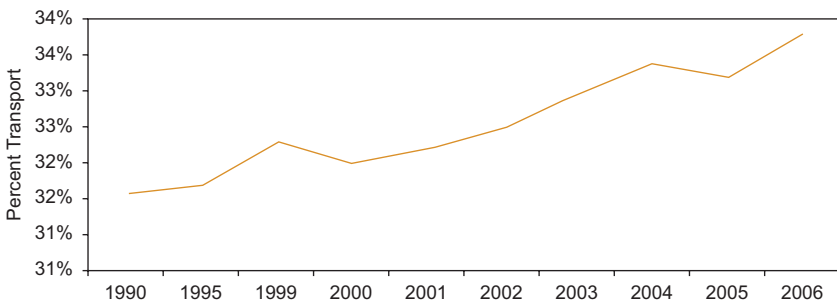
concentrated greenhouse gas on earth, water vapour. However, the water vapour often leads to cloud structures that shade the surface and have a cooling effect (Causes of climate change, 2019).

### 1.1.2 Anthropogenic causes

Since the pre-industrial era, anthropogenic greenhouse gas emissions have increased and are now more significant than ever, mainly due to financial and population growth. Greenhouse gas emissions have led to unexpected atmospheric levels of carbon dioxide, methane, and nitrous oxide (N<sub>2</sub>O) for at least the last 800,000 years. Their effects have been detected throughout the climate system, along with those of other anthropogenic factors. It is very likely that they are the main cause of the warming observed since the middle of the 20th century.

### *Transportation*

Transport accounts for around a third of total carbon emissions from fossil fuels, and this proportion is increasing, as shown in Figure 3. Road transport accounts for about 80 of emissions, of which about 75% are from private transport and 25% from freight transport and other uses of commercial vehicles. Aviation currently accounts for about 9% of fossil fuel emissions, but this share is increasing (Litman, 2012).



**Figure 3.** Transport carbon emissions.

Source: USDOE, 2008.

### ***Industrialization***

In the United Kingdom, the Industrial Revolution began around 1750 and spread throughout Western and Northern Europe due to the limited amount of arable land and the enormous effectiveness of mechanical systems. Since the Industrial Revolution, humans have had a significant impact on climate and environmental change through changes in agricultural and industrial practices and the emission of greenhouse gases into the atmosphere (Mgbemene et al., 2016). Since the Industrial Revolution, mankind has dramatically increased the pace of climate and environmental change by changing agricultural and industrial methods. The population growth that followed industrialization made matters worse. More arable land was needed, and new cities grew (urbanization), leading to colossal deforestation and environmental change. As the population grew, so did the number of people burning fossil fuels to meet their energy needs. Fossil fuels are responsible for about 98 percent of carbon dioxide emissions, 24 percent of methane gas emissions and 18 percent of  $N_2O$  emissions from cars, trucks, homes, businesses, and power plants. Nevertheless, a significant proportion of emissions can be attributed to increasing agriculture, deforestation, landfills, industrial production, and mining. The statement quoted by the World Resources Institute (WRI) notes the grim reality of the link between industrialization and climate change.

There is a large difference between developed/industrialised nations and poorer. Developing countries (DCS) in greenhouse gas emissions and the causes of these emissions. For example: to date, industrialised countries are responsible for about 80% of the carbon dioxide that accumulates in the atmosphere. Annually, more than 60% of global industrial carbon dioxide emissions originate in industrialised countries, which are home to only about 20 percent of the world's population of the world's population.

Much of the increase in emissions in DCS results from the basic human needs for the growing population, while emissions in industrialised countries contribute to the Industrialised countries contribute to the growth of a standard of living that is already far above that of the average person worldwide (Mgbemene, 2011).

### ***Deforestation***

Forests play many important roles for the environment. They combat climate change, provide habitat for many plant and animal species (some of which are endemic to forested areas), provide medicine and livelihoods for people around the world – these vital ecological powerhouses are irreplaceable, and the intrinsic values of trees are at risk. Forests cover 31% of the earth's surface, and the Amazon rainforest alone is home to thousands of plants and animals. Regardless of how healthy the forests are for the environment; they are being cut down at an alarming rate. Every year, 46–58 thousand square kilometers of forest are lost to deforestation. That's the equivalent of a staggering 48 forest football pitches disappearing every minute (Bennett, 2017).

One of the effects of deforestation is that the carbon that was originally in the forests is released into the atmosphere, either immediately as the trees burn, or more slowly as the unburnt organic matter diminishes. Only a tiny percentage of the biomass that was originally in a forest is held in houses or other long-lived structures. Most of the carbon is released into the atmosphere as carbon dioxide, but tiny amounts of methane and carbon monoxide may also be released during decomposition or combustion. Projections for the share of deforestation in carbon emissions vary but are often around 19% higher than emissions from the global transport industry. Forests have considerable potential to become even more significant sources of carbon emissions through deforestation and degradation. Deforestation is accelerating. Once half of the planet was covered by trees, today they cover only a quarter of the land surface, and the loss of trees is progressing at an alarming pace, especially in the tropics (Archana, 2013).

### ***Impact of livestock***

Livestock farming accounts for 14.5% of global annual anthropogenic greenhouse gas emissions. Livestock farming influences the climate through land use change, animal production, manure production, processing, and transport. The production of feed and manure emits CO<sub>2</sub>, N<sub>2</sub>O and methane (CH<sub>4</sub>) and thus has an impact on climate change. The production of animals increases CH<sub>4</sub> emissions. The production and transport of animal products and changes in land use led to

## 1.1 Overview of the factors leading to global climate change

increased CO<sub>2</sub> emissions (Rojas-Downing et al., 2017). In this respect, methane and N<sub>2</sub>O are the most important greenhouse gases from livestock farming. Methane is a gas that is mainly produced by enteric fermentation and the storage of manure and has a 28 times higher influence on global warming than carbon dioxide. N<sub>2</sub>O is a molecule with a global warming potential 265 times higher than carbon dioxide, originating from the storage of manure and the use of organic/inorganic fertilizers. An equivalent carbon dioxide is a conventional unit used to express global warming potential. In addition to greenhouse gas emissions from enteric fermentation and the storage of manure, feed production and the associated carbon dioxide and N<sub>2</sub>O emissions in the soil are another major source of greenhouse gas emissions in livestock farming. Carbon dioxide emissions arise from soil carbon dynamics (e.g. decomposition of plant residues, organic soil mineralization, land use change), synthetic fertilizers and pesticides, and fossil fuels from on-farm agricultural activities. When organic and inorganic fertilizers are applied to the soil, N<sub>2</sub>O emissions are released (Grossi et al., 2018).

### ***Factory farming***

The term factory farming refers to the way in which large quantities of food are produced in agriculture at a low price. This briefing is about the production of animal products on a large scale, including meat, eggs, and dairy products. Factory farming is a broad term that refers to certain industrial processes that differ from conventional, non-intensive animal production. In these circumstances, mobility is restricted, and animals are fed a high-calorie, grain-based diet, often supplemented with antibiotics and hormones to maximize weight gain and prevent infection (see e.g. Dornburg et al., 2006; Sand & Christiansen, 2013).

Environmental concerns can disrupt the agricultural distribution system in the short and long term, affecting production and prices. Both livestock and the crops needed to feed them are highly vulnerable to natural hazards and extreme weather events (which are likely to become more frequent due to climate change), which will affect economic efficiency at farm and company level. Risks in production, such as resource scarcity and climate change, are likely to have a more gradual but more significant financial impact in the medium to long term (see also Asadnabizadeh, 2020). Extreme weather events consistent with climate

## 1 Global climate change situation

change projections have already impacted intensive livestock production (Shared Action the movement for responsible investment, 2015).

### ***Consumerism and climate change***

Consumption is an essential component of human existence. The consumption of food and water enables the cells to convert man's energy to carry out all daily operations. Humans use wood and appliances for housing and human energy for heating and cooling to maintain a comfortable temperature in various environments. All human goods and services require energy, both for necessity and for leisure. Most of this energy is derived from fossil fuels in the world's current energy system, the burning of which produces carbon dioxide that triggers global climate change. Other greenhouse gases such as methane and  $N_2O$  are produced by the consumption of goods and services. (Chow, 2003).

While the role of consumption as a cause of climate change and other types of environmental degradation has often been politically downplayed, cross-national empirical data show the importance of consumption as a driver of greenhouse gas emissions. In response to a heated debate about the role of population in environmental degradation, Ehrlich and Holdren revised their definition of environmental degradation to include the number of people, the amount each individual spends (wealth), and the way people produce consumer goods and services. This led to the IPAT model, which states that the impact on the environment (I) is equal to the population (P) multiplied by the wealth per person (A) generated by the technology (T) (Princen, Conca & Maniates, 2002).

There are generally two types of dependent factors used in greenhouse gas emissions research. Production-based GHG emissions, as targeted under the KP, estimate emissions from all national operations, such as export production, that are consumed in other countries. Consumption-based measures aim to account for emissions from goods consumed within domestic land borders (excluding exports and imports). In addition, several studies have found that the impact of consumption on GHG emissions decreases slightly as wealth levels increase. However, in the most recent literature review, Rosa, and Dietz report that the evidence suggests that marginal GHG emissions with higher consumption rates (Bagliani et al., 2008).

### ***Fossil fuels***

Most air pollution is caused by the burning of fossil fuels (coal, diesel, petrol, oil, and natural gas) for electricity generation, heating, transport, and the economy. In 2011, fossil fuels accounted for 82% of the world's total main energy supply. In the US, oil, natural gas and coal account for 81% of current fuel consumption (World Energy Council, 2013). In 2015, for example, 33.2% of electricity in the US was generated from coal – about the same as natural gas (32.7%), but more than from nuclear (20%) or renewables (13%) (The National Academies presents, 2016).

Energy-related fossil fuel combustion in high- and middle-income countries and biomass burning in low-income countries are responsible for the majority of global air pollution. They cause 85% particulate pollution in the air and almost all sulphur dioxide (SO<sub>2</sub>) and nitrogen oxide emissions into the environment. Carbon, polycyclic aromatic hydrocarbons (PAHs), nitrogen and SO<sub>2</sub>, mercury and volatile ozone-forming chemicals are also emitted. All these factors are associated with a number of unfavorable effects on children's health. The burning of fossil fuels is also the main source of greenhouse gases and short-lived climate pollutants that contribute to climate change. Every year, human activities emit about 35 billion tons of carbon dioxide into the atmosphere, mainly through energy use. The annual greenhouse gas index, which is used by NOAA to monitor the warming effects of long-lived, climate-changing greenhouse gases, increased by 40% from 1990 to 2016, largely due to increased CO<sub>2</sub> concentrations (NETL, 2015).

### ***Aquatic ecosystem***

The composition of carbon dioxide and other greenhouse gases in the environment alters several characteristics of the Earth's climate, oceans, coasts and freshwater ecosystems, and impacts fisheries and aquaculture, air and sea surface temperatures, precipitation, sea level, ocean acidity, wind patterns and tropical cyclone intensity (see e.g. Roessig et al., 2004; Adama et al., 2019). Fishermen, fish farmers and coastal dwellers will feel the full impact as their livelihoods have become more precarious, the availability and quality of fish as food has changed and the risks to their health, safety and homes have increased. Many fishing-dependent

## 1 Global climate change situation

populations are already living in precarious and fragile situations due to a lack of social services and vital infrastructure. Climate change is changing the distribution and efficiency of aquatic and freshwater habitats, influencing biological processes, and changing food webs. The impacts on marine ecosystems, forestry, aquaculture, and the people who depend on them are unknown (Cochrane et al., 2009).

### ***Aerosols***

Aerosols are tiny particles in the atmosphere that can be created in different ways when we burn different types of fossil fuels, coal, oil, wood, and biofuels. Scientists use the term “aerosol” to mean “atmospheric particles”. Aerosol particles have a strong impact on the climate and the environment. The IPCC assessment report shows that aerosols, like greenhouse gases, are an important factor in climate change. Direct and indirect effects can describe the impact of aerosol on climate through a number of complicated methods that are still not well recognised (Andreae et al., 2005).

The direct climatic effect of aerosol particles is shown by the fact that they absorb and disperse the solar and long-wave radiation emitted by the earth’s surface and thus change the radiation budget of the earth’s atmosphere. Since aerosol consists of Cloud Condensation Nuclei (CCN), variations in aerosol concentration can affect macro and micro aspects of clouds, such as cloud longevity and optical properties. This effect can have a detrimental impact on radiation, reflecting the indirect climate effects of aerosols. Aerosols can influence cloud formation and radiative forcing, which affects the climate and the hydrological cycle of the Earth system; they can have a significant impact on the human environment. Due to the diverse spatial and temporal distribution of global particles and the different characteristics of the radiative patterns for the various components, estimates of the direct radiative effect of aerosols differ considerably from estimates of the warming effect of greenhouse gases. In recent centuries, atmospheric aerosols may have partially cancelled out the greenhouse effect resulting from the increase in greenhouse gases. Therefore, a cleaner atmosphere could lead to higher global temperatures in the future and exacerbate global warming and the climate situation (Ren-Jian, Kin-Fai & Zhen-Xing, 2012).

### **1.1.3 The science of climate change: What it is scientific evidence**

Climate change is recognised worldwide as an ever-increasing threat to our planet. The existence and extent of climate change is an issue of great concern to climate scientists and people, groups, and organizations. These include the United Nations Organisation, the World Meteorological Organisation (WMO) and the Intergovernmental Panel on Climate Change (IPCC), whose long-term strategic decisions are critically impacted by climate change, projected climate change and future action to mitigate climate change (also see Asadnabizadeh, 2022). Despite some dubious opinions and findings, many researchers believe that climate change is one of the most important environmental issues in the world today. Researchers agree that climate change is caused by human activities such as the burning of fossil fuels, industrial pollution, deforestation, and land use change. Climate change has wider impacts on the Earth and global ecosystems, including higher air and water temperatures, changes in precipitation patterns, etc.

#### ***United Nations Environment Program***

The United Nations Environment Program (UNEP) is the leading environmental organization of the United Nations system. UNEP uses its expertise to improve environmental standards and practices while contributing to environmental commitments at national, regional, and international levels. UNEP acts as a catalyst, advocate, educator, and promoter for the innovative use of the global environment and sustainable development. To achieve this, UN Environment works with a wide range of partners, including UN agencies, international organizations, national governments, non-governmental organizations, the private sector, and civil society (About the United Nations Environment Program, 2014).

As part of its evolution towards results-based leadership and based on perceptions of environment and climate, UNEP has restructured its work program into six strategic areas: Climate Change Engagement. UNEP has over twenty years of experience with climate change. Together with the WMO, UNEP contributed to the establishment of the IPCC in the 1980s and carried out scientific

## 1 Global climate change situation

assessments of climate change in preparation for the UN Conference on Environment and Development (UNCED) in 1992. UNEP also supported the UNFCCC negotiations, which came into force in 1994. UNEP's work focused on attempts to reduce greenhouse gas emissions, primarily by promoting renewable energy and improving energy efficiency, as well as encouraging the development of a carbon market. Although not exclusively motivated by climate issues, many UNEP operations have benefited from mitigation or adaptation (see e.g. Seki & Christ, 1995; Haas, 2000). UNEP is in the process of strengthening its support to governments, the private sector and society to help them reduce greenhouse gas emissions and prepare for the impacts of climate change. UNEP's perception of climate change leading to the strategy is the result of a comprehensive process involving internal organization specialists and UNEP staff, analysing UNEP's policy mandate, current portfolio of climate change actions and different regions. The Climate Change Strategy provides the basis for reshaping the organization's commitment to climate change and creating a results-oriented work program. (Radka et al., 2010).

### ***World Meteorological Organization***

The WMO is a 191-member intergovernmental organization (IGO). It was founded in 1873 by the International Meteorological Organisation. The WMO was founded in 1950 and became a specialized agency of the United Nations in 1951. Since its inception, the WMO has played a unique role in the safety and well-being of mankind. Since its inception, the WMO has enabled the international community to improve our understanding of weather, climate, and water. The WMO promotes cooperation in the development of meteorological, climatic, hydrological, and geophysical observation networks. In addition, the WMO takes care of the exchange, handling and standardization of related information and supports technology transfer, training, and research (Guide to Meteorological Instruments and Methods of Observation, 2008). The WMO provides a unique mechanism for the rapid exchange of data, news and products based on its perception.

It makes a significant contribution to sustainable development by reducing the loss of lives and assets from weather-, climate- and water-related natural hazards and protecting the environment and global climate for present and future generations. Through its members, the WMO provides forecasts and early

## 1.1 Overview of the factors leading to global climate change

warnings to nations, economic sectors, and individuals to prevent and mitigate disasters, save lives, and reduce property and environmental damage through better risk management. Global attention is drawn to ozone depletion, weather variability and change and their impacts, dwindling water resources, and air and water quality through the WMO's knowledge (see e.g. Jha & Stanton-Geddes, 2013; Shreve & Kelman, 2014).

The WMO monitors and forecasts the transport of chemicals and oil spills, forest fires, volcanic ash, haze, and nuclear isotopes. It assists in the formulation of global and regional policies, conventions, and the implementation of corresponding action plans. In addition, WMO research programs coordinate and integrate member studies to fully exploit global findings in weather and climate assessment and to produce computer models, which are the main basis for improving the accuracy and coverage of weather forecasts. Air quality services are an essential element of the programs supported by the WMO. Changes in air structure have an impact on human health and the Earth's climate (Zambrano-Barragán, 2010).

### ***Intergovernmental Panel on Climate Change***

The origins of the IPCC can be traced back to a series of scientific meetings on climate change and global environmental issues that took place at different times and in different places. The most important discussion was the first World Climate Conference in Geneva, organized by the WMO from 12 to 23 February 1979 in cooperation with UNESCO, FAO, WHO, UNEP, ICSU and other scientific partners. The World Climate Program (WCP), one of the most important climate research institutions within the WMO, was founded during this summit and was the most important breakthrough in promoting awareness of climate change. The WCP is the lead organization and coordinator to provide an authoritative global scientific voice on climate change and to help nations use climate data and expertise for sustainable development and to implement Agenda 21 (Weart, 2008). UNEP, WMO and ICSU coordinated several meetings and workshops through the WCP between 1980 and 1985.

These conferences concluded that climate change was a serious problem caused by human activities and they agreed to hold another global summit in Villach, Austria, in 1985. The World Meteorological Congress in Geneva in May 1987

## 1 Global climate change situation

recognised the results of the Villach conference. Subsequently, the Executive Council of the WMO authorized the Secretary-General to discuss the issue with the Executive Director of the UNEP and to form the Intergovernmental Climate Change Panel (IPCC) (see e.g. Schipper, 2006; Zillman, 2007). Experts debated global climate change at national and global forums, but until 1988 there were no IGOs able to collaborate with study centers worldwide and publish a global report on climate change. To fill this gap, United Nations General Assembly Resolution 43/53 of 6 December 1988, entitled “Protection of the global climate for present and future generations of mankind”, states in Resolution No. (5). To support the joint action of the WMO and UNEP to develop an IPCC to provide internationally coordinated scientific assessments of climate change’s magnitude, timing, and potential environmental and socio-economic impacts of climate change. And realistic response strategies and thanks the efforts of the WMO and UNEP.

The main task of the IPCC was to provide a comprehensive assessment and proposals on the state of scientific knowledge on climate change and its perception, on the social and economic impacts of climate change, on possible response strategies and on aspects that should be included in a viable future international climate Agreement. The IPCC’s role is to analyze scientific, technological, and socio-economic data to better understand the scientific basis of human-induced climate change, its future impacts and adaptation options, and options to mitigate climate change in a large, objective, open and transparent framework. Expert and government review is an essential element of the IPCC process. The Panel does not conduct new research, monitor climate-related data, or make policy recommendations. It is open to all member countries of the WMO and UNEP (Medani, 2018).

### ***United Nations Framework Convention on Climate Change***

The United Nations Framework Convention on Climate Change (UNFCCC), signed at the Environment and Development Conference of the United Nations in 1992, is the foundational climate agreement that has provided the platform for most subsequent international climate agreements. The UNFCCC came into force on March 21, 1994, and 197 nations ratified it. The UNFCCC is designing structure and content as a framework convention, such as Vienna’s Ozone Layer

## 1.1 Overview of the factors leading to global climate change

Protection Convention (see e.g. Scott, 2014). Rather than setting direct limits on ozone-depleting chemicals, the Vienna Convention created a system for collecting data and negotiating a future treaty with specific emission limits. Similarly, the UNFCCC has few specific criteria, including no enforceable requirements for Parties to reduce greenhouse gas emissions. The perception of the UNFCCC was primarily intended as a means to initiate and support a process for future and more comprehensive treaties to combat climate change (Kuh, 2018).

Parties to the Convention endeavor to meet regularly to review developments in the implementation of their treaty obligations and to consider further action to address the threat of climate change. They have also negotiated a Protocol to the Convention. The KP was signed in Kyoto, Japan, in December 1997, but it took many years of negotiations between 1998 and 2004 to finalize the “small print” of the Agreement. The Protocol commits the industrialised countries and former Soviet bloc states (collectively known as “Annex I Parties”) to reduce their greenhouse gas emissions by an average of about 5 percent from 1990 levels in the period 2008–2012.

On the other hand, the Protocol will only enter into force once 55 Parties have agreed to the UNFCCC, as agreed in Kyoto. At the frequent COP meetings, UNFCCC stakeholders continue to make decisions, analyze progress, and determine next steps. The COP, the highest decision-making body of the convention, meets on average once a year. Various institutions and organizations support the COP and the vision and goals of the Convention. The COP consists of a Permanent Secretariat with various tasks set out in Article 8 of the UNFCCC. The Convention’s understanding and perception of climate change is supported by several expert organizations and other established institutions. These include the Consultative Group of Experts (CGE) on National Communications from “non-Annex I” Parties (a group composed mainly of DCS). (A brief introduction to the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, 2009).

### **1.1.4. The political background to global climate change: 6 years before the Paris Agreement**

The Paris Agreement is the culmination of the various phases of the UN climate regime. One of the stages was the negotiation, implementation, and entry into

## 1 Global climate change situation

force of the UNFCCC from 1990–1995. Another was the decade from the start of talks on the KP to its entry into force from 1995–2004. The negotiations that finally led to Paris began in 2005, when attention turned to how to proceed after 2012, when the first commitment period of the KP had ended. The developing countries pushed for the continuation of the Kyoto system. But the target groups of the Kyoto Protocol were not prepared to do so because they did not want to commit themselves to targets, while the United States, China and other major economies did not want to do so. Instead, they favored a more global strategy. The final compromise was to hold two parallel negotiations: one to consider a KP amendment to create a second commitment period, and the other to promote “long-term collective action” under the UNFCCC. In 2005, the KP parties initiated the first path; two years later, the UNFCCC parties introduced the second path with the Bali Action Plan (BAP). At the Copenhagen Conference in 2009, both pathways were to finalize their work.

### ***The road of Copenhagen negotiations 2009***

The UN Climate Change Conference in Copenhagen was a historic event in many respects. It was the culmination of two years of intensive negotiations under the UN Framework Convention on Climate Change (UNFCCC) and the Bali Roadmap, which was agreed at the 13th Conference of the Parties (COP13) in December 2007. Millions of people around the world expected Copenhagen to be a turning point in the fight against climate change. The high-level meeting was attended by 115 heads of state and government and was widely heralded as one of the largest high-level meetings in New York. More than 40,000 people applied for accreditation for the conference, far exceeding the 15,000 seats of the conference venue (see e.g. Dimitrov, 2010; Scotte & Becken, 2010).

The Copenhagen Accord was immediately confronted with massive criticism of its content. However, countries argued that the treaty contained two °C targets and many other important provisions. The measures taken by industrialised countries to mitigate climate change are generally regarded as – obviously weak and – a step backwards compared to the KP. The industrialised countries are not committed to legally binding emission reductions. Similarly, there is no quantification of

## 1.1 Overview of the factors leading to global climate change

a global long-term reduction target or a specific peak date for global emissions. Instead, the agreement points to a “bottom-up” strategy in which advanced and developing countries submit their pledges to the agreement on data grounds, a technique favoured by the US in particular (International Institute for Sustainable Development, 2009).

Judging by the high rhetoric heard before the Copenhagen meeting urging parties to follow the KP to finalize negotiations on a new international climate change agreement, the results are seen as a failure. While the Copenhagen Accord was a necessary consequence of the talks, it did not impose any meaningful and verifiable commitments, such as precise carbon targets or financial payments. However, this fact should not be allowed to undermine the significant progress made in at least three areas: Finance, deforestation, and adaptation. For the first time, industrialised countries (DCs) commit to providing “new and additional, consistent and sufficient financing” of USD 30 billion for the period 2010–12, with a “balanced share between adaptation and mitigation” and prioritising AF for the most vulnerable developing countries.

- i. It is explicitly recognised that action must be taken against deforestation and forest degradation and that a mechanism, i.e., an institution, must be created to mobilize the necessary resources.
- ii. adaptation action and cooperation have been categorized as ‘urgent’, particularly in the least developed countries, small island developing states and Africa, with developing countries committing to providing financial resources (Egenhofer & Georgiev, 2009).
- iii. The agreement discusses all the key elements of the BAP: a long-term objective; mitigation; technology; forests; and assessment, monitoring, and verification.

### I. Long-term goal

The agreement stipulates that the average global temperature rise should be below 2 degrees Celsius. It also calls for a review of the agreement by 2015, which includes the long-term goal of a temperature rise of 1.5 degrees Celsius.

## 1 Global climate change situation

### II. Mitigation

Under the agreement, mitigation measures are adopted by Annex I countries (industrialised countries), which commit to adopting economy-wide emission targets for 2020. Non-Annex I countries (developing countries). (Least developed countries and small island states can take voluntary and supporting action). By 31 January 2010, developed countries have set targets and a preliminary set of measures through DCS, including two footnotes. Although not specified in the agreement, it is generally expected that the targets and measures submitted will be compatible with those requested by governments in the run-up to Copenhagen. Additional DCS items can be added to the Annex on an ongoing basis. Activities for which developing countries request support are registered in a database. Those that receive support are then listed in the annex to the DCS.

### III. Measurement, Reporting, and Verification (MRV)

The emissions targets of Annex I countries will be MRV “in accordance with the current and other requirements of the COP and its allocation of financial resources to developing countries”. These principles are intended to ensure sound, reliable and open accounting of targets and finance. Developing countries’ actions are aligned with their local MRV, with results published in biennial national communications. The published data is subject to external assessment and review according to clearly formulated criteria to ensure compliance with national sovereignty. In line with the COP recommendations, the actions of developing countries receiving international support will be subject to international MRV (see e.g. Bodansky, 2010; Niederberger & Kimble, 2011).

### IV. Forestry

The agreement announces the immediate creation of a method to enable the use of financial resources from industrialised countries to support efforts to reduce emissions from deforestation and forest clearing and to increase the size of forest sinks.

### V. Technology

The treaty creates an innovation framework for both adaptation and mitigation to facilitate technology development and transition.

## 1.1 Overview of the factors leading to global climate change

Link to UNFCCC and Kyoto – Two simultaneous decisions under the Convention and the Protocol (see below) strengthen the two formal negotiating mechanisms before the agreement was adopted in Copenhagen. However, these decisions do not refer to the Agreement. As a result, no formal reference has been made, although some Parties are likely to scrutinise these negotiations to establish and fully operationalise the Agreement. In addition, two years ago in Bali, the COP established the Ad Hoc Working Group on Long-Term Collective Action (AWG-LCA) to discuss the “agreed outcome” to be adopted in Copenhagen. A number of decisions addressing the critical elements of the BAP, and one important decision linking them, have not been finalized. While the parties have made significant progress in certain regions, some draft documents remain largely unfinished.

The COP approved a proposal to forward the text and extend the authority of the AWG-LCA to “submit the results of its work for adoption” at COP16 next year. A draft decision emerged when President Obama revealed that the provisional agreement defined the desired outcome for next year as “a legally binding instrument.” However, the term did not appear in the text presented at the final plenary session. Some nations have spoken in favor of reopening, such as the United States, but others have rejected it, including India and Saudi Arabia (COP15 Copenhagen, 2019).

### ***The Cancun climate summit***

The Cancún summit began with the conviction that it would not be possible to have a binding treaty with significantly reduced expectations compared to the earlier Copenhagen conference. If the outcome of the meeting would define the circumstances, it describes it as reasonably satisfactory. The Cancun agreement, which was reached almost unanimously (only Bolivia voted against), represents significant progress. In adapting to climate change, reducing deforestation and introducing economic aid for underdeveloped countries. The prominent positions were as follows:

- i. The BASIC (Brazil, South Africa, India, and China) was blocked, with different nuances but with a unified stance, as its support for the negotiation process depended on the treaties.

## 1 Global climate change situation

- ii. The bloc of nations including Japan, the Russian Federation, Australia, and Canada was not prepared to support the second period of post-Kyoto emission reduction commitments unless the US agreed to a possible deal.
- iii. The bloc of Bolivia, Venezuela, Nicaragua, Ecuador, and Cuba ALBA (Bolivarian Alliances for the Americas) was critical of the whole process. It blocked the option of renewing the only binding agreement on climate change mitigation at the summit.
- iv. Developing countries taking a clear stance by not accepting reduction commitments until they have set their own for the post-Kyoto period.
- v. Some particular positions, such as China's, have raised the possibility that the Copenhagen Summit's voluntary targets could be binding in order to move the negotiations forward (BC3 Public Policy Briefings, 2011).

In particular, the agreements reached on 11 December in Cancun, Mexico, at the 2010 UN Climate Change Conference were important steps. Forward in reducing greenhouse gas emissions and helping developing countries protect themselves from the effects of climate change and create a sustainable future.

The primary goals of the Cancun agreements are:

- a) Set clear targets and a timetable to reduce man-made greenhouse gas emissions to keep the increase in global average temperature below two degrees.
- b) Encourage all nations to participate in reducing these emissions, in accordance with the respective obligations and capacities of each state.
- c) Ensure international transparency of countries' behaviour and guarantee a timely review of global progress towards the 2C target.
- d) Mobilise the development and transfer of clean technologies to scale up climate change initiatives, get them to the right place at the right time and have the greatest impact on both adaptation and mitigation.
- e) Mobilise and make available more resources in the short and long term so that developing countries can act more effectively.
- f) Help the world's most vulnerable people adapt to the inevitable impacts of climate change through a coordinated adaptation strategy.

## 1.1 Overview of the factors leading to global climate change

- g) Building global capacity to meet the global challenge. Especially in developing countries (Intro to Cancun Agreements, 2019).

### ***Durban 2011***

The talks have been going on for several years: the Ad Hoc Working Group on KP (AWG-KP), which was set up in 2005 to negotiate a second round of Kyoto emission targets for development co-operation. The Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA) was established in 2007 to achieve a more comprehensive ‘agreed outcome that includes non-Kyoto countries and industrialised nations. Many expected that the two paths would lead to a binding agreement at the Copenhagen Summit in 2009, attended by world leaders. Instead, the Copenhagen Accord was reached, a political agreement that was not legally recognised by the COP. With the Cancún Agreements the following year, the key elements of the Copenhagen Accord were officially integrated into the UNFCCC system, including the nations’ mitigation pledges, and the first steps were taken to enforce them. Cancún also sidestepped broader legal issues, including the fate of Kyoto. The AWG-KP and the AWG-LCA are tasked with continuing their work in Durban (Centre for Climate and Energy Solutions, 2011). The UN Climate Change Conference opened on Monday morning, 28 November 2011, in Durban, South Africa. After a welcoming ceremony attended by South African President Jacob Zuma and other high-level representatives, delegates gathered for the opening plenary sessions of the COP, CMP, SBI and SBSTA.

Christiana Figueres, UNFCCC Executive Secretary, emphasized the need for two key actions in Durban: the completion of the COP16 tasks and the resolution of the major political issues raised in Cancun. She emphasized the launch of the Adaptation Committee, the operationalization of the Technology Mechanism in 2012, the approval of the Green Climate Fund (GCF) and the clarification of fast-start financing. More than 12,480 people attended the conference, including more than 5,400 government representatives, 5,800 representatives from UN agencies and organizations, intergovernmental and civil society groups and more than 1,200 journalists. During the Group of 77 and China (G-77/China), Argentina favored a second commitment period under the KP as part of the balanced

## 1 Global climate change situation

and complete outcome of Durban and stated that countries should ultimately implement the Cancun Agreements. Australia favored the transition to a structure for climate change in the Umbrella Group that includes all major economies and considers the respective capacities of nations. According to the European Union (EU), Durban should address the ambition level gap, a single global accounting system and a mechanism for building a new comprehensive, legally binding global framework by 2015 (see e.g. Kulovesi, 2012; Moncel, 2012).

Switzerland outlined three key actions for the Environmental Integrity Group (EIG) in Durban: agreeing on critical components of the post-2012 international regime, initiating a process to further improve the mid-term system, and agreeing on key elements of a shared vision, including a long-term global emissions reduction target and a date for the global emissions peak. In short, all countries in Durban are committed to a detailed strategy that, over time, moves towards the ultimate goal of the Climate Convention: stabilizing greenhouse gas concentrations in the atmosphere at a point that prevents our dangerous interference with the climate system while preserving the right to sustainable development (Summary of the Durban Climate Conference, 28 November–11 December 2011, 2011).

The outcome of Durban was an effective political commitment by Europe and many other industrialised nations (together responsible for around 15% of global emissions) to legislate for a second commitment period at next year's assembly. The committees worked out solutions to the technical obstacles to translating the commitments made in Copenhagen and Cancún into enforceable emissions targets for the EU and countries.

The decisions:

- I. Explain the “intention” of certain groups to convert their commitments into validated emission reduction and mitigation targets in an amendment to the CMP 8 Protocol.
- II. Review the standards for accounting of emissions and removals for land use, land use change and forestry (LULUCF).
- III. The authorisation of the second dedication era of emissions trading and project-based systems (Clean Development Mechanism-CDM and Joint Implementation) as part of the second dedication era.

## 1.1 Overview of the factors leading to global climate change

IV. Add nitrogen trifluoride (NF<sub>3</sub>), a fuel used in the production of silicon wafers and other materials, to the gas basket of the protocol.

The formal introduction of the GCF in favors of mitigation and adaptation in developing countries was an important outcome in Durban. However, the decision does not specify when developing countries can start contributing to the project. The development will be entrusted to a 40-member transitional committee, which has worked out a governance mechanism but was unable to reach full agreement, mainly due to the concerns of the USA. The COP authorized the governance mechanism with a cover decision that clarifies important issues. In Cancún, countries agreed that the GCF will operate independently under the “oversight” of the COP, not under the specific “power” of the legal framework provides for: a 24-member board made up of equal numbers of developed and developing countries; a “fully independent” secretariat; eligible governments can receive donations directly, not through a multilateral agency such as the United Nations Environment Program. Environment Program: and a “facility” to support private sector activities.

Important issues adopted in Durban include the Interim Secretariat (to be run jointly by the UNFCCC and the Global Environment Facility (GEF)) and the methodology for categorizing a permanent host country (to be appointed by the Executive Board and supported by the COP). The regulatory instrument states that the program must “receive” investment from developed countries and “may also” receive funding from a “variety of other sources.” The US wanted to open the program specifically to investment from developing countries, an issue implicitly raised by the wording, which echoes South Korea’s proposal for a start-up fund. The COP on other financial matters:

- i. COP An Executive Board has been established to analyse the financial flows related to climate change and to provide the COP with direction and cooperation between the various UNFCCC funds.
- ii. A work programme is launched to examine possible long-term financing options, which the US had rejected on the grounds that the UNFCCC was not the right forum.

## 1 Global climate change situation

Many other measures to enforce the Cancún Agreements adopted by the parties, such as:

- a) Decisions on the composition and activities of a 16-member Adaptation Committee, which will serve as a “national advisory institution” to the Conference of the Parties “on adaptation issues.
- b) The decisions were aimed at the selection and operation of a host country for a new Climate Technology Centre and network in 2012.
- c) Ongoing workshops to explain the 2020 emissions targets of industrialised countries and to “further assess the range of mitigation actions” taken by DCS.
- d) Establish a web-based database where DCS can indicate planned action steps for which assistance is needed and provide DC with information on appropriate support.
- e) A decision to develop “effective market-based strategies” to support DCS actions to minimise emissions from deforestation and land degradation.
- f) A judgment under the Treaty to create a new market-based strategy to help developed nations meet their emission objectives.

Groups were unable to make progress on some other issues and postponed them to the year, which is as follows:

- A target for the reduction of greenhouse gas emissions by 2050 and a global emissions limit.
- Continuing to define the context and methods of a study on the 2-degree target in 2013–15 and the evolution towards this target (The Centre for Climate and Energy Solutions, 2011).

### ***Doha climate change conference 2012***

The United Nations Climate Change Conference in Doha, Qatar, took place from 26 November to 8 December 2012. It comprised the 18th COP18 of the UNFCCC and the 8th COP of the KP (CMP 8) Assembly. Five subsidiary bodies also met: the Subsidiary Implementing Body (SBI), the Subsidiary Scientific and Technological Advisory Body (SBSTA), the Ad Hoc Working Group on Annex I of the KP (AWG-KP), the AWG-LCA under the Convention (AWG-LCA) and the Ad

## 1.1 Overview of the factors leading to global climate change

Hoc Working Group on the Durban Platform for Enhanced Action (ADP). The meeting attracted around 9,000 participants, including 4,356 officials, 3,956 representatives of UN bodies and agencies, IGOs and civil society organisations, and 683 members of the press – the first time the UN climate change negotiations have taken place in the Middle East (For more on the politics of climate change in the Middle East and North Africa, see also Asadnabizadeh, 2022; Kyungmee, and Garcia, 2023). The Doha negotiations focussed on ensuring that the agreements reached in previous meetings are implemented by the parties. The main objectives of the Doha negotiations were to continue the second commitment period of the KP and the work of the AWG-KP, finalise the work of the AWG-LCA and advance the ADP negotiations (see e.g. Campbell, 2013; Lal Pandey, 2014).

The key issues were how to close the gap between emission mitigation commitments and what is needed to achieve the 20C target, given the low level of ambition that advanced nations have articulated so far, and how to ensure adequate finance – securing economic flows until 2020 after the expiry of fast-track finance in 2012 and the long-term finance target for 2020. In its resolution (FCCC/CP/2012/L.16), the COP agrees to extend the work program on long-term finance by one year. The COP allows the Chair of the COP to appoint two co-chairs for the work programme from a developing country and an established State Party. It also intends to continue the Convention's current procedures for assessing and updating the financial capacity needs of developing countries, including the identification of alternatives for the mobilisation of these instruments and their adequacy, consistency, stability, and availability (Earth Negotiations Bulletin, 2012).

The “Doha Climate Gateway” was the result of two weeks of complex negotiations, the elements of which were as follows:

- i. Restrictions on which countries can use market mechanisms under the KP for the period 2013–2020. Only countries that have signed the KP2 can issue and use CDM and JI credits (market mechanisms under the KP) and move these units internationally.
- ii. We use any surplus of Assigned Amount Units (AAUs) – units allocated to all DCs, including the Russian Federation and Ukraine, under the first commitment period of the KP. A massive surplus – will be minimal in the

## 1 Global climate change situation

2013–2020 period for national enforcement reasons and will disappear in the post-2020 period.

- iii. Doha, no final decision was taken on how to channel and spend the billions of dollars for initiatives to reduce carbon emissions through Reducing Emissions from Deforestation and Forest Degradation (REDD).
- iv. By the end of 2013, new market mechanisms (NMMs) will be developed under the UNFCCC that can be used for commitments under all three processes mentioned above, such as sector coupling and trade, REDD+. At the same time, countries will establish a system to recognise new market tactics developed in the United States for global compliance. This system is intended to create additional incentives for countries such as China, Korea, Colombia, and Mexico to introduce emissions trading systems in various models. The role of the UNFCCC in recognising national organisations and their entities under global commitments was intentionally left unclear in the text. An important assessment of the CDM will take place during 2013, including the implementation of the new global climate change architecture.
- v. The KP text also provides an assessment of the level of commitment to DC in reducing targets in 2014. This text is difficult to reconcile with the simultaneous debate on targets for all nations that will take place in 2015 to reach agreement under the ADP.
- vi. The debate on the GCF (FCCC/CP/2012/L.17) was in favour of its location in the Republic of Korea. It also supported the Board's work programme, which envisages the development of the Private Sector Facility in 2013, the mobilisation of resources and the establishment of an independent secretariat.

In its Executive Committee decision (FCCC/CP/2012/L.16), the COP:

Countries consider welcoming the operationalisation and development of the Central Committee.

Endorses the Standing Committee Support Programme for 2013–2015.

Welcomes the work of the Standing Committee Forum and calls on the Standing Committee to promote the inclusion of the personal, economic, and academic sectors in the Forum.

## 1.1 Overview of the factors leading to global climate change

Welcomes the new structure and operation of the Standing Committee.

Establishes that the Chair and Vice-Chair of the Standing Committee will serve as co-chairs of the Forum.

Standing Committee from its first meeting in 2013.

Decides to re-designate the Committee as the Standing Budget Committee.

Calls on the Committee to seek ways to strengthen techniques to focus on climate finance when preparing the first biennial assessment and analysis of financial flows (Marcu, 2012).

### ***United Nations framework convention on climate change (COP19)***

The Warsaw Conference on Climate Change took place in Poland from 11 to 23 November 2013. This conference comprised the 19th COP19 of the UNFCCC and the 9th COP of the KP (CMP 9). The 39th meeting of the Subsidiary Body for Scientific and Technological Advice (SBSTA 39) and the Subsidiary Body for Implementation (SBI 39) as well as the third meeting of the Ad Hoc Working Group of the Durban Platform for Enhanced Action (ADP 2) took place during the summit. The conference was attended by more than 8,300 people, including 4,022 officials, 3,695 representatives of UN agencies and institutions, intergovernmental and civil society organizations and 658 members of the press.

In Warsaw, negotiations focused on the implementation of treaties concluded at previous conferences, including the promotion of the work of the ad hoc working group ADP (International Institute for Sustainable Development, 2013). Many saw COP19 as a warm-up event for the big conference in Paris in 2015, where both sides will have to agree on new rounds of responsibilities for the third Kyoto era, which begins in 2020. This era implied that the Warsaw conference did not set very high expectations for the meetings in the past – especially not for Bali or Copenhagen. If anything, the differences between the developing countries and the industrialised nations were even greater. Negotiations between the ‘sides’ must be protracted and arduous, often lasting into the early hours of the morning. The key debates centred on the text with which the nations were to submit their next round of targets by the planned 2015 deadline (Hampton, 2014).

## 1 Global climate change situation

Here are some results outlined in four main fields of negotiation:

### i. Financial Contributions

Financial and monetary contributions were an important part of the recent negotiations. Developing countries are calling for economic contributions to current financing systems before discussing post-2020 emission reduction measures. In Warsaw, there were several fragmented pledges for fresh money. Under a major new funding initiative totalling \$280 million, the US pledged \$25 million to slow desertification and limit its impact on global carbon emissions. Countries also pledged \$100 million to supplement the AF, which was established in 2008 to help poorer countries adapt to the impacts of climate change. New aid pledges for the AF were made primarily by European countries: Norway pledged 2.5 million dollars, Sweden 30.2 million dollars, Belgium 1.6 million dollars and Germany 40.7 million dollars (or 30 million euros) (see e.g. Bracking, 2014; Fridahl & Linnér, 2015; Cui & Gui, 2015).

### ii. Loss and Damage

The new “Warsaw International Loss and Damage (L&D) Mechanism Associated with Climate Change Impacts” promises no liability for damages in developing countries caused by the effects of climate change, a red line for the United States and other industrialised countries. The mechanism places the issue under an adaptation structure for at least three years, with a built-in review for 2016. This outcome reflects a hard-won compromise between the US, Nicaragua, the Bahamas, and Fiji and was considered a satisfactory provisional outcome by both sides.

### iii. REDD+

The negotiators achieved several objectives at the Cancun conference in 2010 and agreed on important texts on scientific and technical regulations, financing, and a system of national cooperation. Additions to the text on technical issues included decisions on the implementation of environmental and human rights protection in REDD+ initiatives, laying the foundation for a system of tracking, reporting and verification. The reduction of carbon emissions from standing trees; the establishment of national forest monitoring systems; the establishment of baseline

## 1.1 Overview of the factors leading to global climate change

or reference values to guide a nation in reducing deforestation. During negotiations, the team also decided on the REDD+ financing document, including a provision that states must provide the latest evidence that conservation measures are being met in order to receive compensation (Hultman & Langley, 2013).

Ironically, in some cases, settlements seemed to be made so that members could proclaim improvement. However, the prominent non-governmental organisation (NGO) has staged a ‘walkout’ in recent days, arguing that developing countries are too obstructive. Justin Lee, ambassador for climate and career officer at the Department of Foreign Affairs, led the Australian negotiating team. The Australian government’s decision not to send a minister to the talks has led to a widespread misconception that Australia has abandoned climate change initiatives. Furthermore, the Abbott government has reaffirmed that our national target is 5 percent below the 2000 emissions rate and that it will use the \$1 trillion ‘Direct Action’ plan to ensure this target is met (Hampton, 2014).

### ***COP20***

The Lima Conference on Climate Change took place from 1 to 14 December 2014 in Lima, Peru. It comprised the 20th session (COP20) of the UNFCCC and the 10th session of the Conference of the Parties to the KP (CMP 10) (see e.g. Shockley & Boran, 2015; Tschakert, 2015). Three subsidiary bodies (SBs) also met: the 41st sessions of SBSTA 41 and SBI 41 as well as the 7th part of the second session of the ADP Ad Hoc Working Group (ADP 2-7). More than 11,000 people took part in the climate conference in Lima, including around 6,300 officials, 4,000 representatives of UN agencies and organizations, IGOs and civil society organizations as well as 900 media representatives. The negotiations in Lima focused on the ADP outcomes needed to reach a deal at COP21 in Paris in 2015, such as preparing the data and system needed to submit the NDCs as early as possible in 2015 and making progress on the elements of a draft negotiating text. As for the protracted discussions on a draft decision to advance the Durban Framework for Enhanced Action, COP20 adopted the ‘Lima Call for Climate Action,’

## 1 Global climate change situation

which launches the negotiations for a 2015 agreement next year, the process for submission and review of INDCs and the enhancement of ambition before 2020 (Earth Negotiations Bulletin, 2014).

Five main problems of the Lima Call for Climate Action, worth pursuing during the 2015 Paris Road:

- a) For the first time, an agreement was reached in which all nations, if they are willing to do so, set their targets and submit their CO<sub>2</sub> emissions data by March 2015 (NDC).
- b) Common but differentiated responsibilities (CBDR) was a contentious issue that affected the negotiations between industrialised and developing countries. COP20 could not describe how emission reductions should be distributed among nations. This problem will be discussed at COP21 in Paris.
- c) The agreement reached is in line with the work started in Durban at COP17. The focus of Lima was more global and hardly addressed the progress of individual countries. In contrast to the KP, which mainly concerned the advanced nations, this is a comprehensive agreement that covers all countries.
- d) Funding for the GCF slightly exceeded the target and reached 10.2 billion dollars. The fund will enable developing countries to utilise a variety of techniques to combat climate change. A private sector facility was established in 2015 to ensure that private sector companies can be approved and access the fund.
- e) They introduced a new framework for measurement, investigation, and identification. The first multilateral assessment took place in Lima and provides greater accountability for the actions of advanced countries as they can compare their level of compliance with emission reduction targets (Main outcomes of the Lima Climate Conference (COP20) | Sustainability for all, 2015).

With regard to the INDCs, industrialised countries have decided to focus only on mitigating “nationally agreed commitments”, although many DCS still call for adaptation and financing. The agreement does not directly set out the context of the INDCs. By linking the INDCs to the ultimate objective of the treaty (stabilisation

## 1.1 Overview of the factors leading to global climate change

of greenhouse gas emissions to prevent dangerous anthropogenic interference with the climate system), the decision sets expectations for everyone's mitigation contributions. It also encourages participants to consider this as an element of adaptation. To measure the parties' commitments, the decision sets out some data that the sides can provide if needed, including "quantifiable details" on the duration, scope, and scale of an INDC, as well as the assumptions and methodologies used to measure and account for pollution. Participants can also indicate how "reasonable and constructive" their commitments are. In addition, the phrase "both parties should" has been replaced with "can" in the final text, making this optional. Consideration was also a topic of discussion at this meeting.

Some parties have requested various procedures to examine each other's expected commitments before Paris; large DCS are trying to block them. In the final decision, a mid-year "dialogue" on INDCs was cancelled. Nevertheless, guidance was given to the UNFCCC Council to prepare an analytical study in November on the "cumulative impact" of the INDCs – in other words, how they compare to the reductions needed to limit warming to 2°C, based on differentiation. Throughout the decision, which was roundly rejected by the industrialised countries, the major developing countries pushed for a clear distinction between Annex I (industrialised countries) and non-Annex I (developing countries). The agreement uses the same language as the recent joint statement by the United States and China, which reiterates the UNFCCC idea of "common but differentiated commitments and separate capacities" with the addition of "given different state circumstances" The differentiation was also an issue for developing countries in the political demand for more finance. Instead of taking full responsibility themselves, the industrialised countries called for wording suggesting that other actors "who are in a position to do so" should also participate The final document "clearly realises the help of other parties (Centre for Climate and Energy Solutions, 2014).

## Conclusion

This chapter of the book consists of the most important variables that determine the decision-making situation of the Paris Agreement in international relations. The decision-making situation of the Paris Agreement (DMS-PA) is an essential aspect of the primary approach in this book, namely IID. It is a direct function

## 1 Global climate change situation

of IID. The DMS-PA was fully evaluated by the researchers of this study based on the various items. To be more specific, items such as concern for the environment, perception of climate change, and PA steps were included and assessed. The decision situation reduced the gap between the variables involved and the desired PA situations by understanding problems and items and using IID. In the context of the decision-making situation of the Paris Agreement, the author has prioritised the consolidation of the environmental concerns, the science of climate change and the steps of the PA that will allow a continuous analysis of the IID approach and the chapters to come. This requires a strong elaboration and in-depth analysis, characterized by Natural causes of climate change, Changes in volcanic activity, Solar output, The Earth's orbit around the Sun, Tectonic plates, El Niño, La Niña, Ocean currents, UNEP, WMO, IPCC, UNFCCC, Transport, Industrialization, deforestation, effects of livestock farming, factory farming, consumption and climate change, fossil fuels, aquatic ecosystems, aerosols, the path of negotiations in Copenhagen 2009, the climate summit in Cancun, Durban 2011, the climate conference in Doha 2012, UNFCCC (COP19), COP20. This set of points explains that there are well-understood tools that the author uses to evaluate the DMS-PA layers. I discuss the evidence that the concentration of these tools in this chapter has increased the validity of the decision situation. In this chapter, a wide range of evidence of the climate change situation was evaluated and several different variables were used to understand the decision-making situation. From all these perspectives, the evidence and variables collected by the author lead to a simple conclusion: the natural causes of climate change and human activities outweigh the Paris climate negotiations and situation. The natural and human causes have affected the essential elements of international relations, such as climate change negotiations, climate change agreements (decision). Based on the results of DMS-PA and the modelling used, the author believes that this wide range of variables has been effectively accounted for and has led to an understanding of the global decision-making situation based on the Paris negotiations. The author believes that the main drivers of DMS-PA in the first step are the natural causes of climate change and the scientific consensus on climate change.

# 2

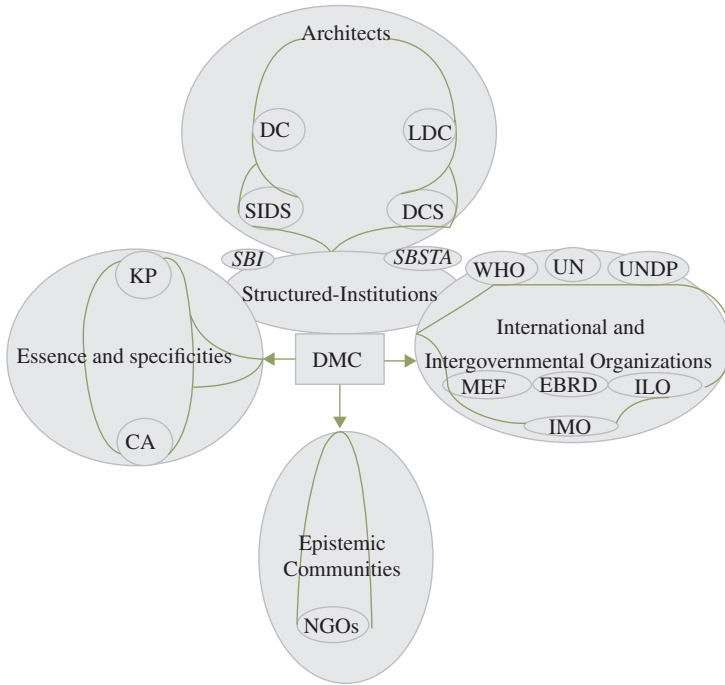
## Global climate change decision-making center

### 2.1. Global climate change centre for decision making PA

The global climate protection agreement(s) aims to help countries achieve their climate targets. The Paris Agreement is a guide for determining the effectiveness of global decisions on climate change. This chapter provides a strategy for exploring the effectiveness and efficiency of the IID approach as a central theme. The basic aim of the strategy, which is described in the following pages of this study, is to guide the author through a systematic and well-organized series of steps to identify factors relevant to assessing the effectiveness of global climate change decision making centers (DMCs). In this section, indicators such as the nature and distinctiveness of the DMC, the institutions of the DMC-PA, the architects of the DMC-PA, and the IGOs are presented in relation to the epistemic communities (see Figure 4) for analysing the Global Climate Change Decision Centre. For example, the architects of the PA refer to industrialised and developing countries.

This section combines a descriptive and an analytical question regarding the Global climate change Decision-making Centre. The critical evaluation of indicators in this section is in line with (1) regime theory (2) epistemic communities. Factors and indicators are at the heart of global climate change decision making, and their presence, absence or importance can significantly influence the behavior of the main approach, namely IID.

## 2 Global climate change decision-making center



**Figure 4.** The logic of decision-making center of Paris Agreement.

*Source:* Author own-constructed.

## 2.2. Understanding decision-making in international relations

At the beginning of this chapter, the author discusses decision-making (DM) in international relations and politics. An attempt is made to define decision-making based on the literature and to consider the relationship between decision-making and global climate change negotiations (PA). Therefore, the centre of global decision-making in this study includes the essence of decision-making of the Paris Agreement, such as A. KP B. Copenhagen Accord, and the specificity of decision-making includes the definition of A. NDC, B. Adaptation. C. Mitigation. Thus, as a first step, the author has benefited from helpful literature on decision making in international relations (DM-IR). Decisions can be classified in different

## 2.2. Understanding decision-making in international relations

ways. In a classic work, Snyder, Bruck, Sapin, and Hudson helped develop global decision-making in international relations and significantly influenced other scholars interested in how foreign policy is made. They believed that states as actors in a situation play a key role in global decision making (Snyder et al., 2002).

Mintz and Derouen (2010) explained different types of decision making. For example, group decision making can be complicated because the group members at the centre of a decision may have different agendas and preferences for the arrangement of policy structure options. Group processes therefore often involve negotiations between the group members. Negotiated decisions are the result of interactions between two actors and are more at the centre of the decision-making process (Mintz & DeRouen, 2010). David Brulé and colleagues (2013) looked at the main debates and criticisms of the various decision-making approaches. They emphasized that a detailed discussion of the rational–cognitive debate and some thoughts is more helpful for future advances in decision analysis (Brulé et al., 2013). Partowazar and co-authors argue that decision-making in international relations depends on various factors independent of decision-making in foreign policy. External factors limit the choices of states, regardless of their political system, history, and culture. The second factor is internal factors, which relate to the various positions and expectations in the internal environment of states. Despite the same systemic pressures, the states at the centre of decision-making behave differently due to their internal sources such as different political systems, cultures, etc. (Partowazar et al., 2016).

Afinotan mentions in his essay that the decision-making framework essentially comprises the following five elements: The decision situation – involves or refers to the objective nature of the environment that may be essential for decision making, decision participants concern the main actors in the decision centre, their educational background and experiences, the decision organization revolves around the context in which decisions are made, the decision process – touches on the various techniques and strategies used to reach a conclusion, the decision outcome – the net results or the totality of the results of the decision process (Afinotan, 2014). The Framework Convention on Climate Change establishes a collective decision-making process for the future actions of the negotiating parties. Since the 1970s, multilateral environmental agreements have increasingly adopted the COP as the standard model for decision-making. It is noteworthy

## 2 Global climate change decision-making center

that the COP model has not been extended beyond the field of environment and climate change (Vihma, 2014).

The author of this study insisted that the PA has created a new collaborative framework for climate change decision-making at the centre of global climate negotiations. Countries have made concerted decisions and found a legally binding agreement after 20 years of global climate action. The PA is at the centre of global decision-making on climate change because it is a combined long-term effort that considers long-term goals. In essence, the PA commitments would cover more emissions targets than the KP, and the contributions would be more concerted than the intentions declared at the 2009 international climate negotiations. Regardless of specificity, states intended to adopt new climate action measures, known as NDCs, as part of further global negotiations. To be more specific, the adaptation and mitigation actions involved in this phase largely set out a clear pathway with short and long-term milestones and a system to support decision-making in measuring and scaling up progress over time at the centre of global climate change negotiations.

### **2.3. Prologue on the nature of the global climate change centre: From Kyoto to Copenhagen**

Based on the Paris Agreement and its comprehensive guidelines under the United Nations Framework Convention on Climate Change (UNFCCC), measures to combat climate change will be implemented worldwide after 2020. The Paris Agreement was signed in 2015, entered into force in 2016 and is currently formulating regulations to ensure its success. The adoption of a set of rules and guidelines is planned for COP24,25 and 26 at the end of 2021. The Paris Agreement is a global UNFCCC agreement that systematically addresses climate change after 2020. The Agreement aims to provide and deploy new essences and tools to support climate change governance (Matsuo, 2018). The Pact recognizes an imminent threat from climate change ‘and the need to strengthen the global response to the threat of climate change and to significantly reduce the risks of climate change’ (Article 2.1). The Paris Agreement and the UNFCCC are essentially based on the scientific method, even if comparisons could be more precise. Greenhouse gas concentrations in the atmosphere should be kept at a level that prevents serious

### 2.3. Prologue on the nature of the global climate change centre

anthropogenic interference with the climate system and allows ecosystems to adapt to climate change so that food supplies do not suffer, and economic growth can continue indefinitely (Cordonier Segger, 2016).

The Paris Agreement reaffirms the long-term temperature increase to control the KP and the Copenhagen Accord (limiting global warming to below 2°C) by giving it legal effect. Setting a new target: “Limiting the increase in the global average temperature to well below 2°C above pre-industrial levels and promoting efforts to limit the temperature increase to 1.5°C.” (Chien Te, 2018). In addition, the KP and Copenhagen disagreed on how to bridge the gap between industrialised and developing countries. Essentially, a breakthrough came in 2015 through the global climate resolutions, which imposed specific responsibilities on both industrialised and developing countries and closed gaps (Fietta, 2016). The Copenhagen and Kyoto negotiations are analyzed to shed more light on this area.

#### ***A. Kyoto protocol***

At the third session of the Conference of the Parties (also known as COP3) in Kyoto, Japan, the KP was adopted on 11 December 1997. At the 7th Conference (COP7) in Marrakesh in 2001, the Parties to the KP adopted detailed rules for the implementation of the Protocol, the so-called ‘Marrakesh Accords’ the KP came into force in February 2005 and obliges the countries that have signed the agreement to reduce their emissions of six greenhouse gases. The main emitters are carbon dioxide, methane and N<sub>2</sub>O (United Nations Framework Convention on Climate Change: Essential Background, 2008). The KP was an important first step. It was the most far-reaching agreement ever reached on climate. The agreement showed that the international community is ready to accept and tackle climate change. (Roewe, 2019). More specifically, the Protocol contains more robust and legally binding measures to reduce global greenhouse gas emissions. Essentially, the Protocol sets agreed targets for 37 industrialised countries (also known as Annex I countries) and the European Union. The aim is to reduce greenhouse gas emissions by an average of 5% compared to 1990 levels. These reductions had to be realized in the period 2008–12.

In view of the fact that the established industrialised countries are also the biggest polluters and have been the main cause of the increase in greenhouse gas

## 2 Global climate change decision-making center

emissions since industrialization, the Protocol places an even greater burden on the developed economies under the premise of the “CBDR” In addition, Western countries must provide additional financial support to promote the implementation of the commitments by the developing countries. All Annex I and non-Annex I Parties shall cooperate in the areas of:

- i. The production, implementation, and utilization of climate-friendly technologies.
- ii. Research into the climate system and systematic observation.
- iii. Education, training, and public awareness of climate change.
- iv. the improvement of methods and data for greenhouse gas inventories.

The KP focused more on its first commitment, which expired in 2012, and the question arose as to what should happen after this period. Should the new decision be organized under the UNFCCC? With a new round of emission reduction targets for industrialised countries? In the next step of the international climate negotiations, the Copenhagen conference should resolve these questions.

### ***B. Copenhagen accord***

The first commitment phase of the KP, which ended in 1997 and came into force in 2005, was concluded with the COP 2012. The main objective is to reach a legally binding global climate agreement at the United Nations Climate Change Conference in Copenhagen and to apply this agreement for the period after 2012 (Riitta Korhola, 2014). The Copenhagen summit can be seen as an essential step, as this was the final agreement to continue the KP (which expired in 2012). The UN Convention in Copenhagen is therefore seen as an essential step (Reena, 2017). The popularity of the conference is evident by the gathering of some 130 national leaders from 191 countries and nearly 35,000 representatives, including activists, scientists, and industrialists. For the first time, the international community recognised the fact of climate change during this meeting. The heads of state at the summit agreed to seek a successor to the KP that could be legally binding on developing countries. Developing countries such as India and China, however, have refused to sign a legally binding pact. Developing

## 2.4. Prologue on the nature of the global climate change centre

countries are legally obliged to reduce their emissions as they are historically responsible for climate change.

On the other hand, the industrialised countries emphasized that although they have produced many greenhouse gases, the developing countries cannot shirk their obligations as they are likely to contribute to this concentration of greenhouse gases. According to the DC, around 40 percent of these countries' emissions have been absorbed into the atmosphere in recent years. Furthermore, the burden of commitments must be shared equally by industrialised and developing countries (Dutt, 2009). When these facts came to light, the international dialogue on climate policy changed. This dialogue no longer focused primarily on strengthening and expanding the Kyoto model, but on improving the strategy at the heart of the Copenhagen Accord. The components of a new model for climate change began to take shape. Paris combined features of the two earlier approaches in a novel way. In several cases, the Paris Agreement reaffirms the 2°C targets of the Copenhagen Accord. It replaced the KP, which only required industrialised countries to reduce greenhouse gas emissions. Thus, the Paris Agreement essentially re-energized the Kyoto and Copenhagen models (Held & Charles, 2018).

## **2.4. Prologue on the nature of the global climate change centre: Linking NDC, mitigation and adaptation**

In the climate change conversation, the Paris Agreement can be better interpreted by considering how it discusses three recurring themes: (1) Nationally Determined Contribution (NDC), (2) Adaptation and (3) Mitigation (Daniel Bodansky 2016). The Paris Agreement has redefined climate action, focusing on the steps of NDC, adaptation and mitigation to emphasize the importance of long-term economic and social change. The agreement emphasizes the importance of building climate-resilient, state-led national pathways to low greenhouse gas (GHG) emissions in order to simultaneously achieve climate and broader sustainable development goals.

These forward-looking strategies, such as NDC, mitigation and adaptation, will in some way guide short-term initiatives that will help achieve long-term goals. This reorientation means that all actions by governments and non-state actors

## 2 Global climate change decision-making center

should be compatible with economic and social development, which is indeed in line with the long-term goals of the Paris Agreement (Cochran & Pauthier, 2019). Therefore, the author believes that the Paris Agreement brings about a significant historical change in global climate change negotiations. This agreement is due to its specificity, which applies to all nations.

### **A. NDC**

The concentrations of the most important greenhouse gases (GHG) in the atmosphere are higher today than they have been in the last 800,000 years. This is due to human activities such as fossil fuel production and land use change (Global Carbon Project, 2014). In recent years, anthropogenic greenhouse gas emissions have contributed significantly to global warming, changes in the global water cycle, declining snowfall, and pack ice, rising sea levels and changes in some extreme climatic conditions, among other things. The UNFCCC has introduced a global warming limit of 2°C above pre-industrial levels to prevent severe impacts in the future.

As the primary tool for countries to share globally how they will reduce their emissions for the post-2020 period, NDCs enable countries to show leadership in tackling climate change (Designing and Preparing Intended Nationally Determined Contributions (Indus), 2016). NDCs are essential for the Paris Agreement and for achieving long-term goals. The NDCs reflect the efforts of individual countries to reduce national emissions and respond to the impacts of climate change. The Paris Agreement (Article 4, paragraph 2) provides that each Party shall prepare, harmonize, and maintain a set of NDCs that it intends to make. Parties should pursue national mitigation initiatives to achieve the objectives of these contributions (UNFCCC, 2020).

### **B. Adaptation**

The Paris Agreement calls for adaptation action under the three priorities, which serve the purpose of the agreement to improve the global response to the threat of climate change in light of sustainable development and poverty eradication (Bonnie, 2017). Through Article 7 of the Paris Agreement, countries have decided

## 2.4. Prologue on the nature of the global climate change centre

to establish the Global Goal on Adaptation (GGA) to enhance adaptive capacity, increase resilience and reduce vulnerability to climate change in order to contribute to sustainable development and ensure an adequate response to temperature goals. Keeping track of progress on all elements of the agreement, both in terms of temperature levels and the global adaptation target, is crucial to the success of the Agreement. States are required to submit an Adaptation Communication to the UNFCCC Climate Change Secretariat once a year, which is entered into a registry (Adaptation Communications under Article 7 of the Paris Agreement, 2016). Under the Paris Agreement, each country should communicate its climate action. The main purpose of the adaptation communication is to:

- i. Communicate forward-looking adaptation priorities, plans, and actions.
- ii. Recognise the need to implement forward-looking adaptation priorities, plans, and actions.
- iii. Track and contribute to overall progress towards achieving the Global Adaptation Goals.
- iv. Contribute to the Global Stocktake (GST) process, which will take stock of countries' collective progress in implementing the Paris Agreement.
- v. Support the submission and updating of forward-looking adaptation priorities, plans, and actions.

Here are some of the key elements which the Communication on Adaptation may include:

- i. Assessment of projected impacts, hazards, vulnerability, and adaptive capacity for all major sectors, including biodiversity and ecosystem.
- ii. Information on adaptation priorities, plans, and actions with clear budget requirements for critical sectors, including biodiversity and nature for DCS.
- iii. The estimated level of public funding that wealthy nations will provide for DCS, supporting forward-looking nations goals, strategies and activities.
- iv. The estimated level of funding needs for adaptation in the DCS.
- v. Ongoing adaptation efforts, their implementation, including adaptation in support of nature-based solutions, and lessons learnt by all countries.

### ***C. Mitigation***

The 2015 Paris Agreement (UNFCCC) is an important milestone in the international response to the challenge of climate change. By working together, UNFCCC countries have achieved the UNFCCC's ultimate goal of avoiding "dangerous anthropogenic interference with the climate system" In 2015, the international climate policy framework took a step forward by converting the UNFCCC target into a quantifiable temperature limit. This goal reflects Article 2 of the Paris Agreement, which states that the objective is to "keep the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels. Measures shall also be taken to limit the temperature increase above pre-industrial levels (see e.g. Heyward, 2007; Rong, 2010; Batalha & Reynolds, 2012)". In addition to a long-term temperature target based on specificity, the Paris Agreement also sets a long-term mitigation target stating that ' Parties shall endeavour to achieve the peak in global greenhouse gas emissions. Establish a link between anthropogenic emissions from sources and the elimination of greenhouse gas sinks as soon as possible in the second half of this century and implement substantial reductions in line with the best available science (Rogeli, 2016).

As a result, the Paris Agreement requires nations to review collective progress "in the light of fairness and the best available evidence" from 2018 onwards in order to achieve their global reduction goals. States indicate that the expected cumulative greenhouse gas emissions of the 2025 and 2030 rates resulting from the planned nationally defined allocations do not fall within the cost-optimal 2 C scenarios because the Agreement has not set national reduction goals that are consistent with the 38 long-term goals. As part of the United Nations Framework Convention on Climate Change (UNFCCC), all parties agreed in 1992 to take measures to mitigate climate change within the framework of their "common but differentiated commitments and respective capabilities" (CDO-RC), whereby a distinction is made between advanced countries (Annex I) and developing countries. The Paris Agreement has moved to a sliding scale of emission reduction measures. While co-benefits and vested interests can drive rapid mitigation action due to the PA, equity remains essential for the ratcheting cycle and the adequacy of climate finance and support in this area (Robiou du Pont et al., 2016).

## **2.5. A multi-criteria assessment framework for the decision-making hub: Putting actors and organizations at the heart of decision-making**

In this part of the book, the author introduces a multi-criteria decision-making approach, that is also used in social science (see Ozsahin et al., 2021), to find the key drivers for the decision centre of global climate change. The author's aim is to evaluate the main actors in a centre and rank them among the different options available. The proposed framework includes various criteria such as the following: Identifying the role of states, international organization(s) and border organization(s).

The author places the category of actor and its criteria first, based on the categories of developed countries, developing countries, least developed countries and small island developing states. The classification of these countries as an actor category shapes the results in the context of the decision centre. The author chooses this classification under World Economic Situation and Prospects (WESP) in the context of the Sustainable Development Goals (SDGs) and, as a case study, the global politics of climate change negotiations.

### **2.5.1 Actors at the centre of global climate change decision-making: Insights from regime theory**

In this section, the author of this book explains the functions of Regime Theory Scholarship (RTS). First, I briefly assess the definition and literature on regime theory to define and divide the critical concepts in the global decision-making centre for the remainder of this study. The straightforward explanation and evaluation of RTS provides a solid theoretical foundation for this part of the study. The author reviews the previous academic literature on regime theory to highlight the key actors – states, IGOs and non-governmental organizations (NGOs) in DMCs. In 1983, a pioneering regime expert, Stephen Krasner, formulated what has become the most cited concept of a regime. I have set out a plan as implicit principles, norms, rules, and decision-making processes around which the perceptions of actors in a particular area of international relations converge. Principles are statements about reality, causality, and correctness. Norms are behaviors defined in terms of rights and obligations.

## 2 Global climate change decision-making center

Rules are precise regulations or operating prohibitions. The decision centre is the predominant method where different practices are distributed through different entities for process and implementation (Krasner, 2013). Independent of climate change, existing multilateral efforts to mitigate greenhouse gas emissions and adapt to climate change are organized around the UNFCCC. Both the KP and the Paris Agreement were negotiated within the framework of the UNFCCC. Together, the UNFCCC, the KP and the Paris Agreement form the basis for the global climate regime (Pattberg & Widerberg, 2018). According to regime theory, nation states are the main actors in international negotiations and decision-making, while civil society plays only a subordinate or supporting role in shaping policy. Young, Keohane and Nye are the leading proponents of regime theory. Marek Pietras (2014) argues that “international regimes are a type of international institution that bind states and other parties to negotiated rules of behavior. They operate in many areas of international relations: Ecology, military, economics, and others. They cooperate with international organizations and are part of collective control solutions for the international community. Regimes are also the subject of research and accompanying theoretical considerations” (Kačka, 2014).

As climate change is a global problem, policy researchers are focusing on negotiations based on a decision-making approach. This thread is also reflected in climate regulation. However, there are discussions about improving co-operation in decision-making on issues such as adaptation and mitigation. Furthermore, regime theory espouses the ideals of liberal institutionalism, which sees international institutions as a force in global politics, negotiations, and decision-making. International organizations, IGOs and non-governmental organizations (NGOs) play a central role in environmental issues, particularly climate change. This is particularly true for climate diplomacy, as the United Nations Development Program (UNDP), the World Health Organisation (WHO) and environmental NGOs (ENGOs), for example, play an important role in formulating and defining decisions in climate change negotiations (Sosa-Nunez & Atkins, 2016). The author of this book notes that the differentiation in the Paris Agreement is more nuanced than that enshrined in the UNFCCC, its KP and the Copenhagen Accord. This position for PA is tailored to the specifics rather than the substance. Therefore, climate regime development based on the UNFCCC principle, specificity

## 2.5. A multi-criteria assessment framework for the decision-making hub

and differentiation remain central features of global decision-making on climate change (the case of the Paris Agreement). Therefore, in this part, it is beneficial to understand the regime theory in order to evaluate the effectiveness of the decision-making centre based on the role of the actors (states).

### ***Developed states (DC)***

Advanced industrialised or industrialised countries in the 21st century are countries with high economic growth and fulfil certain trade-related socio-economic requirements. These include GDP, the industrialization index, and the human development index (HDI), which have been defined by the International Monetary Fund (IMF), the United Nations (UN) and the World Trade Organisation (WTO) (Nicolas, 2019). Development and climate change are closely intertwined and can be considered together. Preventing dangerous climate change is crucial for promoting global development (Climate Change, 2020). At the beginning of the twenty-first century, climate change is a new threat that poses a major problem for some wealthy countries. It is a consequence of economic growth and greenhouse gas emissions and will have significant social, economic, and environmental consequences. These impacts will be unevenly distributed across regional, social, and intergenerational boundaries. The impacts of mitigation and adaptation are associated with unequal and different situations for industrialised and developing countries (Wijaya, 2014). The KP was the only agreement to emerge from the UNFCCC process and enforce binding limits on greenhouse gas emissions. In the first implementation phase of the Protocol, which ran from 2008 to 2012, 37 industrialised countries and the countries of the European Community committed themselves to binding GHG emission targets.

Considering the concept of mutual but differentiated responsibility, the Protocol only imposed emission limits on the (developed) countries in Annex I. Under the Protocol, the developed countries that have ratified the Protocol have set quantified emission limitation and reduction goals (generally around 5 percent below 1990 levels) for the first implementation phase (2008–12), thereby creating emission limits. The Protocol requires the EU to agree on an overall reduction target (the most optimistic of all participants from industrialised countries for the first implementation period) to be distributed among its member states.

## 2 Global climate change decision-making center

Thus, the obligations of each Member State for the first implementation cycle were negotiated in a burden-sharing agreement within the European Union, with obligations linked to variables such as each region's leading energy mix, economic development potential and industrial character. (DellaSala & Goldstein, 2018). In 2009, at COP15 in Copenhagen, a new post-Kyoto climate agreement was sought to commit industrialised countries but failed. The meeting resulted in the Copenhagen Accord, a non-binding declaration aimed at limiting the global temperature rise to 2 degrees Celsius and focusing more on wealthy countries. In 2011, COP17 in Durban initiated the process that led to the Paris Agreement by agreeing to conclude a new agreement for the period after 2020 by 2015. As a developed and leading country in the international negotiations on climate change, the United States announced its commitment to the fight against climate change in November 2014. This decisive action is important to signal to other DC countries that Europe is determined to play a decisive role in securing the international decision on climate change. The participation of industrialised countries, both within Europe and globally, was primarily seen as increasing the chances of reaching an agreement in 2015 (Erbach, 2016). As leaders of COP21 in 2015, France and its European allies were keen not to make the mistakes of Copenhagen.

Of all the main parties, Western nations insisted on making timely and demonstrable national emissions pledges that would be sufficient to build mutual trust for an optimistic agreement to materialize. The EU has acted as a bridge builder, bridging the gap between the development needs of the global South and the stricter climate requirements of the growing North. A joint plan with 79 African, Caribbean, and Pacific (ACP) countries was announced at the start of the summit and European delegates played a leading role in creating a 'high ambition alliance' including the US. This coalition successfully advocated for new international decision-making on climate change and the inclusion of a commitment to limit the increase in global average temperatures to 1.5°C over the century, as well as the creation of a new 'transparency framework' (Barichella, 2017). Based on the DMC layer in this research, it can be argued that the Paris Agreement is the best international decision-making to combat climate change, and Europe as a developed entity has taken credit for its crucial role in the success of COP21.

### ***Developing States (DCS)***

A developing country endeavors to develop economically and socially (What Is a Developing Country, 2020). Developing countries are countries that have passed through the first stages of industrial development and have a low per capita income. The state does not enjoy healthy and safe living conditions, a low gross domestic product, high illiteracy, poor education, transport, communication and medical facilities, unsustainable public debt, unequal income distribution, high mortality and birth rates, maternal and child malnutrition, high infant mortality, poor living conditions and a high uniformity rate (Surbhi, 2019).

When the UN was founded, most developing countries were not sovereign states and had no say in the global political system. With the fall of the Berlin Wall in 1990, the trilateral policy was transformed into a North-South policy. Firstly, the South no longer received raw materials from the East and the East became the South's competitor for the North's money; secondly, the emerging states could no longer compete. Although expectations were high during this period that the fact that fewer resources were needed for security problems would result in a peace dividend, this ultimately did not materialize. The politics of climate change came at a time when the power of developing countries was waning. The 1992 UNFCCC was based on the concept of leadership which industrialised countries should take by (a) minimizing their emissions and (b) providing developing countries with 'new and additional instruments', as stated in Article 4(3).

Furthermore, the governance concept was linked to conditions until 1997: The US expected concrete action from key developing countries, and the EU depended on what other industrialised nations would do. Negative parameters categorize the DCS in the climate regime – its non-inclusion in UNFCCC Annex I and KP Annex B. To be precise, this group consists of about 150 countries. Of these 150 countries, 130 belong to the G-77, and the others are mainly former Eastern and Central European countries (Gupta & Goossens, 2008). When it became apparent that the KP was faltering, the UNFCCC parties attempted to create an alternative mechanism that would encourage a stricter stance from all industrialised and emerging economies, or DCS. While the Copenhagen Accord was only a political agreement, it represented significant progress on some points.

## 2 Global climate change decision-making center

It set the goal of limiting the global temperature increase to 2 degrees Celsius and called on all countries to make commitments to reduce emissions. It set far-reaching conditions for reporting and reviewing countries' actions, set a target of mobilizing \$100 billion a year in public and private finance for developing countries by 2020, and called for the establishment of a new GCF. At COP21 in Paris, the world's heads of state and government established joint binding procedural commitments for industrialised and developing countries (History of the UN climate negotiations, 2020). Unlike the UNFCCC and the KP, the Paris Agreement sets a quantified temperature target. Article 2 states that one of the main objectives of the agreement is to “hold “the increase in the global average temperature to well below 2°C above pre-industrial levels” and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels (Marechal, 2018). This framework explicitly recognizes that this goal can be achieved in the form of international climate change agreements and that the wealthier nation's leading efforts to mitigate climate change must provide greater financial support to developing countries. It is recognised that increased support for developing countries will enable more ambitious action on long-term climate change decisions (Joshi & Sircar, 2016).

### ***Least Developed Countries (LDC)***

Since 1971, the United Nations has recognised the Least Developed Countries (LDCs) as the “poorest and weakest segment” of the international community. They are severely disadvantaged in their development due to their vulnerability (The Least Developed Countries Things to Know, Things To DO, 2017). The LDCs are a group of 48 nations defined by the United Nations as having the lowest socio-economic development indices in the world. The identification of LDCs is based on indicators within three categories: Income, Human Assets and Economic Vulnerability. The UNFCCC categories countries into different groups. The Convention pays particular attention to the 48 countries designated by the United Nations as least developed countries, as they are unable to respond to climate change and adapt to its negative impacts. Parties are encouraged to fully consider the situation of least developed countries when it comes to financing and technology transfer (Lamb & Depledge, 2003). As far as the international climate

## 2.5. A multi-criteria assessment framework for the decision-making hub

summit is concerned, COP7, which took place in Marrakesh, Morocco, in 2001, is regarded as the first milestone in adaptation. It was there that the Marrakesh Accords were reached, which contained important adaptation decisions. At this COP, the work programme for Least Developed Countries (LDCs) was launched to address their specific and urgent needs, including the preparation of National Adaptation Programmes of Action (NAPAs) for LDCs and the establishment of an LDC Expert Group (LEG).

The LEG was established in 2001 as part of the Marrakech Accords to “support LDCs in addressing the negative impacts of climate change.” NAPAs are government-led strategies that identify the most urgent needs of LDCs to adapt to climate change. These include water, agriculture and food security, health, disaster mitigation and prevention, infrastructure, and vulnerable ecosystems. (Least Developed Countries Fund – LDCF, 2020). LEG has since provided technical guidance and advice to LDCs in the planning and implementation of their NAPAs (Singh & Indrajit, 2018). The Parties to the UN Framework Convention on Climate Change (UNFCCC) agreed in December 2011 to develop a “new protocol, another legal instrument or an acceptable outcome with legal force appropriate to all Parties” by 2015 at the latest and to adopt it by 2020. To mobilise political will for ambitious negotiation outcomes, the United Nations is convening a much-anticipated UN climate summit by 2015. The governments of the LDCs actively participated in this summit. The LDC group intended to use this high-level summit to highlight and explain three key positions (UN Doc. FCCC/CP/2010/7/Add.1, 2011).

### i. *An agreement to follow a 1.5°C pathway, based on climate science*

The Convention recognises that LDCs have different circumstances and specific needs in responding to climate change. Scientific evidence, such as that in the IPCC reports, has repeatedly confirmed that LDCs will be the first and most vulnerable to climate change (UNFCCC, 2014). Although countries have agreed on a long-term global goal to keep the average temperature increase for LDCs below 2°C above pre-industrial levels, this temperature target is not ambitious enough. With a global average increase of 2°C, warming and the associated risks will continue

## 2 Global climate change decision-making center

to be unevenly and disproportionately distributed, with the greatest temperature changes occurring where countries are most vulnerable. A more ambitious “1.5°C pathway” to limit the global average temperature increase is essential to minimise risks to LDCs (e.g. Mace, 2016; Robinson & Shine, 2018).

- ii. *A legally binding rules-based regime, respecting the principles of the convention*  
LDCs maintain that by far the most successful way to tackle climate change is through an open, rules-based, and legally binding mechanism structured to enforce collectively agreed obligations while upholding the values of the Convention. Adherence to these principles should ensure that the specific needs and circumstances are recognised and addressed through activities that contribute to the Convention’s objective. However, the LDCs caution against using the principles of the Convention as an excuse for inaction or delay in action. Although the LDCs are the poorest and most vulnerable, the LDCs are willing to participate in the global fight against climate change. Including through the adoption of low-carbon, climate-resilient development strategies by COP21 (see Maljean-Dubois & Wemaëre, 2012; Bodansky, 2016).

- iii. *A meaningful and comprehensive agreement*

The 2015 agreement is comprehensive and covers mitigation, adaptation, L&D, finance, technology development, transfer, capacity building and transparency of actions and support. The adverse impacts of climate change on vulnerable people can lead to long-term L&D. The LDCs emphasize that the international mechanism established in Warsaw in 2013 to combat L&D must be integrated into the 2015 agreement (Stabinsky & Hoffmaister, 2015; Nhamo & Nhamo, 2016). If this is not done, LDCs will unfairly bear the associated costs, including the costs of investing in risk assessment, risk management, insurance, and compensation, as well as other associated costs and impacts of L&D. Policies should ensure that investments promote successful climate action with adequate adaptation and mitigation measures. Access to technology is critical as it enables LDCs and other developing countries to engage in climate change mitigation and adaptation and to pursue low-carbon, climate-resilient

## 2.5. A multi-criteria assessment framework for the decision-making hub

growth pathways. Through the Convention's technology mechanism, the 2015 agreement must accelerate support for the development and transfer of technology. The agreement must also recognize that implementation of the treaty and its elements will be very complex for LDCs without comprehensive capacity building support (Tenzing, 2014).

### ***Small Island Developing States (SIDS)***

Small Island Developing States (SIDS) are a special group of developing countries that face particular social, economic, and environmental problems. SIDS were recognised as a special case for both its environment and their development at the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, held in Rio de Janeiro, Brazil, from 3 to 14 June 1992. The SIDS are recognised and cover three geographical areas – the African, Pacific and Arctic Seas and the Arabian, Mediterranean and South China Seas (AIMS).

The SIDS are geographically separated from each other, but share common social, developmental, and environmental problems. Due to their small size, geographical remoteness and vulnerable climate, the SIDS face a unique combination of difficulties and lower resilience to natural disasters such as cyclones and earthquakes. The so-called developing small island states face a massive problem due to climate change. The SIDS in this category is sometimes referred to as climate change pioneers, as they are the most likely to be affected by the extreme impacts of climate change. The impact of rising sea temperatures on marine ecosystems, which are usually largely dependent on the tiny islanders, is significant (Small Island Developing States Small Islands Big (Ger) Stakes, 2011).

Furthermore, extreme weather events are expected to become more frequent and more severe as a result of climate change. Small islands in the Pacific or the Caribbean – areas that are particularly vulnerable to hurricanes – are at risk of being affected by such events. As low-lying areas, sea level rise is also a dangerous impact for these countries (IPCC, 2007). Most SIDS are members of the Alliance of Small Island States (AOSIS), a broader ad hoc alliance of small island and low-lying coastal states comprising 44 states and observers and representing about 20 percent of the total UN membership. AOSIS is the voice of SIDS in the international climate negotiations under the UNFCCC (Climate Change Realities

## 2 Global climate change decision-making center

in SIDS in the Caribbean, 2017). The main objective of AOSIS is to represent the interests of the islands in the international negotiations within the framework of the UNFCCC.

Although the AOSIS leadership is tiny and lacks political clout, it has become one of the leading players in the UNFCCC negotiations. AOSIS was able to win a seat on the Bureau at the Earth Summit, setting a precedent that has endured to this day, as AOSIS is still represented on several Convention and Protocol bodies as well as climate finance committees. Through effective lobbying at the KP negotiations (which set legally binding emission reduction targets only for Annex I countries (i.e., industrialised countries)), they were once again able to protect their common interests— – and continue to grow under the accepted concepts of the CBDR. As the focus has shifted to the reduction targets for industrialised countries, individual submissions by member states have increased in recent years. In the run-up to the UNFCCC climate conference in Paris (marking the 21st COP since then), AOSIS has placed particular emphasis on promoting change that achieves the UNFCCC's long-term goal of preventing warming of more than 1.5 degrees above pre-industrial levels. During the Bonn Climate Talks in June 2015, the Chairman of AOSIS and the Maldivian Minister of Environment and Energy, H.E. Thoriq Ibrahim referred to numerous extreme weather events in recent times. With regard to the role of AOSIS in the design and development of Cop21, they have called for action and stated that a 1.5-degree limit must be part of the Paris Agreement for the benefit of present and future generations. AOSIS has called for a legally enforceable protocol under the agreement that would apply to all parties involved in the Paris Agreement goals. The coalition has also emphasized that L&D must be treated as a stand-alone element of the 2015 agreement (Betzold et al., 2012).

### **2.5.2 The anatomy of institution: The influence of organizations at the decision-making centre**

In this section, the author reviews and evaluates the influence of international organizations on the performance of the global decision-making centre using information from the Paris Agreement. The author summarises the rules of

## 2.5. A multi-criteria assessment framework for the decision-making hub

international organizations and NGOs in the global decision-making centre. For the international organizations, the author has selected some of the influential institutions associated to the Paris Agreement and policy making. The second is an NGO dominated by specific organizations that focus on knowledge brokers and intermediaries and how these contribute to the overall effectiveness of the decision centers' value chain under the IID approach. These are organizations that coordinate relationships between governments and climate change activities, improve knowledge sharing, strengthen coordination of planned activities, improve cooperation between financial systems, focus on co-production of knowledge and emphasize learning and action processes.

### ***International organizations***

The author of the present study noted that a better understanding of the conditions under which DMCs (effectively) respond to the parameters of PA would contribute to a more comprehensive review and analysis of IID in relation to the international. International organizations are decision-making bodies with delegates from member states that can facilitate effective and efficient decision-making processes at the international level. International organizations are transnational organizations in which states give up some of their sovereignty when they agree to abide by a treaty they join by becoming a member of that organization. They transcend national borders and can also have a significant impact on state and transnational entities.

In relation to climate change and the negotiations, they mean that they have an impact beyond the conditions in the international arena. This is to address and support complex issues of climate change and interactions with global economic, political, and social affairs by facilitating co-operation with other actors, especially governments, to make better negotiation decisions. Charters of such organizations in the form of the IID approach in this study generally include the United Nations system, the WHO, the UNDP, the Major Economies Forum (MEF) on Energy and Climate, the International Energy Agency (IEA), the European Bank for Reconstruction and Development (EBRD), the International Labour Organisation (ILO) and the International Maritime Organisation (IMO).

### ***The United Nations System***

Climate change is the central challenge of our time and must be tackled. Action to reduce greenhouse gas (GHG) emissions and respond to climate change is necessary and therefore all countries must successfully address climate change. For this reason, the UN system is firmly committed to supporting the international community in tackling climate change while working towards a sustainable world for the twenty-first century based on international co-operation between states and decision-making. The United Nations and its specialized agencies, institutions, funds, conferences and other bodies believe that climate change requires comprehensive cooperation and collaboration among all governments, economies and communities.

The UN system brings the advantages of international political legitimacy, wide-ranging and cross-cutting expertise, national and regional presence and strong partnerships with civil society, academia, and the private sector. It focuses on these strengths to encourage action both through the UNFCCC and through an integrated program and summits (How the United Nations System Supports Ambitious Action on Climate Change). As the UNFCCC is the UN's most influential environmental and climate institution, states have a rich history of participation through a program and an agreement (Kamphof, 2018). Like the KP and the Doha Treaty, the Paris Agreement falls within the scope of the UNFCCC. Article 7 of the UNFCCC establishes a COP, which acts as the supreme body of the Convention and meets annually, unless otherwise decided. Mitigation and adaptation are the core elements of the Convention, which is the first objective of COP21.

In The UNFCCC, the terms mitigation and adaptation are considered from different perspectives. Mitigation refers to actions that need to be taken to control the concentration of greenhouse gases in the atmosphere, either by reducing greenhouse gas emissions, utilizing sinks and reservoirs, or a combination of both. The UNFCCC defines adaptation as changes in ecological, social, or economic systems that respond to existing or projected climatic stimuli and their consequences or implications. In the history of the UNFCCC, mitigation and adaptation have had a somewhat uneasy relationship, but COP21's emphasis on an equivalent focus is based on a UNFCCC report (What Is the History of the Paris Agreement? – Ask DAG, 2018).

### ***World Health Organization***

The WHO has improved the general standard of health over the last 60 years. The WHO is an independent body within the UN, which consists of 192 nations. The World Health Assembly, an elected body of 34 members, meets annually to evaluate the organization's new regulations and financial requirements (Braun, 2006). The work of the WHO is defined by its constitution, which divides the core functions of the WHO into three categories: (1) regulatory functions, i.e., international agreements and conferences, rules and non-binding requirements and guidelines, (2) governance and organizational functions, including health for all, poverty and health, essential medicines and special programs for diseases, (3) research and technical cooperation functions, including disease eradication and emergencies (Prah Ruger & Yach, 2009). There is now clear evidence that human activities, especially the burning of fossil fuels and the resulting release of climate pollutants, are causing significant changes in the global climate system. At the current rate of greenhouse gas emissions, global surface temperatures are expected to rise by 4° Celsius by 2100.

This rise in temperature would have a significant impact on health. Already populated, low-lying areas would be flooded, and vital parts of the world would be transformed into places where work or outdoor physical activity is no longer safe for much of the year. The latest evidence indicates that climate change will cause around 250,000 additional deaths per year by the middle of this century. The latest IPCC report assesses strong evidence of increased risk of injury, illness, and death due to heatwaves and fires, increased risk of food and waterborne diseases, increased risk of vector-borne diseases, increased risk of malnutrition due to lower food production in poor regions, and health impacts of job losses and lower labour productivity in vulnerable populations (World Health Organisation Conference on Health and Climate Change, 2014).

In May 2008, The Member States jointly adopted Resolution WHA61.19 on health in the context of climate change. This resolution recognised, among other things, that responses to the health impacts of climate change should be seen as a collective responsibility of all states and that development cooperation should support development cooperation in this way. In January 2009, The WHO Executive Board approved a work plan on climate change and health. According to

## 2 Global climate change decision-making center

the work plan, the WHO should ensure that the adaptation plans of states take health problems into account. Since COP16 in December 2010, one-day climate and health summits have been held in conjunction with the UNFCCC COP discussions, organized by a global network of health groups.

The Climate and Health Summit at COP17 in 2011 led to the Durban Declaration, which called on negotiators to recognize the health benefits of climate action and to advocate for better representation of the health sector in national envoys and central bodies of the UNFCCC (A Summary Report of The World Health Organisation (WHO) Conference on Health and Climate, 2014). Representatives from around the world are gathering in Paris to discuss one of the most pressing issues of our time, climate change, and hopefully adopt a new climate agreement that can put the world on a healthier and lower-carbon development pathway (Health and Climate Change: Road to COP21, 2020).

The Agreement contains explicit references to health, including a reference to the “right to health” in the preamble, and the “co-benefits” of climate action for “adaptation, health and sustainable development” are also recognised in the decision on “enhanced actions” to be taken before 2020. Regardless of its effectiveness in shaping COP21, the WHO has recognised and expressed in its language a growing understanding of the links between health and climate change. To put it simply, ahead of the UN Conference on Climate Change (COP21), the WHO published the first set of state profiles on climate and health and a global analysis of predicted patterns of climate change and human health. The profiles provide a comprehensive picture of the current and projected health impacts of climate change, as well as recent policy actions at the state level and the potential for health co-benefits from climate change mitigation efforts. These actions include switching to cleaner energy sources for electricity generation and household use, as well as increasing the use of public transport, walking, and cycling (COP21 Climate Agreement – Moving Towards Healthier People and A Healthier Planet, 2015).

### ***United Nations Development Program (UNDP)***

The UNDP is the UN’s global development network. The UNDP is currently active on the ground in more than 170 countries and territories, working with them to address international and national growth challenges. The UNDP was created

## 2.5. A multi-criteria assessment framework for the decision-making hub

from the merger of the United Nations Expanded Technical Assistance Program, founded in 1949, and the United Nations Special Fund, founded in 1958. As we know today, the UNDP was established by the UN General Assembly in 1966 (COP21 Climate Agreement – Moving Towards Healthier People and a Healthier Planet, 2015). Climate change poses considerable challenges for society in industrialised and developing countries. The impacts of climate change can undermine decades of progress in human development and jeopardize the Millennium Development Goals (MDGs). In the face of climate change, UNDP promotes inclusive and pro-poor adaptation that leads to stable economic growth and improved social conditions.

UNDP supports countries in developing stable and responsive state institutions, competent public and private sector management, and a trained and experienced human capital that is able to innovate, adapt and achieve results in response to changing conditions. The UNDP's Adaptation Program currently supports 75 countries in strengthening national, sub-national and community capacities to cope with climate change. In total, the UNDP is investing more than 800 million US dollars in climate-resilient growth through its development cooperation program (Vandeweerd, 2011). UNDP has years of experience in urging countries to address climate change. UNDP has worked with its partners to help individuals and communities in over 140 countries reduce emissions and respond to the impacts of climate change. In doing so, the UNDP has learnt that action on climate change must be inclusive, consider the gender perspective and prioritize the poorest and most vulnerable. The Parliamentary Assembly has paved the way for the world to take collective action, and now it is up to us to continue on this path and achieve concrete goals.

In 2015, the UNDP published its first infographic showing the scope and depth of its climate change support over the past two decades (see Siegel & Bastos Lima, 2020). The UNDP report highlighted the achievements and mentioned the prospects that climate action offers states to transform their economies towards carbon-free and climate-resilient sustainable development. To be more specific, the UNDP has issued an updated report on its climate change efforts up to 2015, having played an important role in the global debate on climate change. This report pays particular attention to the links between climate change and sustainable development. It emphasizes the need for a climate change policy focused on the

## 2 Global climate change decision-making center

SDGs and gives examples of UNDP's efforts on the ground to this end. The report outlines the UNDP's pledge to strengthen action on climate change to fulfil the ambitious international agenda adopted by states in 2015 (Keo & Gold, 2016).

### ***Major economies forum on energy and climate***

In 2009, President Obama established the Major Energy and Climate Economics Forum. This high-level forum brings together industrialised and developing countries, which are responsible for about 75 percent of global greenhouse gas emissions, to support international climate negotiations and facilitate concerted action to combat climate change. The forum has been successful on both sides – it has been instrumental in making progress in the broader talks while also launching the Clean Energy Ministerial to catalyze the development and implementation of clean energy and sustainability strategies (Executive Office of the President, 2013). In addition, the Obama administration has sought to establish the MEF as an international platform rather than a U.S. initiative. Meetings have been held in the United States and the United Kingdom, Italy, and Mexico.

Nevertheless, the USA is still the most influential state that shapes the profile of the MEF. This is reflected in the fact that most meetings take place in the USA and that work on clean energy is one of the most tangible results of the MEF (Bausch and Mehling 2011). This institution, with the support of The 17 largest economies participating in the MEF are: Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, Korea, Mexico, the Russian Federation, South Africa, the United Kingdom and the United States, will provide the necessary political leadership to achieve a positive outcome at the UN Climate Change Conference in Copenhagen in December, and promote the development of practical projects and partnerships to reduce greenhouse gas emissions (Major Economies Forum On Energy And Climate | Open Energy Information, 2020), and has made progress in promoting international co-operation on technology action plans that set out concrete steps to promote the development and implementation of low-carbon technologies (Dalkmann & Brannigan, 2010). In the run-up to the Copenhagen Conference in 2009, six meetings were held which helped the major economies to agree on several key issues. Under the Global Partnership, countries signed plans to recognize and share best practices

## 2.5. A multi-criteria assessment framework for the decision-making hub

for many clean energy breakthroughs, which served as the basis for the 2010 Ministry of Clean Energy.

The MEF continued to meet after Copenhagen, although it was less noticeable, and the discussions did not produce prevailing positions on issues relevant to the UNFCCC negotiations. The MEF thus provides a platform for the informal exchange of views on aspects of the climate negotiations and the identification of areas of convergence and divergence. At their meetings in 2013, the MEF participants agreed that the forum should include an action plan. As a result, they set up a task force for energy efficiency in buildings based on the MEF declaration and adaptation (Van Asselt, 2014). The amendment was largely ignored in sessions eleven to seventeen of the MEF, with only a few points of criticism.

The adjustment value was then discussed at the eighteenth meeting in May 2014 due to the upcoming Paris negotiations in 2015. Adaptation was also highlighted at the twentieth and twenty-first meetings, emphasizing the importance of a future Paris agreement to promote adaptation measures. The last documented meeting (at the time of writing) took place on 22 July 2015 and focused primarily on how key concerns such as adaptation should be addressed in the Paris Agreement. Therefore, before the PA in 2015, it was accepted that transformation is necessary, and that more recognition requires adaptation. Although adaptation is urgently needed, it was reported “that adaptation does not mean that mitigation and adaptation must be treated equally” (De Voogt, 2017).

### ***International Energy Agency (IEA)***

The IEA was founded in 1974 to implement an international energy program within the framework of the Organisation for Economic Co-operation and Development (OECD). A fundamental objective is to promote global co-operation and improve energy security through research, development, and demonstration in the field of energy efficiency technology and renewable energy sources (Yoshino, 2013). Put simply, a key part of the Agency’s program involves collaborating on the research, development, and demonstration of new energy technologies to minimize over-reliance on imported oil, improve long-term energy security and reduce greenhouse gas emissions. The IEA’s R&D activities are led by the Committee on Energy Research and Technology (CERT) and supported by a small staff of the Secretariat based in Paris.

## 2 Global climate change decision-making center

In addition, three working groups monitor the various cooperation agreements in the energy sector, develop new areas for cooperation and advise CERT on political issues. (Neymark & judkoff, 2002). Promoting sustainable development and combating climate change are essential elements of energy planning, assessment, and decision-making. Energy accounts for two-thirds of total greenhouse gas emissions. Therefore, the energy industry must make efforts to reduce greenhouse gas emissions and combat climate change (Climate Change Topics, 2020).

The IEA stated that the planet may be rapidly approaching a tipping point in climate change. It pointed out that action to reduce greenhouse gases would be crucial in the coming years (The Global Climate Change Regime, 2013). The global plan in the 1990s addressed environmental problems in general and climate change in particular, and due to these facts, the IEA tried to work more on energy resources and technologies. In the KP, 37 DCs dedicated themselves to the modest goal of reducing emissions by 5 percent by 2012 compared to 1990 levels. Negotiations on a successor treaty for a new commitment phase have stalled so far, and no new international agreement will enter into force before 2020.

However, the search for alternative energy sources and green energy technologies has gained momentum, especially in recent years, partly due to the growing awareness of the threat of climate change. This continues to have an impact on climate change issues, negotiations, and energy policy worldwide. In recent years, international initiatives within the IEA on climate change have increased. The most striking example of such organisational overlap is the invention of the International Renewable Energy Agency (IRENA) in January 2009, with several IEA member states – Germany, Denmark, and Spain – playing a central role in the creation of this new international organisation (Van de Graaf, 2013). In the context of COP21, the IEA mentioned that global greenhouse gas (GHG) emissions from production and energy use are twice as high as those from all other sources combined. This means that measures to combat climate change must primarily come from the energy sector. The IEA suggests that from an energy perspective, the previous four key pillars are necessary for the success of Paris:

- i. Five-year revision – review national climate targets regularly to test the scope to raise ambition.

## 2.5. A multi-criteria assessment framework for the decision-making hub

- ii. Lock in the vision – translate the world’s climate goal into a collective long-term emissions goal.
- iii. Track the transition – establish a process for tracking achievements in the energy sector (IEA Sets out Pillars for Success at COP21, 2015).
- iv. The peak in emissions – sets the conditions to achieve an early rise in global energy-related emissions.

### ***European Bank for Reconstruction and Development***

The EBRD was founded in 1991, when the collapse of the communist regimes of Central and Eastern Europe and the former Soviet states slowly emphasized the need to support the transition to democracy and a market economy (Quadrio Curzio & Fortis, 2008). Its work includes project financing, technical assistance, institutional capacity building and policy advisory services with a global focus. The EBRD’s work focuses primarily on the private sector and micro, small and medium-sized enterprises and utilizes a wide range of financing instruments, primarily loans, equity investments and guarantees (European Bank for Reconstruction and Development, 2015).

Since its foundation in 1991, the EBRD has put environmental issues, and climate change in particular, at the top of its agenda in order to facilitate the transition to market economies (Key players perspective on climate change in the Mediterranean, 2016). In light of this, the EBRD plays a major role in climate change and financing with 369 projects in 29 countries, totaling EUR 34 billion in investment. Climate change initiatives include large-scale energy efficiency in companies, financing services for sustainable energy through financial intermediaries, cleaner energy in the power sector, renewable energy and energy efficiency in urban infrastructure, carbon market support, use of new global financing instruments and support for policy discussions (Dilip & Zhu, 2012).

The EBRD’s founding agreement states: “The Bank is committed to supporting sustainable and environmentally sound growth in all its investment and technical co-operation activities.” Modern and well-functioning market economies should integrate climate change into their decision-making processes and make it a driver of growth and competitiveness. Promoting a sustainable environment and climate-friendly construction therefore goes hand in hand with other elements of

## 2 Global climate change decision-making center

the transformation process. Energy efficiency was therefore recognised early on as an important factor in improving resource efficiency and cost effectiveness.

In response to the call from the G7 Gleneagles Summit in 2005 for the MDBs to step up their clean energy financing activities, the EBRD launched the Sustainable Energy Initiative (SEI) in 2006 to increase investment in sustainable energy in its regions of operation. It improved the business environment for sustainable investments and removed important barriers to market growth (see e.g. Larionova et al., 2015; Nyekwere, 2017). SEI has used the full range of the Bank's financial instruments to support sustainable energy initiatives that emphasize energy efficiency in the energy and business sectors. For example, in the agribusiness, manufacturing and municipal services sectors. Building on the success of the SEI, the EBRD launched the Sustainable Resource Initiative (SRI) in 2013. This umbrella initiative promotes efficiency and innovation in three areas that are critical to the countries in which the EBRD invests: Energy, Water and Materials (MDB Climate Action: The EBRD Perspective, 2019).

The EBRD has stepped up its contribution to the global fight against climate change with a large increase in green financing over the next few years. The announcement was made just two months before a conference in Paris (COP21), where an international climate agreement is to be sealed and a plan with specific measures to combat climate change defined. EBRD President Sir Suma Chakrabarti stated that green finance will continue to grow: The global community has a rare opportunity to deliver a comprehensive collection of measures to combat climate change. With this new approach, which has been approved by the EBRD Board of Directors, the Bank is targeting a green financing volume of around EUR 18 billion in the coming years. In other words, the EBRD would provide as much green finance in the next few years as it has in the last ten years (Williams, 2015).

### ***International Labor Organization***

in 1919, as part of the Versailles negotiations that ended the First World War, the ILO was founded to promote the idea that a genuine and lasting peace can be achieved if it is centered on equality. The ILO became a professional organization of the United Nations in 1946. The specific tripartite agreement gives an equal voice to workers, managers and governments and provides a unique platform for all

## 2.5. A multi-criteria assessment framework for the decision-making hub

women and men to promote meaningful work (Sundholm, 2020). The ILO is the international organization responsible for developing and monitoring international labour standards (International Labour Organisation – ILO, 2020), promoting rights at work and working to ensure decent employment opportunities, improve social protection and strengthen dialogue on work-related issues (International Labour Organisation Knowledge for Policy European Commission, 2020).

Climate change is a major challenge for sustainable development and has a significant impact on economic growth and employment. Today's climate change and environmental degradation will be even more significant in the medium to long term (Addressing the Impact of Climate Change on Labour, 2017). A new report by the ILO warns that increasing heat stress due to global warming will lead to massive job and economic losses by 2030, with emerging economies being the biggest losers. The ILO study entitled *Working on a warmer planet: The impact of heat stress on labour productivity and decent work*. States that rising temperatures and increased heat stress in the workplace would lead to the loss of 80 million full-time jobs and global economic losses of 2.4 trillion dollars by 2030 (Schlein, 2019). In 2009, the International Labour Office was active at COP13 (Bali, Indonesia) as part of the UNFCCC system. Since then, the ILO has actively participated in the COPs and SBs and submitted technical reports to the Parties at the request of the UNFCCC Secretariat on areas of work relevant to the ILO's mandate. Such as the socio-economic impact of response measures or skills and other education initiatives related to climate policy. The ILO also provides detailed information on the links between the world of work and the Decent Work Program and climate change policies and impacts.

The ILO is active in the UN Working Group on Climate Change under the High-Level Committee Program (HLCP). The UN system is a coordinating body in the UNFCCC process and promotes system-wide cooperation, coordination and knowledge sharing in the program and functional areas. In addition, development programs on climate change and decent work have been established through the International Training Centre (ITC-ILO) in Turin, Italy, and at regional and national level (Belén Sanchez & Kamal Gueye, 2015).

The 21st meeting (COP21) of the UNFCCC took place from 30 November to 11 December 2015 in Paris, France. According to the ILO's Global Employment Trends, 74.8 million young people between the ages of 15 and 24 were unemployed

## 2 Global climate change decision-making center

in 2011, an increase of 4 million since 2007. For COP21, the ILO study of the ILO reports that the world is threatened by 600 million workers. The study also highlights that young people are almost three times more likely to be unemployed than adults. The ILO has mentioned that Paris needs to bridge the gap between science and society. It should worry us that investment in research continues to increase without recognizing the natural development of human resources and sustainable job creation (Arowolo, 2015).

### ***The International Maritime Organization***

As a specialized agency of the United Nations, the IMO acts as a standard-setting body in matters of international shipping, but not only in relation to health, safety, and environmental efficiency. Founded in 1948 (originally under the name Inter-Governmental Maritime Consultative Organisation), the IMO's mission is to create a fair and efficient legal framework designed for general adoption and implementation by the maritime industry. More specifically, the measures taken by the IMO regulate various aspects of international shipping, such as ship design, crewing, construction, equipment, and disposal, in order to create a clean, environmentally friendly, energy-efficient, and stable sector (International Maritime Organisation, 2019).

More specifically, the United Nations organization is responsible for developing and implementing measures to improve the safety of international shipping and prevent pollution from ships. The IMO plays a crucial role in achieving the goals set out in the United Nations Sustainable Development Goal (SDG) 14: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development (Lim, 2017). The world has already recognised the need to tackle climate change and greenhouse gas emissions, and international leaders are doing so. Everyone must do their part – no industry or sector should be exempt, including ships. Shipping is the industry that directly handles around 90 percent of world trade and is a key driver of the global economic system (IMO, 2023). International shipping is a large and growing source of greenhouse gas emissions, and emissions are expected to increase significantly unless rapid action is taken to reduce emissions (Reducing Emissions from The Shipping Sector – Climate Action – European Commission, 2020).

## 2.5. A multi-criteria assessment framework for the decision-making hub

The KP includes measures to minimize greenhouse gas emissions from international aviation and shipping. These industries are considered differently from other sources due to their multinational operations, which have been adopted by the IMO. Emissions from domestic aviation and shipping are included in the national targets of Annex I countries. The IMO reports regularly to the UNFCCC on the progress of its work. In September 1997, an International Conference of the Parties to the MARPOL Convention, which adopted the 1997 Protocol amending the MARPOL Convention (MARPOL Annex VI), also adopted Resolution No. 8 on CO<sub>2</sub> emissions from ships. In this resolution, the Marine Environment Protection Committee (MEPC) was asked to examine possible strategies for CO<sub>2</sub> reduction, considering the relationship between CO<sub>2</sub> and other atmospheric and marine pollutants (see e.g. Oberthür, 2003; Lin, 2006).

In December 2003, the IMO Assembly adopted Resolution A.963(23) on IMO policies and practices to reduce greenhouse gas emissions from ships, which mandated the MEPC to define and improve the mechanisms necessary to achieve the limitation or elimination of greenhouse gas emissions from international shipping. In July 2011, the IMO introduced binding measures to improve the energy efficiency of international shipping with Resolution MEPC.203(62). This is the first globally binding energy efficiency standard for an international industrial sector, the first legally binding agreement since the KP on greenhouse gas emissions and the first globally binding register for the reduction of greenhouse gases. The IMO has contributed to the global greenhouse gas emission targets and will continue to do so.

The IMO and its Member States recognize that international shipping, which is responsible for 2.2% of anthropogenic CO<sub>2</sub> emissions, must make a decisive contribution to global efforts to reduce the impact of climate change. During COP21, the IMO provided an overview of its research on tackling greenhouse gas pollution from bunker fuels used in international shipping (Historic Background GHG, 2020). In addition, the IMO focused on further improving guidance to promote uniform enforcement of ship energy efficiency regulations and on technical co-operation and capacity building to ensure the successful implementation and application of the above-mentioned new regulations throughout the world and, in particular, to promote international co-operation and technology transfer related to improving the energy efficiency of ships. The IMO brings together the world's

## 2 Global climate change decision-making center

governments to set the regulatory framework for international shipping, which forms the basis for global decisions such as the PA. In addition, the IMO has contributed to low-carbon technologies and the principles of the Paris Agreement through the expansion of ship design and the development of marine engineers (Adamson & Brown, 2020).

### ***Mapping an epistemic community at the decision-making centre of global climate change: The role of NGOs***

#### **Theoretical literature: Understanding epistemic communities**

The experimental imponderables and the complexity of the world's problems have made international political co-operation increasingly necessary and extremely difficult. Although various theoretical methods have been used to tackle international relations and political challenges, the approaches have offered only fragmentary insights. The study of political co-operation between states includes debates on determinism vs. free will and ways to maintain and change the international system. Among the questions discussed here is whether the behavior of a state is determined by system-level variables, by unit-level factors or by a dynamic interplay between these two factors. Whether state policymakers can define strategic interests and act independently of the social classes nominally served; and whether nations respond to opportunities to create, protect, or expand their wealth and power, increase mutual material benefits, or promote non-material benefits on a regular basis.

They recognize that human agency exists at the intersection of systems (e.g. Antoniadis, 2003; Cross, 2012). A framework for examining the role of expert knowledge-based channels – epistemic communities – in representing the cause-effect relationships of complex problems, helping states set their priorities, framing concerns for public debate, recommending specific policy actions, and defining key negotiating points (Haas, 1992). Peter M. Haas developed the concept of the epistemic community to examine the role of knowledge-based experts in international policymaking. The method was explicitly designed to study decision cases characterized by technical complexity and ambiguity (Araral et al., 2012).

## 2.5. A multi-criteria assessment framework for the decision-making hub

In a broader political sense, epistemic communities are the main channels through which the international community articulates and disseminates the regime's shared values, norms, and laws.

The epistemic societies' confidence in their unbiased competence is their most powerful tool. They provide limited knowledge of interest to decision-makers who are unaware of the dynamic political environment they face, especially on new problems with which they are politically and technologically unfamiliar. While epistemic communities are the main agents responsible for the formulation of such principles, norms and rules, the extent to which they are more widely disseminated and embedded internationally has to do with the political influence of members of epistemic communities. Their ability to persuade others, their potential to maintain bureaucratic power in important institutions, and their ability to maintain control over time (Haas, 2001).

### ***Conceptualization of epistemic communities in the context of the decision centre: PA***

Epistemic communities are important actors in an environment where transnational systems continue to grow and evolve. Many scholars have recently examined cases of "transnationalisation" in specific areas of global governance, such as the development of safety standards for the aviation, shipping, automotive, food, pharmaceutical and telecommunications industries, as well as corporate social responsibility and corporate citizenship. These areas of global governance can lead to more regulation when it comes to climate change negotiations and agreements (Cross, 2012). A key aspect of this transnationalisation is therefore the problem of climate change. Shaping climate change is the new role of non-governmental organizations, multinational corporations, international environmental groups, and international expert groups known as "epistemic communities" (Schreurs, 1996).

Therefore, the literature on the epistemic community, non-governmental organizations and international environmental groups, politics and climate change has raised the interest and visibility of international relations. The link between science and policy identified by the IPCC and the UNFCCC is supported

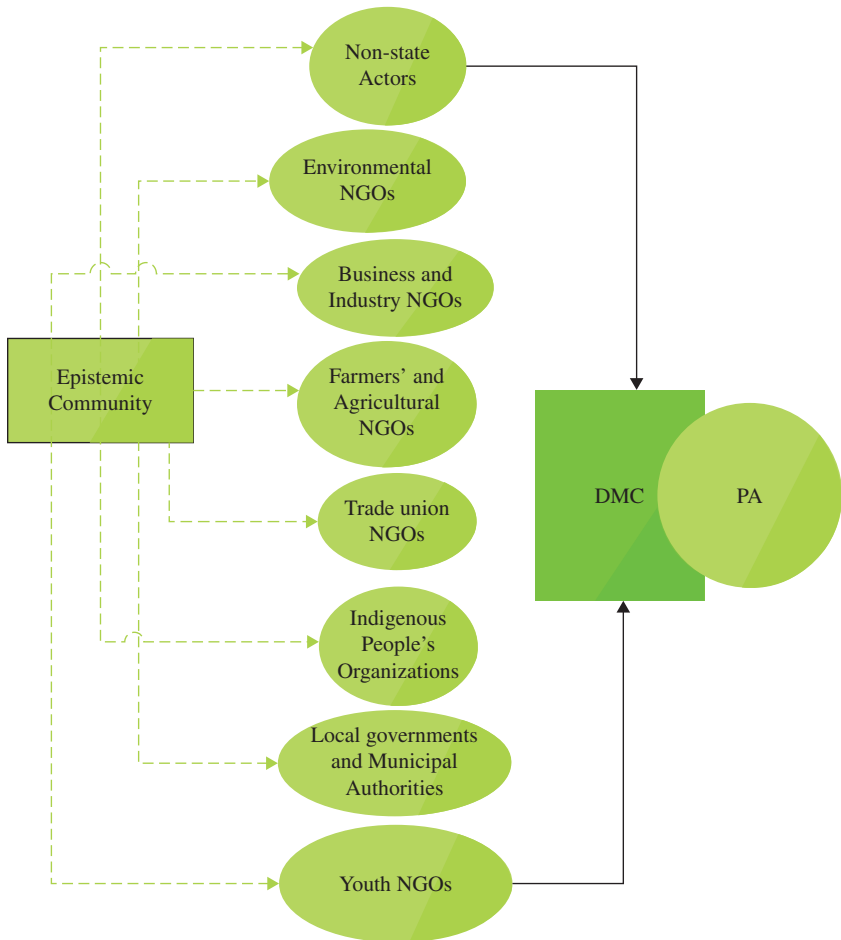
## 2 Global climate change decision-making center

by proponents of the KP, including government officials, international organizations, scientists, NGOs, and businesses. Through the IPCC, a distinctive knowledge-based framework for climate change assessment and policy has emerged. Non-governmental organizations have been instrumental in ensuring the credibility of inclusiveness required for the epistemic alliance to have adequate authority, including the expert advisors.

A very crucial factor may be the fact that ENGOs, intergovernmental and governmental organizations, the academic community and even certain business groups are in a coalition and this community. Non-governmental organizations that have participated in the formation of the epistemic community on climate change have been forced to shift their frame of reference away from ethical and overtly political problems and towards science and technological, political interventions and responses (Gough & Shackley, 2001). The author of the present study has used the short literature on an epistemic community to describe networks in which PA is involved. The concept of cop21 was used as an example of an international epistemic community. Epistemic communities are recognised as key actors in transnational global governance, particularly in climate governance, and are an essential means by which knowledge is translated into power. They are an essential means by which knowledge is transformed into power.

Knowledge communities shape specific government policies and shape climate governance and negotiations more broadly by including the climate issue in negotiations and integrating it into development policy. The outcome of the Paris conference shows that such communities were sufficient to move international discussions on climate change from the emergent stage to the cascade stage. The researcher has argued that the epistemic community framework, together with the concept of climate change negotiations, helps to understand how the DMC has improved its approach to PA. The epistemic community network has enabled an expansion of climate negotiations. It has led to a snowball effect where the PA has been able to demonstrate in global climate governance how to use this network for better, long-term effective decisions. It is therefore important to recognize that epistemic communities in the PA can consist of non-state actors, ENGOs, business and industry NGOs, (BINGO) farmer and agricultural NGOs, trade union NGOs, youth NGOs (YOUNGO), indigenous people's organizations, local governments, and municipal authorities (Figure 5).

## 2.5. A multi-criteria assessment framework for the decision-making hub



**Figure 5.** Epistemic communities role in decision-making center of Paris Agreement.

Source: Author own-constructed.

### ***Non-state actors in the UNFCCC***

Non-state actors include organizations and individuals that are not affiliated with, directed, or funded by the government. These include companies, private financial institutions, non-governmental organizations, and paramilitary and armed

## 2 Global climate change decision-making center

resistance groups (Non-State Actors, 2020). Non-state actors in global environmental governance are increasingly seen as representative actors acting on behalf of others. The responsibility of non-state actors in climate policy, for example, has generated a wealth of academic work. Peter Newell (2008) has described in detail how non-state actors translate their (lack of) interference into transparency claims against companies and public institutions. The responsibility of non-state actors in the broader UN system has been discussed by Peter Willetts (2011).

Karin Bäckstrand (2008) developed a typology to capture transparency in public-private partnerships with non-state actors (Kuyper & Bäckstrand, 2016). Understanding the role of non-state actors in climate policy is becoming increasingly important for the implementation of climate governance and the adoption of measures that will lead to more positive outcomes. The implementation, compliance and effectiveness of international climate law and policy will not be successful if it is limited to governments and IGOs. The implementation of successful climate policy therefore depends on state actors and increasingly also on non-state actors. Non-state actors have already made considerable efforts in the run-up to the major talks to define policy, participate in the debates during the meetings and ultimately contribute to the final agreements by monitoring and evaluating the outcome. At COP20 in 2014, where states and the UNFCCC Secretariat launched a forum called the Non-State Actors Zone (NAZ), there was a significant push for non-state actors. Over 5,200 different actors have participated in this platform. The aim is to connect governments with non-state actors and create synergies to achieve ambitious climate policy goals and improve mitigation and adaptation targets. In 2014, while non-state actors had been acting on climate change for many years, there have been more deliberate and emphatic efforts to link action to the UNFCCC intergovernmental process (Ersin, 2018).

In September 2014, UN Secretary-General Ban Ki-moon organized a climate summit in New York, which was attended not only by heads of state, but also by mayors, CEOs, civil society organizations and others. All non-state actors were encouraged to make ambitious pledges. The Office of the Secretary-General worked for several months before the summit to organize dozens of initiatives bringing together different actors around specific climate goals. Shortly after COP20 and with a view to COP21 in Paris, the UNFCCC Secretariat, the UN Secretary-General's Office and the governments of Peru and France launched the Lima-Paris Action

## 2.5. A multi-criteria assessment framework for the decision-making hub

Agenda, an unprecedented attempt to coordinate further commitments and initiatives by all actors and sectors. The Action Agenda ultimately mobilized over 10,000 commitments from non-state actors and was declared the “fourth pillar” of COP21 by the French COP presidency (see e.g. Kuyper et al., 2017; Hermwille, 2018). More specifically, non-state actors played an influential role in the PA because they created positive ‘mood music’ and built a narrative of opportunity and momentum, particularly in the media and elite forums, which states were reluctant to disrupt. The COP21 decision text institutionalized the role of non-state actors in the new architecture of the UNFCCC regime. The governments in Paris have created a new system to track, support and accelerate non-governmental climate action in the future. They appointed two ‘High-Level Champions’ to mobilize additional action from cities, states, regions, businesses, investors, and others. They recognised the NAZCA portal as the global system for tracking such activities. They mandated that a high-level event for non-state actors be held at each COP to announce new commitments and report on progress. They also decided to link the action agenda to the technical process in the negotiations, in which countries consider new policy options they could adopt so that non-state action can influence national policies and vice versa (Hale, 2018).

### ***Environmental NGOs***

NGOs are generally referred to as non-governmental organizations (NGOs), but states can sponsor them. Such organizations are mainly active in the public sector. The World Bank describes non-governmental organizations (NGOs) as private entities that work to alleviate poverty, promote the rights of the vulnerable, protect the environment, provide essential social services, or promote sustainable growth. According to the Asian Development Bank (ADB), the term NGO refers to groups that are not affiliated with the government and do not pursue commercial objectives (see e.g. Clarke, 1998; Florini & Sovacool, 2009). The characteristics of NGOs can be considered as follows: Environmental monitoring and reporting, environmental protection, resource and environmental management, community-based projects, provision of basic social services, awareness raising, campaigning and advocacy, education, training and capacity building, government-NGOs partnership, regional and international cooperation and networking, engagement in

## 2 Global climate change decision-making center

emergency relief, promotion of the interests of the poor, promotion of community development, environmental management plans, biodiversity and wildlife conservation (Badrudin, 2015). In recent years, the range of activities of ENGOs and other important groups has expanded.

The activities of ENGOs and other major groups are broader than simply raising environmental awareness and acting as advocacy groups. Their movements now include environmental monitoring, promoting environmental education, training, capacity building, conducting demonstration projects, lobbying in partnership with government and promoting regional and international environmental co-operation. Many are also involved in the practical management of nature reserves. They encourage community or individual action and advocate for greater government and corporate sector involvement (Al Mubarak & Tanzeed, 2012). NGOs influence international conventions, monitor government implementation of agreements, and raise public awareness (Baylis et al., 2019).

The access of NGOs as observers at UNFCCC conferences has been open and comprehensive. The literature on climate change shows that NGOs played a prominent and conspicuous role in the international negotiations on climate change. Nearly 1,100 NGOs participated in the 1992 Rio Conference, while 134 NGOs participated in the 1972 Stockholm Conference on the Human Environment. In 1997, 3,865 NGOs participated, in 2009 there were 13,482 NGOs, but this number dropped to 5,386 in 2010 and 3,985 in 2014 (Depledge, 2016). While there was little room for NGOs to participate in the official negotiations, apart from the opening and closing remarks on the ADP mechanism and the final speeches at the last meeting of the parties that formally adopted the Paris Agreement, they had other opportunities to make their voices heard. The main contribution of NGOs to COP21 is the provision of technical information and expertise to inform other relevant stakeholders about their actions.

During COP21, NGOs provided insights into the science of climate change, disseminated information and updates on the status of negotiations through briefings, press conferences and the newsletter ECO, published by the global environmental umbrella organization Climate Action Network (CAN), and advocated for their preferred text options through informal networking or external lobbying and protest actions. Eight constituencies were represented in Paris: Industry and business (BINGO), local Governments and municipal authorities (LGMA),

## 2.5. A multi-criteria assessment framework for the decision-making hub

environmental Organizations (ENGO), Indigenous Peoples (IPO), 29 Research and Independent NGOs (RINGO), Trade Unions and Non-Governmental Organizations (TUNGO), Women and Gender Organizations (Women and Gender) and youth Organizations (YOUNGO) (Finiguerra, 2017).

### **BINGO**

The BINGO constituency serves the economic and industrial sector. According to a 2014 study by Nasiritousi, Hjerpe, Linnér, it is seen as influencing decision-making, agenda-setting and decision-makers, especially on mitigation issues where industry plays a central role. According to BINGO's latest statement, one of its main priorities is to promote flexible market-based instruments and the implementation of technological innovations, and to provide its members with professional and sectoral knowledge. The importance of business in providing technical skills and industry knowledge is credited for BINGO's high reputation. Its focus is on the International Chamber of Commerce, which has a long tradition of representing trade interests in international forums.

The economic interests of governments are undoubtedly significant and well represented by BINGO officials, but it is important to recognize that their priorities are far from uniform. BINGO encompasses a wide range of companies around the globe, from major emitters to technology solution providers, with the latter having grown in importance over the years (Alessi, 2020). In terms of the climate regime and negotiations, BINGOs are among the longest-standing and most active observer groups participating in the climate regime. From the early 1990s, when negotiations for an international conference began, to the signing and rationalization of the KP at the end of the century, business participation and engagement was dominated by the fossil fuel lobby – organized primarily by the Global Climate Coalition, a coalition opposed to emissions reduction and regulation that includes US and some European oil, coal, and vehicle manufacturers. By the turn of the century, however, the BINGO constituency had grown and diversified. It now encompassed a broader range of organizations with widely divergent interests, mandates, and strategies in the international climate regime. The growth of BINGO as a distinct type of business also reflects corporate efforts to increase their credibility as foreign political actors. The emergence and development of

## 2 Global climate change decision-making center

BINGOs in the climate negotiations is due to the UNFCCC Secretariat's requirement that all non-state actors be for-profit, as well as the Secretariat's ability to coordinate the participation of observer organizations in various NGO groups (Vormedal, 2008).

BINGO argued that the business community needs to understand the implications of the potential 2015 agreement and that it wants to contribute to the future Agreement. They explained that business routinely engages with governments – at national and sub-national level – through well-established channels. A recognised, continuous channel for business input will be essential for a successful, practical, and implementable post-2020 Agreement. BINGO pointed out that the Paris agreement should encourage and work with markets, including carbon pricing in countries that aim to do so, and encourage innovation and technology deployment (see e.g. Wamsler et al., 2020). Companies are willing to support and work with governments to create a broad and deep toolkit of different market instruments, risk mitigation and frameworks during and after COP21. To make the treaty “future-proof”, i.e., resilient and lasting in its relevance, they urged governments to develop flexibility to adapt to new scientific, technological, and economic knowledge and experience. The business community wants clarity and predictability in public policy. For business, the new agreement should recognize the interlinked challenges of energy access and energy security and advance the broad post-2015 development agenda (UNFCCC, 2014).

### ***Agricultural NGOs***

Non-governmental organizations, also known as NGOs, play an important role in people's lives and promote diverse economic growth. The agricultural sector is one of the areas promoted by NGOs. In this way, people get jobs, earn a living, have a better lifestyle, and develop their economy (Role of NGOs in Agriculture Development, 2015). Agriculture also has an important impact on climate change. In 2005, it contributed to 10–12 percent of total global greenhouse gas emissions (5120 MtCO<sub>2</sub> eq/yr to 6166 MtCO<sub>2</sub> eq/y). It is worth noting that the five regions, mainly non-Annex I countries, were responsible for 74% of total agricultural emissions. These are also the regions where the largest share of food production is expected in the future (Muldowney et al., 2013). The provisions of the UNFCCC

## 2.5. A multi-criteria assessment framework for the decision-making hub

explicitly address the position of agriculture in relation to climate change, both in terms of mitigation and adaptation. Food protection is listed as one of the three requirements that guide the understanding of the ultimate objective of the Convention.

The Convention explicitly requires that the reduction of greenhouse gas concentrations in the atmosphere must take place within a timeframe that ensures that food production is not affected. Agriculture is also mentioned as one of the economic sectors for which Parties must prepare plans and measures to reduce greenhouse gas emissions (Kalfagianni & Duyck, n.d.). Regarding the negotiations on climate change, the role of agriculture and related non-governmental organizations was addressed by the Ad Hoc Working Group on Long-Term Action (AWG-LCA) for the 2009 UNFCCC meeting in Copenhagen.

In it, members pledged to promote research and development and technology transfer and to work together to reduce greenhouse gas emissions while promoting agricultural efficiency and productivity and addressing development priorities and food security. In the discussions on climate change in Copenhagen, not enough time was devoted to agriculture and non-governmental organizations to overcome the technical aspects required to reach only a political agreement on the inclusion of agriculture in the treaty. However, the text on agriculture proposed in Copenhagen was dropped by the Parties in Cancun (only the call for a work program of the Subsidiary Body for Scientific and Technical Advice – SBSTA) (Elbehri et al., 2011). The Paris agreement opens the door for more adaptation and mitigation in the agricultural sector with the help of NGOs.

The Paris Agreement aims to limit the increase in global average temperatures to “well below two degrees C” and to pursue efforts to limit it to 1.5 degrees C, which will come into force in 2020. Food security and agriculture are not ignored in the Paris Agreement (Research Program on Climate Change, Agriculture and Food Security, 2015). Prior to the PA in 2014, governments and critical non-governmental organizations discussed how an improved agricultural sector and better land use could reduce emissions and build resilience as part of future meetings in 2015. The coalition and the debates on agriculture in New York could boost governments and NGOs in their attempts to raise immediate climate ambition under the UN Framework Convention on Climate Change and the universal climate agreement to be negotiated in Paris in 2015. During the meeting in

## 2 Global climate change decision-making center

New York before the Paris Summit on Agriculture and Land Use, several multilateral organizations presented their work.

The GEF, for example, described areas in which it contributes to financing sustainable agriculture. The Technical Expert Meeting on Land Use concluded that despite the enormous challenges, food producers have good opportunities to increase their productivity, reduce emissions and strengthen their resilience. States and non-governmental organizations also pointed out that the land sector should be an essential element for increasing the immediate climate targets and the global climate agreement of 2015 (Agriculture to Play Key Role at UN Summit, 2014).

### ***Trade union NGOs – TUNGO***

Both trade unions and NGOs are the leading international actors in civil society. NGOs are voluntary, independent, not-for-profit and do not pursue self-serving goals (see e.g. Breitmeier & Rittberger, 2000; Davies, 2014). A trade union can be seen as a self-interested membership organization that primarily advocates for the interests of its members. Historically, trade unions have argued that a consistent defense of their members' interests requires a long-term struggle for a social and political context at national and international level that serves the well-being of people and society. They rightly claim to serve the interests of the community, as do NGOs working to improve human living conditions (Spooner, 2004). The transition to a low-carbon economy within a few decades is a challenge for all countries. Decarbonizing an economy that is still highly dependent on fossil fuels will require, among other things, far-reaching industrial change and technological transformation, the development of new energy patterns, new business models and a more circularity in production and consumption. The transition will improve air quality and reduce energy dependency (see also Asadnabizadeh, 2021).

It could be an excellent tool for job creation and an opportunity to strengthen global know-how and technological capabilities in the field of environmental innovation. The transition will reshape the labour market in ways that bring both new risks and new opportunities for workers: new jobs, but in some cases also job destruction, the replacement of some existing occupations with new ones, and the need for new competences and skills. Certain sectors and regions, especially those

## 2.5. A multi-criteria assessment framework for the decision-making hub

dependent on carbon-intensive industries, could be more affected than others. Anticipating these trends and their impact on workers is at the centre of trade union activities. Climate governance and related policy planning provide an opportunity for trade unions to improve their understanding of the ongoing changes and their influence on climate policy (Denis & Herrera Rodriguez, 2017).

Independently of the literature on the role of trade union in climate policy, Uzzell and R athzel (2013) emphasize the value of trade union climate action. R athzel and Uzzell summarize the narratives that unions use to express their climate policies and some of the dilemmas they encounter when interacting with progressive issues such as the struggle between job preservation and the quality of services for workers (R athzel & Uzzell, 2011). More than 400 trade unionists took part in activities related to the 15th Conference of the Parties to the UNFCCC, which took place in Copenhagen from 7 to 18 December 2009. The international trade union movement had two main objectives in Copenhagen: to promote efforts to reach an ambitious agreement at COP15 and to ensure that fundamental labour issues are included in these decisions. The International Trade Union Confederation (ITUC) issued a comprehensive statement entitled ‘Trade Unions and Climate Change. Equality, fairness, and unity in the fight against Climate Change’, which addresses the key aspects of climate change, its labour relations, and the role of trade unions. This statement sets out the key objectives of the trade union movement in the negotiations and in its alliances with other key decision-makers on climate change (Trade Unions at The UN Framework Convention on Climate Change UNFCCC – COP15, 2009).

The 21st session of the UN Framework Convention on Climate Change (COP21) had the task of agreeing on a new climate framework to drive forward the implementation of the climate convention. This includes the long-term goals that states will pursue, the way in which they will increase the ambition of their nationally determined contributions (INDCs), the amount of climate finance to be mobilized in the future and a purpose for adaptation. The ITUC had 117 badges, that allowed us to register 171 delegates, thanks to the split between week 1 and week 2. In addition, several unions registered under their status or through their government representative. The trade union’s demands for Paris were distributed in the run-up to and during COP21. The Trade Union climate summit (Paris, 14–15 September 2015) and the Trade Union Forum on Climate and Employment

## 2 Global climate change decision-making center

(3–6 December 2015) helped to spread the messages in a very “crowded” media environment. The ITUC also launched a call for dialogue for a just transition, jointly signed by civil society and business allies, which was published the day before the COP began (Trade Unions at The UN Framework Convention on Climate Change, 2015).

### ***YOUNGO***

It is generally recognised that youth organizations are non-profit, voluntary NGOs run by young people. Under certain conditions, they can either be part of the state system or run by youth workers. They are usually established to promote the political, financial, cultural, or economic interests of their members. Typically, youth organizations focus on promoting and safeguarding the democratic and social rights of young people and facilitating their social and political participation in society at all levels. They also provide opportunities for personal and social development through recreational activities, volunteering, and non-formal and informal learning (Youth Organisation and Youth Programme, 2020). Youth participation within the United Nations (UN) has a long and productive history. Resolution No. 3022 of 1972 describes “channels of communication with youth and international youth organizations”. In 1981, the General Assembly and the then Secretary-General Kurt Waldheim called on the governments of the world to include youth delegates in their national delegations (Darrach, 2011). According to the guidelines for the participation of representatives of non-governmental organizations in UNFCCC meetings, “representatives must normally be at least 18 years of age. At COP5 in Bonn, which took place from 25 October to 5 November 1999, young people got involved as NGO representatives by launching official initiatives and influencing delegates in a parallel children and youth forum on the environment. At COP7 in Marrakech, youth organizations issued statements calling for “a low-carbon future and to see the entry into force of the Protocol as the beginning of a ‘long road’ in the fight against climate change”. At COP10 in Buenos Aires, young people came together for the first time as an “organized caucus” to draft a resolution calling for “the establishment of a Youth Community Group within the COP to ensure youth engagement, in line with other communities such as businesses, indigenous peoples and environmental organizations.”

## 2.5. A multi-criteria assessment framework for the decision-making hub

At COP11/CMP 1 in Montreal, the Canadian government sponsored an ambitious “International Youth Summit” organized by Canadian environmental youth groups. At COP13/CMP 3 in Bali, young people held the third youth conference and actively participated in the COP through press conferences and side events. At COP14/CMP 4, over 500 young people gathered in Poznan to call on governments to work together for an ambitious climate Agreement. Prior to COP15/CMP 5, the Secretariat granted young people provisional constituency status. This new constituency is referred to as YOUNGO. The status of the constituency (a) enabled the exchange of official information between young people and the Secretariat; (b) assisted the Secretariat in ensuring effective youth participation appropriate for an intergovernmental meeting (O’Doherty et al., 2015). Youth participation at COP21 was unusual due to unusually high public interest, increased registrations, and the reduction of quotas for regular participants. Youth participation combined with heightened security precautions following the Paris terrorist attacks resulted in an unprecedented number of negotiations being closed to observers, which negatively impacted perceptions of youth participation (Thew, 2018).

### ***Indigenous people’s***

Indigenous peoples are communities that live in or are associated with geographically distinct traditional habitats or ancestral territories and identify themselves as part of a particular cultural group descended from groups that lived in the area before modern states were established and today’s borders were defined. They maintain cultural and social identities and social, economic, cultural, and political institutions that are separate from the mainstream or dominant society or culture (WHO Indigenous Peoples, 2020). Indigenous peoples in relation to climate change are not explicitly mentioned in the UNFCCC text. Nevertheless, Article 4 of the Convention calls on developed countries to recognize the problems and risks faced by developing countries due to climate change.

Article 4, paragraph 8 defines the emergency faced by different social groups, such as those living in areas threatened by sea level rise, those vulnerable to heat waves and desertification, those prone to natural disasters, or those with fragile ecosystems, including the ecosystems of mountainous regions

## 2 Global climate change decision-making center

(Macchi et al., 2008). Since the adoption of the 1997 Kyoto Protocol to reduce global greenhouse gas emissions, members of indigenous peoples have begun to push for participation in climate change agreements, but they have been left out. In 2004, the UNFCCC – the international environmental agreement that was signed at the Earth Summit in Rio de Janeiro from 3 to 14 June 1992 and entered into force on 21 March 1994 – recognised their participation. Since 2013, representatives of indigenous peoples have been meeting at international conferences and other forums. This has enabled them to collectively claim their rights to protection under national and international law on the basis of both human rights and environmental protection (Etchart, 2017). Indigenous peoples and local communities (IP/LCs) are supported in preparing for effective participation in COP21:

- i. The capacity of indigenous peoples and local community representatives to engage effectively in COP21 is strengthened.
- ii. Key IP/LC representatives are supported to participate in preparatory/planning meetings throughout 2015.
- iii. IP/LC positions and contributions to COP21 are defined through national and regional consultations.
- iv. IP/LC experiences and perspectives are communicating to government representatives and UNFCCC negotiators through the state- and region-specific activities in the run-up to and during COP21.
- v. The visibility and standing of IP/LCs in their own countries are strengthened through opportunities to interact with their governments in an international setting.
- vi. Robust and helpful dialogue is facilitated among IP/LCs, governments, private sector, multilateral and others, both inside and outside the formal UNFCCC negotiations area.
- vii. IP/LCs deliver a declaration(s)/call(s) for action addressing priority issues (e.g. land titling, respect, and restoration of traditional territoriality, dedicated territorial climate finance, self-determination, and free, prior, and informed consent) and are duly profiling as innovators, partners, and essential stakeholders in the Paris agreement (LCIPP, 2021).

## 2.5. A multi-criteria assessment framework for the decision-making hub

### ***Local governments and municipal authorities***

Nine stakeholder organizations, including local governments, were named at the 1992 Earth Summit as key partners of society for the implementation of the global sustainability agenda. Since the first (COP) in 1995, the LGMA Constituency has represented local and regional governments in the UNFCCC processes. Since 1995, the LGMA Constituency has represented local and regional government networks in the UNFCCC process (About the LGMA – Cities & Regions Pavilion – LGMA, 2020). The challenges that climate change poses to people and the world cannot be solved without the involvement of local authorities.

Between 1990 and 2007, the roadmap for local climate action was established within the UNFCCC and beyond through active participation in the UN Earth Summit and subsequent Conferences of the Parties (COPs), as well as through the launch of initiatives such as the Municipal Leaders' Summit on Climate Change. The Local Government Climate Roadmap was developed from 2007 to 2013 and has led to a number of successes. This includes recognizing the contribution of local and subnational governments in the official COP outcome documents and the launch of the Carbon Climate Registry. In the period 2013–2015, the mission of the Local Government Climate Roadmap has been accomplished as the world moves towards a climate agreement at COP21 in Paris in 2015. After eight years of tremendous mobilization at all levels, the Local Government Environment Roadmap has achieved its overall goals (Arikan & Brekke, 2015). In addition, local and subnational governments are actively advocating rapid and transformative climate action within and outside the COP21 negotiation process. These efforts are supported by the Transformative Actions Program (TAP) at COP21 (Subnational Governments and COP21, 2020).

### **2.5.3 The decision-making centre of the climate change instrument: Transboundary organizations**

The management of the decision-making centre for global climate change can be understood in terms of boundary organizations. The creation and function of boundary organizations for the study of the global decision-making centre for

## 2 Global climate change decision-making center

climate change (Paris agreement) is important. These organizations can influence the climate change decision-making centre in two ways at the global level: (1) SBSTA (2) SBI. These organizations are one such instrument to coordinate the production of policy-relevant yet policy-neutral scientific work in the global climate change decision-making hub.

### ***The Subsidiary Body for Scientific and Technological Advice (SBSTA)***

The SBSTA is one of the two permanent subsidiary bodies of the Convention established by the COP/CMP. It supports the work of the COP, the CMP, and the CMA by providing timely information and advice on scientific and technological issues related to the Convention, the KP and the Paris Agreement (see e.g. Koetz et al., 2008). The SBSTA's main areas of work include impacts, vulnerability, and adaptation to climate change, promoting the development and transfer of environmentally sound technologies, and conducting technical work to improve the guidelines for the preparation and review of greenhouse gas emission inventories of Annex I Parties. The SBSTA carries out methodological work within the framework of the Convention, the KP and the Paris Agreement and promotes co-operation in research and the systematic observation of the climate system.

In addition, the SBSTA plays an essential role as a link between the scientific information provided by expert sources such as the IPCC on the one hand and the policy-oriented needs of the COP on the other. In view of COP21, it is expected that the SBSTA's support for climate action in the agricultural sector, including NAMAs, will increase in the context of the SBSTA, the COP and the submission of the NDCs. The aim of the session during COP21 is to highlight progress and pathways for countries interested in climate finance for agricultural mitigation through livestock. Agricultural NAMAs finance reduced emissions while supporting agricultural production and livelihoods. This side event will focus on discussing active NAMA proposals that will reduce emissions while improving livestock productivity. Experts spoke about monitoring, reporting and verification (MRV), public-private partnerships and financing opportunities (UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA), 2020).

### ***Subsidiary Body for Implementation (SBI)***

SBI stands for SBI. Its work is at the centre of all implementation issues under the Convention, the KP and the Paris Agreement. In this respect, its plan is orientated around the critical building blocks of implementation of all these treaties and instruments: transparency, mitigation, adaptation, finance, technology, and capacity building, and aims to strengthen the ambition of Parties in all aspects of their plan (see e.g. Jacob, 2003). From 2014, the SBI increasingly focused on the further development of the MRV issues as outlined in the Cancun Framework. To this end, two processes were launched, the International Assessment and Review (IAR) process and the International Consultation and Analysis (ICA) process, which are conducted under the SBI. In addition, the SBI annually reviews the development of greenhouse gas emissions of developing countries and regularly reports on the policies and measures of industrialised and developing countries, which enable us to track global emissions as well as mitigation and adaptation measures. Efforts in the areas of financial, technological, and capacity-building support, research, and systematic monitoring, as well as education, training, and public awareness (Subsidiary Body for Implementation (SBI), 2020). The Paris Agreement and its COP decisions do not contain any concrete next steps to promote education before the agreement enters into force. However, in Paris, the Parties adopted the mandate for the interim review of the Doha work program on Article 6 of the Convention. With this decision, the COP requested the SBI to initiate the interim review of the implementation of the Doha Work Program on Article 6 of the Convention at the UNFCCC negotiating session in May 2016, so that the review can be completed by November 2016, at COP22. The study should be used to drive the education and public awareness agenda over the next four years and enable Parties at the CMA1 to adopt a program to further improve the implementation of training, public awareness, public participation, and public access to information to drive action under the Agreement (Dagent et al., 2016).

### **Conclusion**

In this chapter, the author has begun to review and analyze the global decision-making centre of the Paris Agreement (DMC-PA). The decision-making

## 2 Global climate change decision-making center

centre is a well-structured position that can be seen as a global decision on climate change in the Paris Agreement. The key to understanding the decision-making centre of the Paris Agreement is the author's ability to carefully identify all relevant elements of the global decision-making centre. In this chapter, the author has attempted to provide the details such as the understanding of decision-making in international relations, the decision-making centre in climate change negotiations, the specifics of DMC-PA, the actors of DMC-PA, the institutional structure of the global climate regime, the IGOs, the United Nations system, the WHO, the UNDP, the MEF, the IEA, the EBRD, the International Labour Organization (ILO), the IMO, the role of NGOs in epistemic communities and the conceptualization of epistemic communities in the context of PA.

Therefore, the author believes that the DMC-PA analysis and its variables have made a significant contribution to the global decision-making centre of climate change negotiations, not only theoretically, but also substantively and methodologically. The variables (indicators) that express the environment and development status of climate change actors through simple classification and graphics in this chapter effectively support the understanding of the global decision-making centre.

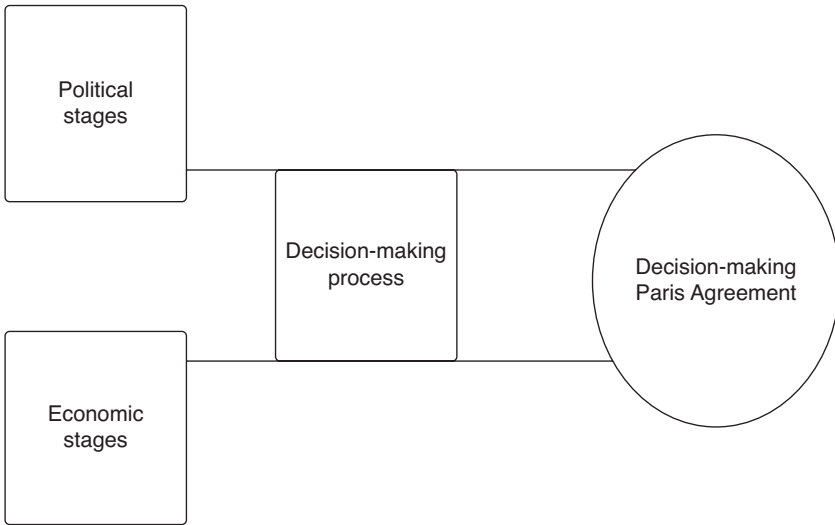
# 3

## **Global decision-making process on climate change: Paris Agreement**

The global decision-making process (DMP) is an essential criterion of this book, which plays an important role in the IID approach. In other words, it is a good idea to look at the Paris Agreement from the IID perspective, which can be achieved through its third phase, namely the decision-making process on climate change. At this stage, it is important to analyze how the Paris Climate Agreement was framed as a global decision to change climate negotiations. Based on the DMP, this book proposes a framework to define and analyze the process of the Paris Agreement on climate change through the two-stage structure of the global decision-making process. It considers the range of political and economic stages (Figure 6). At the centre of each stage would be the political and economic dynamic(s) of the decision, identified with sufficient precision to allow the author to better analyze them. The techniques of the two-level structure provide an effective means of understanding how the global decision-making process is used to construct the current political and economic stages for the global decision-making process, namely the Paris Agreement.

This analysis would begin by identifying and characterizing the discrepancies between the political and economic aspects of the decision. It would then diagnose the reasons for the design of the Paris Agreement, accepting the possibility that the two levels are not at the same level. The analysis in this part covers broad areas of information and decision-making in political and economic terms, analysing the practical aspects of three individual decision tables.

### 3 Global decision-making process on climate change: Paris Agreement



**Figure 6.** Decision-making process for the structure of Paris Agreement.

*Source:* Author own-constructed.

### 3.1 A framework for diagnosing the structure of the global decision-making process

Decision-making is the selection of a course of action from a range of alternatives. It is an essential part of planning, but also a fundamental part of the overall management process. The six main stages of the decision-making process are problem recognition and diagnosis, identification of options, evaluation of alternatives, selection of an option, implementation, and evaluation (Tiernan & Morley, 2013). Andy Afinotan (2014) argues that decision-making in international relations is the deliberation of choices between alternative courses of action. The degree of independence enjoyed by a nation's state can be measured in a particular way by the extent to which the decisions of its leadership are influenced by events in the external environment, rather than the extent to which its actions or decisions are influenced by events in its external environment. He believes that the decision-making process encompasses the various techniques and strategies used to plan. This technique refers to the competence of the decision participants, the

### 3.1 A framework for diagnosing the structure of the global decision-making

information available to them and their motives or motivation (Afinotan, 2014). In addition, Herbert Simon (1960) pointed out that the decision-making process consists of the following stages:

1. Intelligence (gathering information and identifying the problem)
2. Design (identify alternatives and select criteria)
3. Selection (use criteria to evaluate alternatives and make a decision)
4. Implementation (putting the decision into action and allocating resources)  
(Mintz & DeRouen, 2010).

As the uncertainty of climate change is relatively new to decision-makers, building capacity to cope with climate change is a critical adaptation measure. Therefore, governments have a crucial role to play in creating the framework conditions necessary for decision-making and change. The decision-making process must focus on providing people with the appropriate knowledge, incentives, resources, and skills to increase their resilience and adapt themselves to climate change (World Resources Institute, 2002). The decision-making process can take place in different ways and in different steps, which are discussed below. These steps are similar to those described for climate change adaptation processes:

- a) Identifying and analysing the problem.
- b) Identifying and prioritising the decision criteria.
- c) Determining the prioritised solution.
- d) Generation of solution options.
- e) Evaluation of the generated options.
- f) Selecting and applying the best option.
- g) Analysing the results

From these points of view and with these theoretical elements, different organizations implicitly or explicitly face their different needs to deal with evolutionary or change processes in which the scientific and technical knowledge apparently available is not always sufficient to make good decisions (Bustos & Vicuna, 2016). These studies provide starting points for intervening in the decision-making process in global climate change negotiations. Vihma pointed out that the COP

### 3 Global decision-making process on climate change: Paris Agreement

decision-making process in the global UN climate negotiations remains essential and problematic. Since the 1970s, the COP has been a regular paradigm for treaty negotiation and management in international environmental treaties. Although the COP and its decision-making process are limited in some respects, they have been and will most likely remain a crucial element of global climate policy. Even though the COP and its decision-making process are not legally binding, it is clear that they have been used with far-reaching political, if not legal, implications.

Therefore, understanding the high-level meetings leading up to COP21 in Paris is an incentive to analyze at least some of the pressing issues surrounding global climate problems and the decision-making process (Vihma, 2014). In order to understand why the given information can be used as a framework to examine how the global decision-making process of the negotiations at the PA was shaped, the author of this chapter will analyze the main process of the global decision-making negotiations before the PA. The author examines the global decision-making process of the negotiation structures that incorporate political and economic factors and feed into major global decisions on climate change before the PA, for example, starting from the Durban Summit, through Doha and Warsaw, to Lima.

#### **3.1.1 Two-stage structure for the global decision-making process: Application to PA**

This part of the book analyses a two-stage decision-making process for global climate negotiations. The author has chosen to divide the decisions in the run-up to Paris into two phases, a political phase, and an economic phase. The two-stage decision-making structure, which clearly underlies the analysis of pre-COP decisions in Paris, depends on political and economic signals based on available resources.

##### ***3.1.1.1 The rationale for the political stages of the decision-making process***

The political stages of global climate negotiations are a tool to examine the critical issues surrounding the process of global decision-making on climate change. The importance of the PA has led the author of this study to explore a better and practical understanding of the driving forces and political factors that have influenced the DMP-PA. Assessing these complex issues from a political perspective

### 3.1 A framework for diagnosing the structure of the global decision-making

helps to describe the interactions between the different COPs in response to climate change issues and provides broader opportunities to better understand the global decision-making process on climate change.

Therefore, this part of the study analyses the political signals of decisions in the climate change negotiations in the context of the pre-PA period. In other words, to what extent is the DMP-PA involved in the political factors of pre-PA negotiation decisions. This is a crucial criterion to better understand the issues that influence decision-making in a given global climate negotiation. This section looks specifically at 17 key factors based on decisions made during the pre-PA global negotiations. Firstly, it looks at the Durban Political Stages (DPS), DOPS, then the Warsaw Political Stages (WPS) and LPS. Finally, the Paris Political Phases (PPS) are analyzed (Table 1).

The structure of the constructed table shows the different political characteristics of the decisions taken by the states in the negotiations prior to the PA on climate change. During the PS-DMP assessment, 5 clusters were identified: DPS 4 elements, DOPS 3 elements and WPS 1 element. The author discovered some elements for the two middle categories which show less tangible trends towards PA. The categories with more political elements, DPS 4, LPS 5 and PPS 4, show more tangible political signals for the process of global decision-making on climate change.

## **Durban**

### ***Pledges and commitments of EU FAC***

The Foreign Affairs Council consists of the ministers of the Member States of the European Union responsible for foreign affairs, defense and development. These ministers meet monthly to discuss foreign policy, trade, security, defense and development issues (Foreign Affairs Council, 2016). The meetings of the Foreign Affairs Council are chaired by the High Representative of the Union for Foreign Affairs and Security Policy. The High Representative is supported by the European External Action Service (EEAS). Rationality and solidarity in the EU's climate negotiations increased significantly in the 1990s. Although the Foreign Affairs Council agreed on common objectives, positions, and tactics from the very

### 3 Global decision-making process on climate change: Paris Agreement

**Table 1.** The scope of the political stages of decision-making process.

<b>PS-DMP</b>	<b>More tangible</b>	<b>Less tangible</b>
DPS	<ul style="list-style-type: none"> <li>I. Pledges and commitments of EU Foreign Affairs Council</li> <li>II. Pledges and commitments of EU Green Diplomacy Network</li> <li>III. Papua New Guinea (PNG)</li> <li>IV. Russian federationn Proposal</li> </ul>	
DOPS		<ul style="list-style-type: none"> <li>I. Long-term Cooperative Action (AWG-LCA)</li> <li>II. Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP)</li> <li>III. ADP</li> </ul>
WPS		<ul style="list-style-type: none"> <li>I. Commitments of countries (40) and UNFCCC-Cartagena Dialogue2013</li> </ul>
LPS	<ul style="list-style-type: none"> <li>I. China–U.S. Commitments</li> <li>II. Commitments of France and Peru (LPAA)</li> <li>III. India and U.S. Consensus (F-GHG)</li> <li>IV. Isla Margarita (Pre-COP in Venezuela, November 2014)</li> <li>V. UN climate summit, September 2014</li> </ul>	
PPS	<ul style="list-style-type: none"> <li>I. U.S.-Brazil commitments on Climate Change 2015</li> <li>II. EU-China commitments and actions</li> <li>III. French Presidency and its commitments 2015</li> <li>IV. Adoption of the 17 SDGs</li> </ul>	

Source: Author own-constructed.

### 3.1 A framework for diagnosing the structure of the global decision-making

beginning of the international discussions, each Member State proposed its commitments and initiatives and took the floor in the actual UNFCCC negotiations in the early 1990s. In 2004, the structure of foreign policy orientation and representation was reorganized to improve its efficiency and strengthen the ownership of the structural framework by EU Member States (Foreign Affairs Council (FAC) Configuration, 2020).

The revisions supported a trend among EU negotiators toward forming a European identity, and they were regarded as a significant step forward by many participating in EU climate discussions. However, as of mid-2011, the organization and representation of EU external climate policy kept following the existing model. Even though EU delegates began to speak from behind the flag of the EU rather than the flag of the Member State holding the Presidency of the Council in 2010 (Oberthür, 2011). The main objective of the 2011 Durban Climate Conference was to agree on the Durban Platform for Improved Action, which sets out a roadmap for future climate negotiations and thus prevents the UNFCCC mechanism from failing. The EU, together with the presidency of the Durban Summit and a limited number of other states, appears to have been the main architect of this roadmap (van Schaik, 2012). The EU and the FAC firmly believe that an aggressive, inclusive and legally binding global climate change regime, involving all major economies, is necessary if the world is to avoid dangerous climate change. Europe agreed on such a structure in Copenhagen and Cancun and is in a position to do so in Durban.

It is therefore important for the EU and the Council to reach consensus in Durban on a comprehensive plan and timetable to finalize the system as soon as possible and implement it by 2020 at the latest. They felt that climate change action on the ground can be improved in the short and medium term. The meeting must also take the follow-up decisions needed to implement certain aspects of the Cancún Agreements and resolve a number of critical issues that were left out of the Cancún Agreements (Press corner, 2011). COP17 agreed to start negotiations under an ADP, which is tasked with negotiating a protocol, other legal instrument or agreed outcome with legal force under the Convention that applies to all parties. This agreement is only the first phase: talks are to be finalized by 2015, with a possible agreement coming into force in 2020 if the treaty is still concluded. However, the Durban Summit represents an improvement on the model favored

### 3 Global decision-making process on climate change: Paris Agreement

by the EU and the FAC for managing global climate change – a top-down international agreement with binding targets for all nations. In addition, the actions and commitments of the EU and the FAC were instrumental in bringing the final talks to a successful conclusion and preparing for the next climate conference in Doha (Pavese & Torney, 2012).

#### ***Pledges and commitments of EU Green Diplomacy Network***

The Green Diplomacy Network (GDN) is a significant but often neglected innovation that has effectively combined the power of EU delegations with the national diplomatic framework. Launched by the European Council in 2003, the GDN was originally intended to facilitate the integration of environmental objectives into the EU's external relations by building an informal network of experts in national capitals (see e.g. Del Castillo, 2010; Morgera, 2012). At its inception, each rotating EU presidency organized a GDN meeting in Brussels to inform the other member states about the international environmental negotiations of the coming semester and to examine the implementation of a common EU strategy for environmental priorities.

The entry into force of the Lisbon Treaty on 1 December brought some important improvements for the network. Since 2012, the Presidency has shifted from the Council Presidency to the EEAS in order to promote continuity (Ujvari, 2016). In the early years, the GDN (2005a, 2005b, 2006) was particularly active in the areas of sustainability, biodiversity conservation and the prevention of environmental damage caused by toxic chemicals. Once bilateral relations were consolidated, the GDN organized informal meetings involving several countries with similar goals and interests. In 2004, for example, the EU launched a demarche on climate change in which 34 third countries took part. In 2005, the initial successes were evaluated by the Council, which concluded that this was an important component of the initial success. Nevertheless, these measures were ultimately not enough to achieve the overarching EU climate targets. Since the Lisbon Treaty in 2009 and based on the lessons learnt from the Copenhagen Summit in 2009, the EU has 'revitalized' the GDN and revised its diplomatic strategy (see e.g. Otterbach, 2021). The EU tends to rely on promises at UN summits to go further and pay more than

### 3.1 A framework for diagnosing the structure of the global decision-making

others to stop climate change in the hope that they will follow suit, but this has not proved very effective.

This promise was most evident at the Copenhagen summit in 2009, where the EU was sidelined. Many retrospective analyses of that summit argue that the EU's narrative of leading by example or extending its preferences to others needed to change in time for Paris 2015. As part of their diplomatic "rethinking," the EU and the GDN have tried to focus more on recognizing the normative positions of third countries. Their epistemic community of diplomats tried to enforce their pragmatic, bottom-up approach in a much more committed way. In 2011, the EU regained some power with the establishment of the so-called Durban Platform, which lobbied for a major climate agreement between international actors in 2015, to be implemented by 2020, when the Kyoto Protocol expires. With the Durban Platform, it was clear that the EU and the GDN saw the Paris Summit in December 2015 as a defining moment (Cross, 2018).

#### ***Papua New Guinea (PNG)***

PNG, the largest and most populous country in the Pacific, is under pressure from the effects of environmental and climate change. The unpredictable environment makes its society vulnerable to many threats. Slow-onset cycles (drought, frost, salinization, coastal erosion, sea level rise) and fast-onset events (cyclones, earthquakes, floods, landslides, tsunamis and volcanic storm surges) are a reality for PNG. PNG experiences two to three national activations (and several smaller local activations) for disaster events each year. There have been seven significant events in the last 15 years, including floods, tsunamis, landslides, droughts and volcanic eruptions. In addition, there is a significant risk of technological and man-made disasters from oil spills, industrial emissions, uncontrolled and disruptive land use and infrastructure construction, as well as rapid population growth.

Independently of the climate negotiations, PNG as a non-Annex I member ratified the UNFCCC in 1992 and 1994. And the KP in 1999 and 2002 respectively. The first national communication was drafted in 2000, then approved by the Council towards 2001 and finally sent out after ratification in 2002. PNG has also undertaken several new initiatives aimed at supporting our commitment to the

### 3 Global decision-making process on climate change: Paris Agreement

UNFCCC. These include the inclusion of climate change in our current national long-term policy visions, plans and strategies, namely Vision 2050 and the National Strategic Plan 2010–2030 (Naser, 2015).

In addition, the Office of Climate Change and Development should be established to advocate for the implementation of the goals. PNG is leading a proactive coalition of rainforest nations to participate in negotiations under the UNFCCC on behalf of its 52 member countries, particularly in relation to REDD+ (Pundari, 2014). This information was taken up at COP11 in Montreal by PNG and Costa Rica, which lead the Coalition for Rainforest Nations (CFRN). An alliance of more than 50 members of the DCS with tropical forests has made a joint submission entitled Reducing Emissions from Deforestation in DCS: Approaches to Stimulate Action. This submission was made as part of an item specifically requested by PNG to be added to the provisional agenda and sought support from several other Latin American and African countries. This submission considers the introduction of “RED” into the UNFCCC process, which has evolved into what we know today as REDD+ (La Viña and de Leon, 2014).

During the conference in Durban, the states and Mexico had prepared a proposal to amend the convention in accordance with Articles 15 and 16. This point was first discussed at the COP plenary session on 30 November. Mexico, supported by Colombia and others, tabled a proposal to hold a vote as a “last resort” in the event that all efforts to reach consensus on issues with broad support have failed. The parties also discussed this issue during the week. He explained that this was to avoid “paralysis” Bolivia, Venezuela and Saudi Arabia said they could only support a consensus approach. The states convened informal consultations on the issue. Many countries, in particular Costa Rica, Colombia, Guyana, Suriname and the European Union, were in favor of this idea in order to increase the effectiveness of the Agreement. Saudi Arabia, Bolivia and Venezuela rejected any change to the consensus rule. During the final plenary session of COP17, Mexico expressed its satisfaction with the interest shown and pointed out that a revised version of the proposal had been submitted. The parties agreed to place the item on the provisional agenda of COP18 (International Institute for Sustainable Development, 2011).

### ***Russian federation proposal***

To tackle climate change, Russia has indicated that it will go beyond the second Kyoto pledge for the time being. The Russian Federation has the opportunity to prove its position as a strict climate protector by legally implementing a domestic emissions limitation target as a security partner, as proposed at the Copenhagen conference in 2009. This situation will show the international world that Moscow has abandoned its history of reducing post-Soviet emissions. It will lend prestige to the Russian Federation's insistence on negotiating a new global climate agreement instead of entering the second phase of the KP.

At the climate conference in Durban, the Russian Federation's resolution took the first step by formally recommending the establishment of a regular review of national groups under the UNFCCC. As a starting point for the KP, these groups divide countries in terms of necessary climate commitments based on 1990 growth levels. Based on the current stage of growth, their change will update who has to contribute and what kind of pollution reduction or limitation. Let's assume that the future climate agreement continues to be used as a reference point. In that case, this could force the better-off DCS to adopt carbon reduction targets based on their level of economic development (Vatansever & Korppoo, 2012). At the COP plenary session on 30 November, the Russian Federation made it clear that the list of states in Annexes I and II must be reviewed regularly. There were opponents and supporters. Belarus, Ukraine, and Kazakhstan supported this proposal, while Saudi Arabia opposed it. Informal consultations took place, chaired by Ambassador Javier Diaz (Costa Rica). During the closing plenary session, the Russian Federation sought clarification on the status of the proposal. COP President Nkoana-Mashabane referred to fruitful debates on the legal, political, and other implications of the proposal and added that more time was needed to assess the proposal (International Institute for Sustainable Development, 2012).

The Russian Federation's proposal at the climate summit in Durban contains an important and generally accepted concept, namely the setting of standards for developing countries to gradually move towards emission reduction targets, depending on their level of economic growth. The Russian Federation needs to develop a more concrete plan to contribute to the Durban Platform and optimize the

### 3 Global decision-making process on climate change: Paris Agreement

foreign policy and global mitigation benefits of this proposal. Adopting a national mitigation target will show developing countries that Moscow practices what it preaches (see e.g. Abdenur, 2014; Stuenkel, 2021).

Although the position of the Russian Federation in the current climate negotiations is less decisive than during the Kyoto ratification process, the Russian Federation's position on future burden sharing is compatible with other DCs and provides Moscow with a more solid forum to establish a co-operative position. The main weakness of the Russian Federation's initiative is that it is essentially hollow. The issue needs to be brought into sharper focus, regardless of the fact that the G77 DCS community is opposed to the adoption of mitigation commitments. Moscow needs to come up with a more concrete plan to help shape and control the future climate regime, as reflected in the foreign policy doctrine of the Russian Federation. For example, the agreement could include updated indicators to determine which countries are sufficiently developed to make commitments to limit and reduce emissions under the eventual climate Agreement. Lacking substance, this very sensible proposal is easy for a powerful DCS lobby to undermine and disregard (Vatansever & Korppoo, 2012).

## **Doha**

### ***Long-term cooperative action***

Decision 1/CP.13 (BAP) established the AWG-LCA as a subsidiary body of the Treaty to carry out a comprehensive process to enable the full, effective, and sustainable implementation of the Convention through long-term cooperative action through 2012 and beyond to achieve an agreed agreement (AWG-LCA bodies page, 2020). The ad hoc working group initiated the discussion on developing countries' mitigation actions that led to the Cancun Agreement. Definition of developing countries' mitigation commitments and the arrangements to support these commitments and the MRV framework, aspects of which were further agreed as a result of Durban (History of negotiations, 2012).

In Doha, these areas were discussed as part of the cooperative sectoral climate protection approaches. Tracking of the Ad Hoc Working Group on Long-term Cooperative Action Ad Hoc Working Group under the Convention (AWG-LCA).

### 3.1 A framework for diagnosing the structure of the global decision-making

The critical issues raised by the parties were: The position of the UNFCCC in relation to the IMO/ICAO, the treatment of DC and the required emission reductions. There is a growing consensus among Parties that the IMO and the International Civil Aviation Organisation (ICAO) should develop and implement policies to reduce emissions from their respective sectors, with some guidance from the UNFCCC. Nevertheless, the agenda item has been highly controversial, and the positions of the parties have hardly converged in recent years (see e.g. Oberthür, 2003; Shi, 2016).

The most contentious issue was whether the principle of CBDR should apply in these sectors when it comes to greenhouse gas emissions or whether the IMO/ICAO should act in accordance with their equal treatment of all ships and aircraft. Finally, some countries, including the EU, would have liked to set global sectoral reduction targets under the UNFCCC, while others saw no need. In Doha, the parties were unable to reconcile the CBDR principle with the prohibition of preferential treatment that would distort international competition in the respective markets. This BAP agenda item was therefore the only closed item for which there was neither a resolution text nor a follow-up process (Herold et al., 2013). Ad hoc working group on further obligations for Annex I parties under the KP (AWG-KP).

In 2005, the Conference of the Parties serving as the meeting of the Parties to the KP (CMP) established the Ad Hoc Working Group on Further Commitments of Annex I Parties under the KP (AWG-KP) at its first session in Montreal through its decision 1/CMP.1. The AWG-KP was established to discuss the future commitments of industrialised countries under the KP. The AWG-KP reported to the CMP (Ad Hoc Working Group on Further Commitments for Annex I Parties under the KP (AWG-KP), 2020). Only those nations that have ratified the AWG-KP are concerned with the Protocol. Therefore, neither the United States nor emerging or industrialised countries are concerned. The scope and purpose of its work can only be tenuous when it comes to the ultimate goal of reducing greenhouse gas emissions worldwide.

The states wanted the AWG-KP to conduct and finalize its deliberations so that there would be a PK2 and not a break between PK1 and PK2. During the 2nd MOP, held jointly with the 12th COP in Nairobi in 2006, the AWG-KP discussions did not contribute to the concept of commitments for the eventual PK 2. While discussions continued under the leadership of the AWG-KP, the

### 3 Global decision-making process on climate change: Paris Agreement

BAP, which was adopted at the end of the 13th COP in 2007, was adopted. This plan opened up a different mechanism for discussion and negotiation through the formation of an AWG-LCA under the Convention (AWG-LCA) (see e.g. Boston, 2008). The BAP implies that the AWG-LCA is responsible for initiating a comprehensive process that will enable the Convention to be fully, efficiently, and sustainably enforced through long-term cooperative action, now through 2012 and beyond, to achieve an agreed outcome, it is the 15th COP. In other words, the Working Group should participate in the negotiations that should lead to an agreement on the implementation of the 2012 KP and beyond. This agreement is to be implemented at the 15th COP in Copenhagen in 2009. The countries have not reached an agreement, but they have decided that a joint agreement is necessary. The AWG-LCA was created without dissolving the AWG-KP. For this reason, two working groups have been discussing the future of the KP after 2012 in parallel since 2007.

The negotiations conducted by the AWG-KP aim to define new commitments to reduce greenhouse gas emissions for countries that already have commitments under the KP for period 1. In contrast, the AWG-LCA negotiations aim to define new commitments for all nations. The AWG-KP is under the authority of the KP, while the AWG-LCA is under the authority of the Convention and includes all countries, including the United States and developing countries that have ratified the treaty (Tsayem Demaze, 2014). The agreement was reached at the 18th year AWG-KP ('COP18') in Doha, Qatar, where industrialised countries reluctantly accepted to make new commitments under the KP for the second commitment period 2013–20.

This agreement was enshrined in the Doha Amendment to the Protocol. Nevertheless, the negotiated collective emission reductions were only a minimal attempt to combat climate change. They were only 18% below 1990 levels by 2020, and Australia committed to reducing its emissions by 0.5% below 1990 levels by 2020. The Protocol was further weakened by the withdrawal of Canada and the inability of the Russian Federation, Japan and New Zealand to fulfil their commitments in the second commitment phase. In addition, the Doha Amendment never achieved formal legal effect: currently, only 66 parties to the Protocol have ratified the Doha Amendment, while 144 ratifications are required for it to enter into force (Wewerinke-Singh & Doebbler, 2020).

### 3.1 A framework for diagnosing the structure of the global decision-making

#### ***ADP for enhanced action (ADP)***

The ad hoc working group on the ADP is a subsidiary body established by Decision 1/CP.17 in December 2011. The mandate of the ADP is to develop a protocol, other legal instrument or agreed outcome with legal force under the Convention. The mandate applies to all Parties and must be finalized by 2015 at the latest so that it can be adopted at the twenty-first session of the (COP) and enter into force and be implemented from 2020 (ADP bodies, 2020). The decision to establish an ad hoc working group on the ADP provides for 1. the initiation of a process to negotiate a protocol, other legal instrument or agreed outcome with legal force under the Convention applicable to all Parties as soon as possible, but no later than 2015. Work will begin immediately under the ad hoc working group on the ADP. At the twenty-first session of the Conference of the Parties, the outcome will be adopted so that it can enter into force and be implemented from 2020. 2. Extend the AWG-LCA by one year. 3. Launch an immediate work plan to increase mitigation ambition, now, up to and beyond 2015 (Osafu et al., 2012). During the course of the year, the parties decided that work on the ADP must be conducted in two separate steps: Work step 1 deals with the visions and aspirations for the ADP (in line with paragraphs 2–6 of Decision 1/CP.17). Work step 2 deals with the enhanced mitigation ambitions (in line with paragraphs 7–8 of Decision 1/CP.17). In October 2012, at a negotiating meeting in Bangkok, Parties exchanged views on what nations are preparing for a post-2020 system (see e.g. Depledge, 2008; Stern et al., 2014). For both workstreams, the co-chairs of the ADP have written overview notes on the roundtable discussions, indicating where opinions differ between countries. In Doha, additional critical issues for the workstreams were highlighted by the co-chairs in a recent reflection note:

##### Workstream 1:

- a) How will Parties apply the principles of the UNFCCC in the new agreement?
- b) How countries will consider national circumstances and changes.
- c) How the new agreement will be “applicable to all” in practise, including approaches to defining differentiated commitments.
- d) Ways to incentivize full and ambitious participation and ensure effective implementation and compliance regimes.

### 3 Global decision-making process on climate change: Paris Agreement

#### Workstream 2:

- a) How to raise the ambition of existing commitments by Parties and encourage those who have not yet submitted their commitments?
- b) International and national actions that are additional and thus complementary to the Parties' commitments can be strengthened, promoted, and supported by the Convention.
- c) Ways to deepen the work, including technical and quantitative analyses of options to increase ambition.

Ways to incentivize mitigation action and ensure effective implementation (Sarac, 2012).

#### **Warsaw**

#### ***Commitments of countries (40) and UNFCCC – Cartagena Dialogue 2013***

The Cartagena Dialogue for Progressive Action is a group of around 40 countries seeking ambitious results in the UNFCCC negotiations. Participating countries include Antigua and Barbuda, Australia, Bangladesh, Belgium, Burundi, Chile, Colombia, Costa Rica, Denmark, Democratic Republic of Congo, Dominican Republic, France, Ethiopia, Gambia, Germany, Ghana, Guatemala, Indonesia, Kenya, Lebanon, Malawi, Maldives, Marshall Islands, Mexico, Netherlands, New Zealand, Norway, Panama, Peru, Rwanda, Samoa, Spain, Switzerland, Sweden, South Africa, Tanzania, Thailand, Timor-Leste, Uruguay, United Kingdom and the European Commission. The dialogue emerged as an accidental and informal attempt to produce the Copenhagen negotiating texts.

The Cartagena Group/Dialogue for Progressive Action was established by 30 developed and developing countries at COP15 in Copenhagen to work towards a constructive outcome for progressive action to advance climate change talks (Australian Government, 2011). The dialogue has officially taken place five times since its inception, in Colombia, the Maldives, Costa Rica, Malawi and Samoa. As the dialogue is a closed intergovernmental conference, it is difficult to obtain specific details about the discussions. However, mitigation plans, assessment, reporting

### 3.1 A framework for diagnosing the structure of the global decision-making

and monitoring procedures for mitigation commitments, climate finance, the need to strengthen the implementation of adaptation strategies and the need for a realistic, systematic, and legally binding AWG-KP and AWG-LCA outcome have been discussed so far. At the second meeting in the Maldives in July 2010, the participating nations committed to taking a leadership role in mitigation and adaptation (see e.g. Laine, 2014; McLaughlin, 2016). The discussion at the third meeting in Costa Rica was based on textual proposals to achieve a grand outcome in Cancún. The fifth meeting, held in Samoa in July 2011, focused on finance, mitigation targets and the need for a framework for international responsibilities, whether through the continuation of the KP or a possible Durban mandate.

The Cartagena debate is often one of the few prospects for a global consensus on climate change. Monica Araya, a Costa Rican climate negotiator, describes the Cartagena dialogue as “the most innovative and constructive platform currently available in climate negotiations – unusual and refreshingly constructive, allowing for the exchange of ideas. The Australian government, which has played a significant role in establishing the dialogue, notes that it has proven to be a necessary platform for open discourse to move the negotiations forward (Bowering, 2011). In 2013, the parties extended the duration of the Cartagena Dialogue in the expectation that the forum in Warsaw would lead to greater understanding and consensus. In April 2013, the following concerns were raised for Warsaw at a conference:

The importance of rapidly operationalizing the newly developed systems, structures, institutions, and processes.

Maintaining an effective link between the discussions in the subsidiary bodies and the ADP.

An efficient, comprehensive, multilateral system based on the rules developed under 2015 Accordance; the need to focus on low-hanging mitigation capacities and complementary measures (Herold et al., 2013).

## **Lima (COP20)**

### ***China–U.S. commitments***

The United States of America and the People’s Republic of China have an essential role to play in the fight against global climate change, one of the greatest challenges facing humanity. The gravity of the obstacle calls on both sides to work together

### 3 Global decision-making process on climate change: Paris Agreement

constructively for the common good. The United States and China announced a bilateral cooperation agreement on renewable energy production and greenhouse gas emissions on 11 November 2014. They have outlined steps as part of a longer-term plan to achieve deep DE carbonization of the global economy over time. These steps would also boost international climate negotiations towards a sustainable new climate agreement in Paris by 2015 (Lima) (U.S.-China Joint Announcement on Climate Change, 2014).

The new US target is to reduce emissions by an average of 2.3 to 2.8 percent annually between 2020 and 2025. In the first quarter of 2015, the parties to the UNFCCC presented the new proposal as the U.S. “NDC.” Although the recent midterm elections have seen increased opposition from the Republican Party, President Obama has proposed making this pledge without Congressional approval. In order for China to achieve its new target, it will promote energy production from non-fossil fuels to meet 20 percent of its energy needs by 2030. This approach will result in the generation of 800 to 1,000 gigawatts of emission-free energy from nuclear, wind, solar and other sources by 2030, a significant improvement over current coal-fired power generation by 2030 (see Vezirgiannidou, 2013; Christoff, 2016; Cooper, 2018, among others).

These initiatives go hand in hand with China’s aim, particularly in Beijing, to reduce local air pollution. However, the year in which emissions will peak seems doubtful, especially without a more comprehensive reduction target. The pledge signals “the “end of the coal age” and the growing importance of other sources of energy generation, particularly natural gas and renewables, alongside the use of clean, energy-efficient technologies. The two companies have agreed to enhance co-operation on climate and renewable energy through policy consultations and practical work on clean energy innovations and low greenhouse gas emissions. The United States and China have agreed to expand joint research and development in renewable energy, promote large-scale demonstrations of carbon capture, utilization, and storage, and increase cooperation on hydrofluorocarbons. They also want to launch an initiative for climate-friendly/low-carbon cities, promote trade in environmentally friendly goods and demonstrate renewable energy locally (Echeverría & Gass, 2014).

### 3.1 A framework for diagnosing the structure of the global decision-making

#### ***Commitments of France and Peru***

At COP21, countries are to create a new international framework to prevent global temperatures from rising above 1.5°/2°C by the end of the century. Achieving this goal will require a truly global response from all authorities, cities, businesses, investors, and civil society. To illustrate this action as an essential basis for potential progress in the implementation of the new Paris Agreement, COP21 will include a whole range of action-orientated activities over several days as part of the Lima to Paris Action Plan, which will also involve non-state actors (Fabius et al., 2014).

The website presents the activities under the Lima-Paris Action Agenda (LPAA), which brings together governmental and non-governmental actors to accelerate joint action on climate change. According to the UNFCCC, such a step is essential to keep the increase in global average temperature below 2°C. More specifically, the LPAA aims to strengthen climate action now and after COP21 by, among other things, supporting efforts towards low-carbon and climate-resilient societies. In addition, it mobilizes stakeholders and provides a forum for meaningful and measurable action and commitments; and it provides progressive support for existing projects, including those initiated during the UN-GS conference (see e.g. Chan et al., 2018; Hickmann et al., 2019; Hickmann & Elsässer, 2020). New initiatives, especially in less developed sectors or areas, will also be supported by the LPAA. Parties will regularly link UNFCCC projects in the areas of agriculture, forestry, transport, renewable energy, energy access and productivity, resilience, urban growth, private finance, industry, innovation, construction, and short-lived climate pollutants to the website (Hub, 2015).

The goal of the LPAA was to ‘catalyze action on climate change’, which led to the UNFCCC’s aim to further improve ambition before 2020. In addition, they facilitated the ‘2015 Agreement’, which aimed at individual and collective climate action by state and non-state actors, in particular businesses, investors, cities, sub-national regions and civil society organizations. It should also contribute to narrowing the gap between the climate action taken or underway and what science indicates is appropriate to limit the increase in global average temperature to less than 2°C above pre-industrial levels. This target referred to a series of

### 3 Global decision-making process on climate change: Paris Agreement

UNEP reports that indicate that national commitments to reduce emissions are inadequate.

Four partners working together under the name ‘Quartet’, including the Peruvian Presidency of COP20, the French Presidency of COP21, the UNFCCC Secretariat and the Office of the Secretary-General of the United Nations, presented the LPAA as a joint initiative (see e.g. Pasztor, 2016; Widerberg & Pattberg, 2016). The results of the New York Climate Summit were presented by UN Secretary-General Ban Ki-moon in September 2014, three months before COP20. In collaboration with the LPAA, the Peruvian COP20 Presidency introduced a data platform – the ‘Non-state Actor Zone for Climate Action’ or ‘NAZCA’ – to highlight, track and monitor climate action. NAZCA, which is operated by the UNFCCC Secretariat, has utilized data from external providers on climate action by non-state actors, namely CDP and Carbon, and has become an important tool for the LPAA to demonstrate progress. NAZCA recorded over 11,000 individual commitments and 35 joint initiatives during COP21 (Widerberg, 2017).

#### ***India and U.S. consensus (F-GHG)***

Prime Minister Narendra Modi and President Barack Obama co-authored an article in the Washington Post after their meeting in late September, and their two countries issued a solid joint statement from the US to India. The statement was unexpectedly positive, with significant, strategic, global partners in many areas, including trade, industry, maritime security, e-governance and even sanitation. Both heads of state and government paid particular attention to the issues of energy and climate change. Indeed, both sides appear to recognize their responsibility to tackle climate change while respecting the multiple commitments of individual nations (Antholis, 2014).

The US, in a statement released during a meeting between Modi and Obama at the White House, emphasized its determination to formally ratify the agreement as soon as possible. India reiterated the pledge and added that its systems have also started working towards this common goal. Although the wording leaves some room for India to delay adoption, it is the clearest sign yet that India, the world’s third largest emitter of greenhouse gases, is in favor of global efforts to fast-track the Agreement. The U.S.–India statement also points a way forward to secure

### 3.1 A framework for diagnosing the structure of the global decision-making

an updated Montreal Protocol to phase down hydrofluorocarbons, a dominant greenhouse gas used in air conditioners and refrigerators. The new amendment to reduce HFCs will help countries meet their important goal of limiting global warming to 2 degrees Celsius above pre-industrial levels, as experts agree that a rapid phase-out of HFCs could prevent warming of half a degree or more (see e.g. Zaelke & Borgford-Parnell, 2015; Stokes et al., 2016). The statement said India and the United States will work together this year to pass an HFC amendment that provides for expanded financial assistance to support developing countries, which is a key concern for India.

In addition, the statement said the U.S. Export-Import Bank will work toward a sustainable financing package with India for Westinghouse's proposal to build six nuclear reactors in India. The two nations have also proposed a \$20 million clean energy financing plan between the U.S. and India that aims to mobilize \$400 million in investments to power 1 million homes with green and low-carbon electricity by 2020, as well as a \$40 million catalytic solar financing program between the U.S. and India that aims to mobilize up to \$1 billion in solar energy investments (Restuccia, 2016).

Among the most important issues, the United States and India are working to support the Indian government's goal of providing 175 gigawatts of clean energy by 2022. TODAY, the U.S. reports 5.4 GW of new commitments from the U.S. green sector seizing the opportunity to invest in India. The United States and India continue to expand their bilateral cooperation on climate change through the U.S.-India Joint Working Group on Mitigating Climate Change and similar forums (see e.g. Kasa et al., 2007; Rajamani, 2009; Michaela, 2012). Improved collaboration in the field of energy security remains an important area of collaboration. The two countries actively participate in negotiations to share information on global energy developments and common priorities for market stability and to promote sustainable economic development. The US Trade and Development Agency (USTDA) has declared funding for a feasibility study to help Indian Oil Corporation Ltd (IOCL) evaluate advanced technologies at IOCL refineries to improve energy production and urban air quality. The study will also explore ways to expand the use of petroleum byproducts to produce safer fuels for transportation and power generation (The White House Office of the Press Secretary, 2016).

***Isla Margarita (Pre-COP in Venezuela, November 2014)***

The ‘Margarita Declaration on Climate Change’ is the result of a preparatory exercise organized by the Venezuelan government for the Social Pre-COP on Climate Change, which included the perspectives of participating communities and initiatives that strive for the values of inclusion and intergenerational justice and a good and safe life. The preparatory meeting, which took place from 15 to 18 July 2014 on Margarita Island, Venezuela, consisted of three sessions: “State Governments on Climate Change”, “The Future Has the Word: Youth on Climate Change” and “Safe Living on Climate Change”. The aim of the conference, which was attended by representatives of the Venezuelan and international community and social movements, was to identify, exchange and pool positions and initiatives in preparation for the Social Pre-COP organized by the Venezuelan government, which will take place on Margarita Island, Venezuela, from 4 to 7 November 2014. The thematic elements of the Margarita Declaration are intergenerational peace and the interests of future generations, as well as sustainable and just living, such as climate ethics, the social impact of climate change, social decision-making, the war against climate change and the responsibility of the North and the South.

Among other things, the declaration addresses intergenerational justice and the needs of future generations: the need to transform the “consumption model into a good life and global cooperative societies”, the exchange of views and solidarity, the mobilization of youth, creative and environmental education, and the need to work for a solution for the richest countries. The declaration calls for an alternative climate-ethical growth policy based on living in harmony with nature and an equal distribution of “carbon airspace” It also describes carbon markets as “wrong answers” and the UN’s Reducing Emissions from Deforestation and Degradation (UN-REDD) program (Social Pre-COP, 2014). The strategic objectives agreed in the declaration and document include:

Public engagement and the institutionalization of the external pre-COP as a separate and autonomous space to ensure the successful involvement of civil society in the negotiation process. Civil society has also called on policy makers to instruct the UNFCCC to protect freedom of expression, including agitation. International companies must be given a sustainable framework and a fair chance and be accountable for their actions and activities. To keep the global temperature

### 3.1 A framework for diagnosing the structure of the global decision-making

rising below 1.5 degrees, an ‘even distribution’ of mitigation efforts by all states based on historical commitment and capabilities was also called for. Enforcing climate finance commitments must be done with substantial new public funding. The financing mechanisms and instruments must not be debt-inducing and unpredictable, and they must not follow the logic of corporate supply and demand.

Climate discussions do not lead to institutions, organizations or tactics that promote the financialization of nature, such as carbon markets, geoengineering, REDD, climate-smart agriculture, or high-risk alternatives that can harm the environment and the health of future generations. The Paris Agreement of 2015 must prioritize the special conditions of the least developed countries, particularly with regard to adaptation, displacement, and destruction, as well as the methods for achieving them (First ever Social Pre-COP on climate change delivers strong messages from civil society in the run-up to Lima Climate Summit – IBON International, 2014).

#### ***UN climate summit, September 2014***

The UN Climate Summit took place on 23 September 2014 at the UN Headquarters in New York, USA. UN Secretary-General Ban Ki-moon opened the summit with the words: “We are not here to talk; we are here to make history. The summit was attended by over 120 heads of state and government, ministers and leaders from multilateral organizations, the financial and business sectors, civil society, sub-national authorities, and local communities. In addition, measures on climate change are to be initiated and the political will for a global agreement within the framework of the UN Framework Convention on Climate Change (UNFCCC) is to be mobilized by 2015 (see e.g. Rimmer, 2014; MacGregor, 2014). After the opening ceremony, the summit took place in three parallel plenary sessions, in which the heads of state and government announced national measures and ambitions.

A private sector forum took place over lunch. In the afternoon, two parallel sessions on national action and announced ambitions were held for the governments that had sent ministers to the meeting. In the afternoon, three parallel sessions dealt with multilateral and multi-stakeholder action announcements on the following topics: Finance, Energy, Forests, Agriculture, Resilience, Oil and

### 3 Global decision-making process on climate change: Paris Agreement

Industry, Transport and Cities. Two parallel workshops focused on thematic discussions on climate science, the voices of the environmental movement, climate, well-being and employment, and the economic case for action.

At the conclusion of the United Nations Climate Change Forum, UN Secretary-General Ban Ki-moon emphasized that never before had so many global leaders pulled together to combat climate change. He mentioned the updates made during the day and the donations. Peruvian President Ollanta Humala called for a transparent and concise resolution to be implemented in Paris at the UNFCCC COP20 in Lima in December 2015 and endorsed the guidelines for national contributions from all nations. Former South African First Lady Graça Machel, Graça Machel Confidence, urged everyone to ensure that “each of us matches the scale of the task with our actions” from now until UNFCCC COP20 (A Summary Report of the UN Climate Summit 2014, 2014).

The declarations of the heads of state and government at the summit contained a holistic global perspective on climate change:

- a) World leaders agreed that climate change is a critical issue of our time, that immediate action is needed to reduce pollution and increase resilience, and that they will lead this effort.
- b) Leaders agreed that climate action must be taken to eradicate global poverty and promote sustainable development.
- c) The representatives agreed to limit the global temperature increase to less than 2 degrees Celsius above pre-industrial levels.
- d) Several leaders called on all states to take national action consistent with a pathway of less than 2 degrees, and several nations agreed to do so.
- e) Leaders have committed to finalizing a substantive, universal new agreement under the UNFCCC at COP21 in Paris in 2015 and to adopting the first version of such an agreement at COP20 in Lima in December 2014.
- f) The Heads of State and Government agreed that the new agreement should be successful, long-term, inclusive and provide adequate financing for mitigation and adaptation.
- g) The importance of dealing with failures and violations was emphasized by many.

### 3.1 A framework for diagnosing the structure of the global decision-making

- h) Several participants expressed their determination to submit their Intended Nationally Determined Commitments (INDCs) for the new agreement in the first quarter of 2015.
- i) Several Heads of State and Government reaffirmed the objectives and principles of the UNFCCC, including the concepts of fairness and common but differentiated responsibilities. In addition, some emphasized that the global initiative to solve the climate problem should present increasing conditions and facts (UN Climate Summit: Ban Ki-moon Final Summary, 2014).

## Paris

### ***U.S.–Brazil commitments on climate change 2015***

The United States Department of Agriculture and the Brazilian Ministry of Agriculture, Livestock and Food Supply released the joint statement today: Brazil and the United States have faced record droughts and other climate and production challenges in recent years. To meet the growing demand for food, we urge all nations to share knowledge and explore practices and technologies that significantly increase productivity, use water effectively, minimize food losses, develop resilience to severe climate events, and respond to climate change (United States Department of Agriculture, 2015). This was followed at the end of June 2015 by the “Joint Declaration of the USA and Brazil on Climate Change”.

It is good to see that the two heads of state put climate change at the top of their goals at their meeting. The Global Resources Institute described the declaration as remarkable, unprecedented and a “significant step forward (The U.S.–Brazil Joint Statement on Climate Change: Unacceptable, Unambitious and Highly Dangerous | REDD Monitor, 2015). The presidents emphasized the fact that Brazil and the United States have reduced greenhouse gas emissions more than any other country in the world since 2005. Compared to 2005, Brazil has reduced its emissions by about 41 percent, while the United States has reduced its emissions by about 10 percent and is on track to meet its 2020 target. Both countries are making solid contributions for the post-2020 period in the run-up to the UN Climate Change Conference in Paris and are thus fulfilling their commitment

### 3 Global decision-making process on climate change: Paris Agreement

to take on a global leadership role. The United States, according to its UNFCCC report, aims to meet an economic target by reducing its emissions by 26%–28% below 2005 levels by 2025. Brazil would make a fair and optimistic nationally determined intended commitment that represents the most significant possible contribution beyond its existing measures (see e.g. Heal, 2017; Gu & Wang, 2018).

It would apply to the introduction of comprehensive policy measures, including those in the areas of forestry, land use, production, and energy. The two presidents have agreed to launch a joint Climate Change plan to be presented by a new US–Brazil Climate Change Working Group (CCWG) to enhance bilateral collaboration on land use, renewable energy, and adaptation, as well as strategic discussions on national and international climate issues. The working group will begin its work by October 2015. The CCWG will draw up a work plan at its first meeting to explore areas of action for co-operation. The CCWG will be a forum to address one or more of the following proposals that have been built up over time. In addition, the United States and Brazil will strengthen bilateral energy partnership arrangements through the Strategic Energy Dialogue, which will hold timely ministerial meetings and another meeting on October 8 and 9, 2015. Renewable energy: We utilize the abundant renewable resources of both countries and expand studies on the availability of energy from renewable energy sources such as wind, solar, biomass and renewable fuels.

- i. Energy efficiency and energy storage: By expanding the current co-operation, we will promote smart grid projects, the use of energy-saving building materials and the improvement of energy quality in production, particularly through the expanded use of energy-saving and efficient energy storage technologies, especially batteries.
- ii. Energy Science Foundations: The exchange of science, growth and innovation perspectives and the promotion of collaboration between universities and academic institutions of both nations through the U.S. Centers for Energy Frontier Studies and the Scientific Mobility Policy of Brazil.
- iii. nuclear power generation: Brazil and the United States will learn from the good experiences of both countries and work together to produce nuclear energy and technology in a healthy and sustainable manner.

### 3.1 A framework for diagnosing the structure of the global decision-making

- iv. Accelerating Financing: The United States and Brazil will jointly pilot innovative financing instruments in Brazil to mobilize new investments in clean energy, energy conservation and resilience initiatives to spur development (The White House, 2015).

#### ***EU–China commitments and actions***

Climate change is a threat that knows no borders and can only be overcome through collective coordination and intervention. Since the early 1990s, the international community has been working to create a global mechanism for climate protection, the UNFCCC, and to take joint climate protection measures, even though the capabilities, resources and strategies of individual states vary greatly. In the search for strong leadership on climate change, the European Union (EU) and China have been identified as potential allies for global climate collaboration (see e.g. Men, 2014; Sattich et al., 2021). On the one hand, the EU, which has taken initiatives in this area since the early 1990s, is regarded as one of the leading forces in climate change.

On the other hand, China has developed from a weak agricultural economy to the second largest economy in the world over the last fifty years. Since China was a recalcitrant member of the global climate policy community in the 1990s, it has made a more effective contribution. Together, the EU and China are now responsible for almost a third of global greenhouse gas emissions. As a result, their environmental and energy policies are important as they directly impact the current and potential greenhouse gas emissions and decision-making processes of other nations (Liu, et al., 2019). Despite tensions between industrialised and emerging economies, the EU and China have converged on various issues, such as the introduction of climate-related emissions trading schemes. In 2005, the EU initiated the world's first emissions trading system (ETS) and China agreed to improve the Clean Growth Process. Obvious tensions between the EU and China emerged at the UN talks in the run-up to the 2009 summit in Copenhagen (COP15). The long-contradictory perspectives included, for example, legally binding pollution reduction targets and global monitoring systems. Finally, at the Copenhagen conference, China and other major emitters prevented the adoption of legally binding targets for emerging economies until DC increased its financial

### 3 Global decision-making process on climate change: Paris Agreement

and emission reduction commitments, hampering the EU's ambition and weakening its self-image as a global climate leader. The Copenhagen roadmap has shown that despite bilateral agreements, there are still too many differences between the EU and China to stand on a common front (Locatelli, 2020).

According to the draft joint statement, the EU and China see the Paris Agreement as a historic achievement that will accelerate irreversibly low global greenhouse gas emissions and climate-resilient development. The nine-page draft states: "The EU and China emphasize their key political contribution to the successful adoption of the Paris Agreement in all its facets. Their political, technological, economic, and scientific cooperation on climate change and renewable energy will be "significantly strengthened" to facilitate the planet's transition to a low greenhouse gas economy. The statement said the two hope to make climate action, like economic relations, a "key pillar" of their bilateral partnership, emphasizing that their cooperation will promote job creation, investment, and economic growth. Europe and China will also expand their co-operation on the introduction of the so-called ETS for carbon markets (Carmichael & Pigman, 2017).

#### ***Presidency of France and its commitments 2015***

Throughout 2015, the French Presidency (COP21) was dedicated to preparing for the climate conference in Paris. Throughout the conference, COP leader Laurent Fabius and his group were praised for their willingness to listen, maintain transparency, and broker compromises on key sticking points (see e.g. Thompson, 2015; Oberthür & Groen, 2016). Inviting heads of state and government to participate at the beginning rather than the end of the COP, as was the case in Copenhagen, was one of the pioneering measures of the French presidency. This presidency showed political will and probably helped to advance the technical work from the outset. Expectations for the outcome of the Paris conference were weaker than expectations for the outcome of the Copenhagen conference, in stark contrast to COP15. The French presidency and diplomats, think tanks and scientists alike informed the world that the outcome of COP21 would not solve climate change (Lázaro-Touza, 2016).

Under the COP21 Presidency, France's policy involves a large number of high-level actors (French President, Special Envoy for the Earth, Foreign Minister,

### 3.1 A framework for diagnosing the structure of the global decision-making

and Environment Ambassador) with the help of a multidisciplinary interministerial group. The new French presidency organized informal meetings between governments and developed its cooperation with think tanks and international organizations, leading to an initial exchange of ideas and trusting relationships that benefited the Paris talks.

The French Presidency emphasized this strategy at the start of the negotiations in November by setting up a Paris Commission, a negotiating platform accessible to all, and appointing ministerial coordinators for all areas so that all state and non-state actors could be involved (Paris Agreement, 2020). Specifically, France copied the Indaba model from the COP in Durban and heard from Copenhagen that the heads of state and government give diplomatic advice and that the document is non-negotiable. “In a process that began before the COP in Lima in 2014, the French Presidency, in collaboration with the Peruvian Presidency, tried to convene several ministerial meetings” so that the ministers could get to know each other better. Another institutional revolution of the presidency was to place the entire responsibility for drafting the document on the party leaders.

In the ADP communications team, ministers had to communicate with the long, heavily bracketed text that the parties had formed, and the subsequent iterations published in the second week faithfully reflected the parties’ deliberations. By dropping a shocking text late in the deliberations, the French Presidency guaranteed that the text belonged to the parties and that the participants recognised that they were jointly responsible for its success or failure. Several parties had secretly suspected that the presidency had its test throughout the conference, but due to its nature it was never made public. This has encouraged ministers to do the hard work of sorting through selections and brackets. It is not only a compliment to the French Presidency that all political groups praised the Presidency, but also a confirmation that they all felt that their positions were recognised (The IISD’s SDG Knowledge Hub, 2015).

### ***Adoption of the 17 SDGs***

The SDGs emerged from the combination of two environmental and development cycles, the UN Rio+20 Conference on Sustainable Development and the post-millennium development goals, as well as the growing awareness of the link

### 3 Global decision-making process on climate change: Paris Agreement

between development and environmental development, which is, however, insufficiently organized. These two aspects reinforce the distinctions between climate and sustainability and industrialised and DCS, with environmental societies in Europe focusing on international accountability and cooperation at the national level of sustainable development and growth societies (SDGs and the Paris agreement: One year on, 2016). The United Nations Sustainable Development Forum on the implementation of the 2030 Agenda and the Sustainable Development Goals took place in New York from 25 to 27 September 2015 and was of great importance.

The United Nations Secretariat, through its Division for Sustainable Development of the Department of Economic and Social Affairs (DESA), launched Collaborations for Sustainable Development Goals (SDGs), an online forum to promote cooperation to achieve the Sustainable Development Goals, in the run-up to the summit (Division for Sustainable Development of the United Nations Department of Economic and Social Affairs, 2015). The new global goals are the result of a more integrated approach than ever before, in which the authorities involve business, civil society and citizens from the outset. We all agree on where the world needs to go. It requires unprecedented commitment from all sectors of society (The SDGs Explained for Business | UN Global Compact, 2020).

Before shaping the Paris Agreement and new pathways for sustainable development, some points were considered in the SDGs. The aspirations for the SDGs are summarized in paragraph 3 of the declaration. “By 2030, we are determined to end poverty and hunger everywhere, reduce inequalities within and among countries, build peaceful, just, and inclusive societies, protect human rights, promote gender equality, and empower women and girls, and ensure the lasting protection of the planet and its natural resources. We are also determined to create the conditions for sustainable, inclusive, and lasting economic growth, shared prosperity, and decent work for all, considering different national levels of development and capacities” (United Nations, 2020).

In concrete terms, what is probably the most detailed, far-reaching, and ambitious Agenda 2030 for sustainable development is being turned into a global Agreement. It consists of 17 priorities, 169 goals and 230 measures. It emphasizes that these strategies and goals are “integrated and indivisible” and must be

### 3.1 A framework for diagnosing the structure of the global decision-making

pursued jointly, taking full account of all potential synergies and linkages. The 2030 Agenda is undoubtedly more detailed than the inclusion of social, technological, and environmental sustainability, its counterparts. Although the earlier interpretations of sustainable development had many similarities, the SDGs are specifically more political and relate to industrialised and developing countries. The SDGs are closely related to the Paris Climate Agreement (UNFCCC, 2016), a global treaty to limit climate change, where all actions under the SDGs must be supportive or compatible, as well as the Convention on Biological Diversity (UN, 1992b) and its most recent Strategic Plan for Biodiversity and its associated (Aichi) targets (CBD, 2011) (Hambrey, 2020).

#### ***3.1.1.2 Rationale for the economic phases of the decision-making process***

The author of this study believes that a second assessment of the DMP-PA is necessary to understand the decision taken at the Paris summit in response to the problems of global climate change. The economic stages (ES) of the DMP-PA, which influence other decision-making and implementation stages, need to be considered. Some stages are more tangible – the Durban economic stage of (DES) and the Lima economic stage (LES) – and others less tangible –DOha the economic stage (DOES) and the Warsaw economic stage (WES) (Table 2) – due to the economic factors that the author found behind these global climate change decision-making processes. Analysing the ES-DMP will allow the author to compare the economic measures and reactions to the decision-making process with regard to the Paris Agreement. Based on the literature review, a comparative analysis of the table created by the author (the scope of the ES-DMP assessment) is proposed, with particular attention to the DES and LES elements, and then a focus on the DOES and WES elements behind the decisions.

Table 2, designed by the author, contains ES-DMPs from 4 selected global negotiations before the PA (Durban, Doha, Warsaw, Lima) covering the most critical tipping points. Each category of the table is described and analyzed in this section of this chapter based on the economic drivers behind global climate change decisions.

### 3 Global decision-making process on climate change: Paris Agreement

**Table 2.** The scope of the economic stages of decision-making process.

ES-DMP	More tangible	Less tangible
DES	<ul style="list-style-type: none"> <li>I. Financial crash 2008–2009</li> <li>II. RUSSIAN FEDERATION PROPOSAL</li> <li>III. Green Growth Alliance</li> <li>IV. Global Commission on the Economy and Climate</li> <li>V. Carbon Tracker</li> <li>VI. BNEF</li> <li>VII. The Rockefeller Brothers Fund</li> </ul>	
DOES		Doha Climate Gateway financial decisions
WES		Bio Carbon Fund initiative
LES	<ul style="list-style-type: none"> <li>I. We Mean Business</li> <li>II. The Global Commission on the Economy and Climate</li> <li>III. C40 Cities Climate Leadership Group</li> <li>IV. Bank of England and carbon budget on climate change</li> <li>V. The Norwegian Sovereign Wealth Fund and carbon budget on climate change</li> </ul>	

Source: Author own-constructed.

## Durban

### ***Financial crash 2008–2009***

The financial crash was the event that triggered the 2007–2008 crisis. The fall in prices initially contributed to a subprime mortgage crisis in the US, where a large number of loans were made to subprime borrowers at an adjustable rate, particularly from 2003/2004 onwards (see e.g. Shim et al., 2013; Baker & Underhill, 2015). It became increasingly complicated to refinance these loans as they began to fall on the markets. Adjustable-rate mortgages were updated to higher rates during

### 3.1 A framework for diagnosing the structure of the global decision-making

the same period. These two variables led to a wave of repayment problems for subprime borrowers, and foreclosures ensued. The decline in residential property in the US was preceded by a similar trend in residential property prices around the world in the coming months via a transmission mechanism (POP, 2009).

Meanwhile, global carbon dioxide emissions from fossil fuel combustion and cement production increased by 5.9% in 2010, exceeding 9 Pg carbon (Pg C) for the first time and more than offsetting the 1.4% decrease in 2009. The impact of the 2008–2009 global financial crisis on emissions has led to solid emissions growth in emerging economies, a return to emissions growth in advanced economies and an increase in the intensity of fossil fuel combustion in the global economy.

Initial projections of global CO<sub>2</sub> emissions from fossil fuel combustion and cement production show that emissions increased by 0.51 Pg C (5.9 percent) in 2010, reaching a record high of  $9.1 \pm 0.5$  Pg C. The increase in 2010 was due to high growth rates in some primary developing economies (Supplementary Table S1), such as 10.4 percent in China (0.212 Pg C) and 9.4 percent (0.049 Pg C) in India, while this contribution from some developing countries was also significant in absolute terms. For example, the United States 4.1% (0.060 Pg C), the Russian Federation 5.8% (0.025 Pg C) and the 27 member states of the European Union 2.2% (0.022 Pg C) (Peters et al., 2011).

The global financial crisis has prompted policy makers in industrialised countries to talk about the so-called New Deal, a re-industrialization with a focus on low-carbon energy, during the climate negotiations in Copenhagen and Durban. Concepts such as carbon capture in power plants, a 100 percent carbon tax, dividends for low-carbon consumers and the fourth generation of nuclear energy are among the key policy objectives. At the UNFCCC conference in Durban in 2011, the common goal of governments to set new global warming and emissions targets for 2020 and 2050 was discussed (Costello et al., 2009).

### ***Green growth alliance***

The idea of green growth began to take root at the G20 summit in Pittsburgh in 2008, where participants launched the concept of sound, competitive and sustainable growth (see e.g. Bradford & Linn, 2012; Blaxekjær, 2015; Tienhaara, 2016). In 2009, the structure was discussed again at the G20 summit in Korea, where

### 3 Global decision-making process on climate change: Paris Agreement

leaders placed a high priority on green development globally, while also prioritizing green growth – an innovation at the summit, the creation of the Business 20 or “B20” as an invitation to formal feedback from business leaders.

The concept was discussed again in 2009 during the G20 summit in Korea, when leaders placed a strong global emphasis on green development while prioritizing green growth. At the summit, the Business 20 or “B20” was launched as an official call for formal contributions from top companies and marked the beginning of a new development. Since then, and at a time when businesses and governments are grappling with how to tackle the global economic crisis, green growth has become a key initiative that creates new economic opportunities while addressing environmental and resource scarcity problems (Nelson, 2013). Following the G20 meetings and similar intergovernmental conferences, non-governmental and private sector platforms are now engaged in promoting public-private alliances and government initiatives to increase investment in resource-efficient, low-carbon infrastructure and services. The members of the 2012 B20 Green Growth Task Force have developed the Green Growth Action Alliance as a realistic way to pursue this green growth agenda.

According to the World Economic Forum, partnerships between the public and private sectors have proven useful in climate finance, such as the 2009 G20 Task Forces on Climate Investment and Clean Energy Financing for Low Carbon Prosperity, the 2010 Critical Mass Program and the UK Government’s Capital Markets Climate Program. The Alliance brings together more than 60 participants, including the host nation and the host state: nations of the donor community, foreign and non-governmental research organizations, development finance agencies and the private sector.

The Alliance was founded with a specific goal: to find innovative ways and methods for green development and to unlock private investment. It seeks to make the low-carbon alternative the most desirable option for development. The Alliance is a group of actions that aim to turn innovation into reality and harness the best of the private sector, including innovative business models and a long-term focus on profitability (The Green Growth Action Alliance: Progress report from the first year of catalyzing private investment, 2013). As a complementary mechanism to the UNFCCC negotiations, Korea, and Denmark, together with COP16 host Mexico, started to promote a green economy in the UNFCCC

### 3.1 A framework for diagnosing the structure of the global decision-making

interim cases and formed the Green Growth Alliance at the Durban Climate Summit in 2010 and 2011. China, Kenya, and Qatar joined this alliance in 2012, Ethiopia in 2014 and Vietnam in 2015. Korea and Denmark have influenced green growth to include public-private partnerships on green sector investments and market-based values, but green progress is still closely linked to global sustainable development and poverty eradication. In addition to combating climate change, one goal seems to be to position Korea, Denmark and Mexico as active members of the international community, with the central aim of the Green Growth Alliance being to bridge the North-South divide. With financial support from Denmark, Korea established the Global Green Growth Institute (GGGI) in 2010, while Denmark launched the Global Green Growth Forum (3GF) in 2011. (3GF). Since 2011 and the international climate conference in Durban, the GGGI has been a fully-fledged international organization, acting as a partner network and as the secretariat of the Green Growth Alliance within the Danish Ministry of Foreign Affairs (Øfjord Blaxekjær, 2016).

#### ***Global commission on the economy and climate***

The Global Commission on the Economy and Climate and its flagship initiative New Climate Economy were established to help governments, businesses and society make more informed decisions about how to achieve economic growth and sustainability while tackling climate change (see e.g. Newell & Taylor, 2017; Sharma & Soederberg, 2019). The Commission was funded in 2013 by the governments of Colombia, Ethiopia, Indonesia, Norway, South Korea, Sweden, and the United Kingdom. As an autonomous body, the Global Commission, composed of 28 former heads of state, gave finance ministers and policymakers from business, industry, and finance complete freedom to draw their conclusions, benefiting from the help of partner governments. The Committee has published three comprehensive flagship reports: the Brookings Institution, the Energy Transitions Commission (ETC), the Coalition for Urban Transitions, the Food and Land Use Coalition (FOLU), the Grantham Research Institute on Climate Change and the Environment, the Overseas Development Institute (ODI), SYSTEMIQ and WRI (Corfee-Morlot et al., 2018). The Global Commission on the Economy and Climate has called for action in ten key areas

### 3 Global decision-making process on climate change: Paris Agreement

where collaboration between nations, states and regions, cities, international organizations, and the private sector offers opportunities for more significant and economically beneficial climate action:

1. Accelerate low-carbon development in the world's cities.
2. Increase agricultural production by restoring and protecting the agricultural and forestry environment.
3. Invest at least US\$1 trillion per year in clean energy.
4. Raise energy efficiency standards to the world's best levels.
5. Introduce carbon pricing and phase out fossil fuel subsidies.
6. Ensure that new infrastructure is climate friendly.
7. Galvanize low-carbon innovation.
8. Drive low-carbon growth through business and investor action.
9. Raise the standard for international aviation and maritime emissions reductions.
10. Phase down the use of hydrofluorocarbons (HFCs).

Taken together, the implementation of these measures will achieve 96 percent of the emission reductions needed to maintain global emissions by 2030. They will also bring significant economic benefits. For example, investments in sustainable cities could save around USD 17 trillion worldwide by 2050 (The Global Commission on the Economy and Climate and its flagship project The New Climate Economy, 2020).

#### ***Carbon tracker***

Carbon Tracker is a non-profit organization founded to stimulate a new way of thinking about climate risks. It is funded by several European and American organizations. Carbon Tracker is not an investment advisor and does not reflect the ease of investing in any individual company or mutual fund or other investment (Gray et al., 2018). Carbon Tracker is a professional financial think tank that provides an in-depth assessment of the impact of the energy transition on capital markets and future investments in high-cost and carbon-intensive fossil fuels (see also Asadnabizadeh, 2023). The team of financial market, energy and legal

### 3.1 A framework for diagnosing the structure of the global decision-making

experts uses leading industry databases and produces innovative analyses to highlight both risks and opportunities for investors on the road to a low-carbon future. The Carbon Tracker recognizes that cumulative emissions have a finite global 'carbon budget' that must be adhered to in order to avoid exceeding 2 degrees Celsius and disrupting the global ecosystem.

They believe that, as has already been seen with energy utilities in the EU and coal mining companies in the US, financial markets are struggling to adjust the capital allocation mechanism, resulting in the owners of fossil fuel companies, their shareholders, losing value in the future. They also conclude that businesses have not adequately considered the risk of a dramatic reduction in potential demand due to technological advances and policy changes (About us – Carbon Tracker Initiative, 2020). Regardless of the international climate conferences, cost-effective greenhouse gas mitigation is crucial to reducing greenhouse gas emissions. Individual actors and institutions cannot achieve cost-effective mitigation if they pursue their own targets individually.

Developed countries need to work together at the international level to mobilize financial flows in developing countries for low-carbon investments. A range of fiscal, structural, and capacity-related variables suggest that many developing countries have an excellent risk environment for investors that could penalize new types of investment, even where carbon reductions are possible. In this context, an analysis of the Paris agreements from 2012 to 2015 by Climate Action Tracker shows that the co-benefits of mitigating to a 1.5/2°C pathway in 2030 will significantly reduce the overall costs of mitigation, including the financial costs of damage from air pollution. The Climate Action Tracker also shows that a significant proportion of the costs are higher.

The behavior of pedestrians, reducing pollution from industrial chimneys or improving cookstoves would offset the costs of environmental policies such as renewable energy, urban mobility measures based on public mobility, pedestrian regulations, and savings from reduced mortality. The pollution gap between governments' existing reduction commitments and a temperature limit of 1.5°C is about 23 GtCO<sub>2</sub> E by 2030. They believe that in this period, the associated interactions between pollution control and practise and community would cover many developed and DCS by economic costs. Climate change helps the environment and the economy by reducing health expenditures associated with air pollution,

### 3 Global decision-making process on climate change: Paris Agreement

increasing worker productivity, and extending life expectancy (United Nations Development Program Bureau for Development Policy, 2016).

In order to continue the fight against climate change and to institutionalize the DCS contribution to adaptation and mitigation efforts through DC support in Durban in 2011, the Ad Hoc Working Group on the ADP or Durban Platform was created in a new negotiating framework. The working group was set up in 2012 with the aim of adopting an agreement by 2015 that would apply to all parties and be implemented by 2020 (Summary for Policymakers, 2013). At the same time, according to the IPCC, global emissions must be reduced by 20 to 40 by 2030 compared to 1990 levels. The Secretariat of the Convention has published a summary report listing 119 countries representing 86% of global greenhouse gas emissions. In this study, The Secretariat illustrates that the mitigation efforts emphasized by the countries for 2025 and 2030 are very likely to lead to a temperature increase of more than two °C by 2100 compared to pre-industrial levels. A similar analysis by the independent scientific analysis Climate Action Tracker arrives at precisely this figure (Summary for policymakers, 2015).

#### ***BNEF***

BNEF is the world's leading provider of reports, analyses, research, and analysis for policy makers in the fields of renewable energy, smart energy technologies, carbon markets, carbon capture and storage, and nuclear power. BNEF has more than 180 employees in London, Washington D.C., New York, Tokyo, New Delhi, Beijing, Singapore, Hong Kong, Sydney, São Paulo, Cape Town, and Zurich. BNEF works for leading investors, companies, and countries worldwide. In-depth market research on wind, solar, bioenergy, geothermal, carbon capture and storage, smart grids, energy conservation and nuclear energy is supported by Insight Services.

The company also offers Insight Services for each major emerging carbon market: Europe, Global Kyoto, Australia and the United States, covering proposed regional markets and future government action, as well as the voluntary carbon market. The BNEF Market Intelligence Service provides access to the world's most

### 3.1 A framework for diagnosing the structure of the global decision-making

accurate and complete renewable energy and carbon information for investors. The News and Briefing Service is the world's leading news organization dedicated to renewable energy investment. The organization also conducts applied research on behalf of consumers. It is networking at the highest level (indices for the Americas, Europe/Middle East/Africa, and Asia/Oceania and then for sub-sectors such as solar and wind energy will provide new insights for investors and ETF providers in 2020).

At the UN climate summit in Cancún, it was successfully decided that the GCF would control “a “large part” of the 100 billion dollars pledged for DCS in Copenhagen. BNEF, in response to the frustration of many insiders, proposed the creation of a “Green Climate Finance System” rather than a single fund that would not raise enough money from donor countries. Working closely with the Climate Finance Innovation Centre, BNEF initiated Finance for Resilience, an accelerator program that uses the network to identify and promote the most promising ideas for growing investments in renewable energy (Liebreich, 2014).

Decision-makers must define the rules for managing the fund and develop strategies to ensure financial transparency, evaluate the success of the measures and strengthen stakeholder participation. UNFCCC Executive Secretary Christiana Figueres recently reported that “the Fund’s Transition Committee is now fully on board to finalize the Fund’s design for adoption by the UNFCCC COP in Durban (see e.g. Fuel for Thought: mid-August from mid-November 2012 to January 2013, Brunner et al., 2012). She indicated that the fund would be operational by 2012 in Durban. Some observers remain skeptical about the effectiveness of the fund, especially if it is to be financed by donations from developing countries. In Durban, Michael Liebreich, Chief Executive of BNEF, explained that this funding approach would be a recipe for failure to reduce emissions due to the weak financial position of Annex I countries, which are constrained by the Kyoto Protocol.

Information from BNEF shows that these concerns may be justified. In a research note, Bloomberg points out that while industrialised countries have pledged \$27.3 billion in fast-start funding for DCS, only \$11.3 billion has been made available as of August 2011. Assuming equal monthly instalments, Bloomberg calculates that governments should have provided USD 16.7 billion. Due to this lack of accountability, there are also significant concerns as to whether this funding

### 3 Global decision-making process on climate change: Paris Agreement

is “new and complementary” to existing aid programs for future climate negotiations (Ernst Young Organisation, 2020).

#### ***The Rockefeller brothers fund***

The five sons of John D. Rockefeller Jr. founded ‘the RBF’ on 23 December 1940. As an entity from which they could run organized philanthropic programs. Standard Oil, the oil company founded by Standard Oil, was the source of their wealth. The remarkable family tradition of using the family fortune in the interest of the family fortune began with John D. Rockefeller Sr. and his uncle, John D. Rockefeller Jr. John D., who took over the family tradition, 3rd, Nelson, Laurence, Winthrop, and David. Each of the Rockefellers had always been interested in philanthropic giving, so they banded together to increase the effectiveness of their efforts; together they could accomplish more than they could individually (see e.g. Perkins, 1990; Winkler, 2007).

At The heart of the RBF is its commitment to protecting the natural environment, while the roots of its foundation lie in the oil business. In its first decade of activity, The RBF has already helped to establish national organizations. For example, Parks promotes scientific research and finances zoological stations, among other things. The fund began awarding grants to combat climate change through its sustainable growth policy in 1984. Over the past 30 years, the Sustainable Development Initiative has used its grants to support several analytical public policy studies to make the economic case for climate change. The RBF’s Sustainable Development Initiative alone accounted for nearly \$75 million in grants between 2005 and 2015 (Bonsey & Rotenberg, 2016).

In 1984, the RBF first began awarding climate change grants and has continuously maintained its interest in climate change. Advances in policy, research, philanthropy, and the climate revolution have provided a complex backdrop for the Fund’s climate change activities over the past 25+ years. The most recent era of RBF activity on climate change began in 2005, when the Board of Directors approved a proposal to redirect nearly all of the Fund’s green growth resources to the fight against climate change. The total investment in sustainable development during this period (2005–2010) totaled 43.6 million dollars.

The \$38.5 million was earmarked for the RBF’s broader mission to combat climate change at the international level and global warming with two goals.

### 3.1 A framework for diagnosing the structure of the global decision-making

To achieve a meaningful global agreement, to limit the scientific assessment of the safe level of climate change, and to secure an ambitious U.S. federal strategy on climate change (Northrop & Bailey, 2010). As world leaders look ahead to another round of climate talks in Durban, South Africa in December, it is a fact that the poorest and most disadvantaged communities in both developed and emerging economies are bearing the costs of climate change. During the summit in Durban, both individuals and city networks quickly demonstrated that they are playing a leading role in addressing the risks of climate change.

Cities are best placed because they best understand the urban environment and the needs of their citizens. The increase in population and economic activity in cities ensures that minimizing the impacts of climate change – from rising sea levels to an increase in extreme weather events – is critical to minimizing economic damage. During the climate negotiations in Durban, the issue of cities, the impact of climate change and financial support from the Rockefeller Foundations was discussed. Most importantly, this network facilitates learning and information sharing about the climate issues facing cities (Chu, 2011).

## **Doha**

### ***Doha climate gateway financial decisions***

8 December 2012: From 26 November to 8 December 2012, the UN Climate Change Conference in Doha, Qatar, focused on ensuring that commitments made at previous conferences were adopted. After two weeks of talks, negotiators adopted the Doha Climate Gateway decisions on Saturday evening, 8 December. The outcome requires revisions to the KP to establish a second contribution period (Doha Climate Change Conference Adopts Doha Climate Gateway, 2012).

In Doha, the parties explicitly agreed on the technical terms of the second commitment period of the KP (KP-CP2), which will enter into force in 2013–2020. The KP-CP2 commitments generally include the extension of the 2015 Paris Agreement and the 2020 voluntary commitments adopted in Copenhagen in 2009. Thus, the second cycle quotas related to additional pollution compared to 2008–2010 will be cancelled. Consequently, the commitments proposed by the states, as set out in the Doha Decision, do not correspond to the basic objectives of the nations to be achieved. Ultimately, with the exception of Ukraine, the

### 3 Global decision-making process on climate change: Paris Agreement

emissions approved under KP-CP2 correspond to a slight reduction from current emission levels (see e.g. Chen et al., 2013).

However, in the event of a “satisfactory” international agreement, several nations, such as the EU, have raised the prospect of increasing their ambitions. With a view to a possible global agreement by 2015, they want to keep this option open. In April 2014, the Annex I countries participating in KP-CP2 reconsidered their pledge. By offering targets between –25 percent and –40 percent, they welcome the opportunity to strengthen their resolve. An amendment was tabled to allow for this review. Apart from the KP-CP2 commitments, three important topics were discussed:

A formal agreement allowing filing from 1 January 2013.

Restriction on the use of credits from Kyoto countries not participating in KP-CP2.

Limiting the use of surplus allowances from KP-CP1 (see e.g. Blaxekjær & Nielsen, 2014).

During COP18, particular attention was drawn to the third point, given that there is no consensus on this issue even within Europe. Poland, in particular, lobbied for the transfer of surplus allowances from KP-CP1 to KP-CP2. It was finally accepted that the KP does not bind the Annex I state. KP-CP2 was not in a position to transfer or purchase the allowances and carbon credits in question for this period. The impact of this decision is limited with regard to Certified Emission Reductions (CERs), as it is possible to cancel CERs directly in September 2012 without going through the registry of Annex B countries. These countries can also receive CERs through the direct financing of CDM programs. Three quarters of the participating countries must agree to the changes to the KP. However, until the national approval procedures have been completed, the amendments will be adopted by the nations. In practise, this should mean that the KP-CP2 commitments can effectively begin in 2013 and continue until 2015 (Morel & Leguet, 2012).

## **Warsaw**

### ***Biocarbon fund initiative***

The Initiative Sustainable Forest Landscapes (ISFL) of the Biocarbon Fund is a multilateral organization that promotes and rewards the reduction of greenhouse

### 3.1 A framework for diagnosing the structure of the global decision-making

gas pollution and enhanced greenhouse gas sequestration through improved land management, namely REDD+ (Reduced Deforestation and Forest Depletion Emissions), climate-smart agriculture and more thoughtful land use planning and strategies. The Sustainable Forest Environments Biocarbon Fund program was established in 2013. Germany, the Kingdom of Norway, Switzerland, the United Kingdom (Department of Industry, Energy and Industrial Policy and Department of Environment, Food and Rural Affairs) and the United States are funding the project. It has funds totaling USD 360 million and supports projects in Colombia, Ethiopia, Indonesia, Mexico, and Zambia (“ISFL) – Climate Initiatives Platform”, 2013). The initiative is based on the realization that the growth of agriculture and the conversion of land use must be controlled. The ISFL will enable countries to recognize and promote climate-friendly agricultural products. Particularly in areas where agriculture is a major driver of deforestation and low-carbon land use initiatives.

The project is building a portfolio of legal services that will have a significant impact on rural areas in different regions as part of a landscape strategy. On the one hand by protecting forests, restoring degraded land, and improving agricultural production, and on the other hand by improving livelihoods and local ecosystems (Hagbrink, 2013). ISFL aims to promote and support the reduction of greenhouse gas emissions and increased sequestration of greenhouse gases through improved land management, namely REDD+ (Reduced Deforestation and Forest Depletion Emissions), climate-smart agriculture and smarter land use planning and policies. ISFL aims to promote sustainable growth with low carbon emissions. It supports emerging forest nations to end deforestation and greenhouse gas pollution from other types of land use change.

The aim is to identify new approaches that can be implemented at international level, such as national low-carbon policies and global donor funding schemes such as REDD+ (UK Department of Energy & Climate Change, 2015). During the international climate negotiations in Poland in 2013, some states confirmed the role and function of the Biocarbon Fund Program for Sustainable Forest Ecosystems, which aims to take a step towards a more comprehensive strategy for land use conservation, and pledged a total of USD 280 million for a proposed multilateral project that goes beyond the UNFCCC and is operated by the World Bank (see e.g. Šimunović et al., 2018; Lier et al., 2021). The United States will be

### 3 Global decision-making process on climate change: Paris Agreement

the smallest national contributor to the current fund, with \$135 million from Norway and \$120 million from the United Kingdom. Curiously, Brazil, one of the most forested countries in the world, came under fire when Environment Minister Izabella Teixeira had to justify why deforestation rates in the Amazon have increased for the first time since 2005.

Brazilian non-governmental organizations have discovered the obvious: Deforestation rates began to rise after the forest law was updated in 2012. However, this also correlates with the start of the world's first exchange of land and forest credits (offsets) via the newly established Bolsa Verde. And although Brazil has vigorously (and successfully) lobbied against a global market solution for REDD+, the Warsaw system would not prevent countries from introducing national or bilateral REDD+ markets (Heinrich Böll Foundation Green Political Foundation, 2020).

## Lima

### ***We mean business***

Founded in 2014, the We Mean Business alliance aims to unite the world's leading climate change industry programs and has since overseen the implementation of several corporate governance frameworks to amplify climate change in business. Although there are other projects in the corporate sector, We Mean Business is led by the most influential pioneers in corporate sustainability and has well over 1,000 companies in its network (see e.g. Scott et al., 2016). We Mean Business is an alliance of blocks in its simplest form, seeking to improve the world's leading business climate initiatives. The alliance took shape in 2013 as a result of a series of climate events and congresses that hosted numerous corporate climate conferences and brought together business leaders to look for ways to improve how the entrepreneurial community works together. Although We Mean, Business brings together hundreds of stakeholders, the organizational framework is structured to promote collaboration and minimize friction between the different aspirations of the various competing stakeholders.

From the beginning, We Mean Business has been obsessed with the challenge of getting hundreds of companies, executives, and climate protection organizations

### 3.1 A framework for diagnosing the structure of the global decision-making

to work together. We Mean Business often encourages collaboration among a larger group of people by stimulating the exchange of information. Reducing information barriers and improving transparency encourages collaboration on external affairs involving a wide range of stakeholders. For the We Mean Business alliance, building a forum where participants in the various programs meet regularly allows them to share best practices, brainstorm ideas and increase overall awareness of what their peers are focusing on (Teater, 2019).

In 2015, as the world enters the final phase of the current round of climate negotiations in Paris, there will inevitably be several phases in which the machinery will pause or instead be revitalized. The 20th Conference of the Parties to the UNFCCC in Lima, Peru, COP20, is at the top of the list of such moments; if Lima fails, Paris will almost certainly fail. In Lima, most governments adopted measures to stabilize carbon emissions. The Global Commission on the Economy on Climate, chaired by former Mexican President Felipe Calderon, underpinned this in its ground-breaking report “New Climate Economy”.

They stated that “countries at all income levels now have the opportunity to build sustainable economic growth while reducing the immense risks of climate change (see e.g. Lockwood, 2015; McInerney & Johannsdottir, 2016). The environmental group needs to change this majority by giving them the confidence to make bold promises and purchasing into a new clean industrial revolution. The arguments for action or the ‘why’ have already been made – higher productivity, energy conservation, economic development, and job creation. During the Lima conference, organizations that put sustainability and climate change at the heart of their business plan outperformed their peers.

As one of the key alliances of business organizations presented at Climate Lima, We Mean Business announced that forward-thinking companies that invest in low-carbon technologies achieve an average internal rate of return (IRR) of 27 percent. This organization argued that the development of a new wave of ambitious climate and energy policies, which will form the future climate policy environment, is progressing alongside cities, states and regional governments around the world (Climate negotiations: If we fail in Lima, we will fail in Paris, 2014).

#### ***The global commission on the economy and climate***

The Global Commission on the Economy and Climate was established to investigate whether lasting economic prosperity can be achieved if the consequences of climate change are mitigated (Dagnet and Waskow, 2020). The Commission's consortium consists of seven academic institutions from the fields of economics and development in the USA, China, Europe, India, Korea, and Ethiopia, as well as the Stockholm Climate Institute. An international council comprising former heads of state and finance ministers as well as experts from the fields of business, industry and finance oversees the initiative.

The Commission's flagship initiative, Current Climate Economy, aims to produce more robust and thorough statistics on whether and how climate policies can be implemented to achieve positive economic outcomes. Its mission is to contribute to the discourse on the global economy and climate change and to advise policy makers on their priorities and spending decisions in the business and financial sectors. This includes a review of scientific evidence aimed at a broad international audience. Nations and private actors would be best placed to make responsible decisions for the benefit of themselves, their constituencies, and the global environment if they better recognised the various consequences of climate change-related behavior (Global Commission on the Economy and Climate | SEI, 2020).

The Lima Agreement on climate change was signed by Lord Nicholas Stern, Chairman of the Grantham Research Institute on Climate Change, and the Environment and Vice-Chairman of the Global Commission on Economic and Climate. He, as the most critical representative of the international commission, said: This is an important step towards a new agreement at the Paris climate conference in December 2015, but there also remain many important issues that need to be resolved between nations over the next 12 months (see e.g. Sohn, 2016; Leggett, 2018). Before the Paris conference is planned, countries must make nationally defined, ambitious, and reliable contributions. However, it is already foreseeable that the scale of action to monitor and minimize annual greenhouse gas emissions as a whole would not be consistent with a pathway that would provide a real incentive to prevent harmful global warming of more than 2 degrees Celsius above

### 3.1 A framework for diagnosing the structure of the global decision-making

pre-industrial levels. This situation means that countries must continue to find ways to accelerate the reduction of emissions.

In addition, they should build on the agreements of the Paris Agreement to consciously increase the scale of action thereafter. To build mutual trust, all parties must continue to work together constructively. Rich countries must take responsibility for their increased wealth and their historical contribution to greenhouse gas emissions in the atmosphere. They need to better address the consequences of climate change that we already have. In addition, they should also generate and unleash even greater public and private participation in smooth economic growth in developing countries, not just relabeling international aid budgets (New Climate Economy, 2014).

#### ***C40 cities climate leadership group***

The C40 is a community of global megacities taking action to combat climate change. C40 encourages cities to actively collaborate, share expertise and promote concrete and sustainable progress in the fight against climate change (see e.g. Lee & Koski, 2014; Davidson & Gleeson, 2015; Heikkinen et al., 2018). Developed and run by cities, it focuses on mitigating climate change and promoting environmental activities that reduce greenhouse gas pollution and climate threats while improving the health, well-being, and economic opportunities of city residents.

The C40 Cities Climate Leadership Group aims, among other things, to substantially and significantly reduce both greenhouse gas emissions and the risks associated with climate change, share information and drive implementation through metrics, and understand the local benefits of these alternatives: cleaner air and water, lower electricity prices, reduced road pollution, better quality of life, longer life expectancy, green jobs and green businesses (C40 Cities Climate Leadership Group (C40) – Climate Initiatives Platform, 2020).

Since 2007, the organization has expanded to cities all over the world. In artistic style and demographics, but comparable in population, they are different. Extend and vulnerability to the threat of a changing climate to the atmosphere. Leadership was handed over in 2008 to the then Mayor of Toronto, David Miller, who chaired the 2009 Copenhagen Climate Conference for Mayors, attended by

### 3 Global decision-making process on climate change: Paris Agreement

mayors from 79 cities. He also chaired the 2009 C40 Mayors Summit in Seoul. Under the control of then New York Mayor Michael Bloomberg in 2011, CCI Cities and the C40 were fully integrated into the Executive Board. Management with trained full-time staff. Siemens Collaboration projects are showcased at the Crystal Sustainable Cities Project, their recently opened facility in London; an annual leadership award series recognizing invention and innovation has been added. The projects discuss climate challenges and a new expanded live tech conference channeling the exchange of advice, ideas and concepts participant best practices. In preparation for the annual C40 conference, two important studies were published at the beginning of February 2014: “Energy Measures in Megacities “CDP Cities 2013, in collaboration with the Emissions Transparency Initiative”. The second volume of the study, ‘Climate Actions’, was published in 2014 to coincide with the climate conference in Lima. It evaluates the efforts of the mayors and presents convincing examples of successes and developments in the measures taken by the member cities in relation to climate change (Tapscott et al., 2014).

United Nations Secretary-General Ban Ki-moon and Michael R. Bloomberg, UN Special Envoy for Local Government and Climate Change, announced the Global Compact of Mayors (see e.g. Dotto & Oakes, 2019; Swiney, 2020), the world’s first initiative to tackle climate change in major cities. Using a recently standardized calculation framework consistent with international trends, the Compact would encourage cities to collectively agree on deep reductions in greenhouse gas pollution, publish updated targets and proposals, and report annually on their progress. As part of this initiative, cities will follow the same blueprint for international climate negotiations to contribute to the 2015 Paris global climate Agreement. Following the completion of a pilot phase involving around 30 locations worldwide and numerous training workshops in Latin America, Asia, Africa and Europe, the Global Protocol for Community (GPC)-scale Greenhouse Gas Emission Inventories entered its final phase in 2014. In July 2014, version 2.0 of the GPC was made available for public comment. The formal introduction of the GPC was confirmed and discussed at the COP in Lima in December 2014.

During the Lima conference, the GPC proposed a tool to help communities and local governments of all sizes and geographies to calculate and disclose greenhouse gas emissions in a standardized way, in order to create a uniform

### 3.1 A framework for diagnosing the structure of the global decision-making

national minimum level for the assessment of greenhouse gas emissions at the community level (Achievements | LG Climate Roadmap, 2014). In other words, the introduction of the GPC-scale Greenhouse Gas Emission Inventories (GPC) developed in cooperation with C40 was the most important result for the cities in Lima. The first step in tackling pollution in cities is to identify and calculate where it comes from. However, this has proven to be impossible if there is no accurate method of measuring emissions at city level. The GPC addresses this problem by providing municipalities with the first global emissions standard that allows them to regularly monitor their performance and set reasonable targets for reducing emissions (Morgan et al., 2014).

#### ***Bank of England and carbon budget on climate change***

The Bank of England aims to promote the welfare of the citizens of the United Kingdom by maintaining monetary and financial equilibrium. In light of many considerations that may affect its statutory priorities, the Bank takes a forward-looking approach to meeting its obligations (see for example, Forde et al., 1992; Ungerer et al., 1983; Monasterolo et al., 2019). The Bank's Financial Policy Committee (FPC) is committed to defining and tracking threats that jeopardies the stability of the UK financial system and taking action to address or mitigate them. Although climate-related factors, such as increased volatility in headline inflation due to food and energy price shocks, may have an impact on financial policy, the Bank's response to climate-related factors is primarily motivated by its commitment to promoting the protection and soundness of controlled entities and maintaining financial stability.

The Bank's focus on the impact of climate-related financial threats increasingly fits within the broader framework of decisions taken by central banks and financial regulators internationally and by the global community. This atmosphere includes risk management measures such as the studies on the financial consequences of climate change by the European Systemic Risk Board (ESRB), the Dutch and Swedish financial authorities and the German Ministry of Finance. They also include transparency measures, such as the regulations adopted by the California Department of Insurance on the public disclosure of fossil fuel assets

### 3 Global decision-making process on climate change: Paris Agreement

(Morgan et al., 2014). It is worth mentioning that Bank of England system has received climate impacts as follows:

The number of recorded weather-related catastrophic events since the 1980s has been Triplicated. Inflation-adjusted insurance claims have grown to around \$55 billion over the last decade, from an estimated rate around \$10 billion in the 1980s.

Changes in law, technology, and public opinion might cause a revaluation of many assets in transformation risk factors, resulting in credit exposures for banks and other lenders as expenditures and opportunities become apparent.

The vital issue of rising credit losses due to climate-related variables is mainly consistent with the outlook of solvency risks for the banking sector more generally. In the bank of England banking sector, nearly three-quarters of total risk-weighted assets contribute to credit and counterparty risk (Prudential Regulation Authority, 2018).

The Bank of England is investigating the possibility of economic collapse if companies can no longer exploit their coal, oil and gas reserves due to climate change concerns. On the same day that a new round of global talks on climate change began in Lima, Peru, the Bank of England advised Congress to investigate the carbon bubble. During his speech in Lima, Bank of England Governor Mark Carney emphasized that fossil fuel companies should not burn any of their reserves if the world avoids catastrophic climate change. During the climate conference in Lima, he mentioned that if the world enters into an official agreement in Paris in a year's time to limit global warming to 2C by reducing carbon emissions, several fossil fuel companies will be left with "stranded money", that is, resources they will not sell (Bank of England investigating risk of carbon bubble, 2014).

#### ***The Norwegian sovereign wealth fund and carbon budget on climate change***

The surplus income that a nation accumulates over time is a Sovereign Wealth Fund (SWF), sometimes referred to as a collective wealth fund. The state-backed

### 3.1 A framework for diagnosing the structure of the global decision-making

resource pool is mainly fueled by foreign exchange reserves (see e.g. Bang & Lahn, 2019; Bhopal, 2021). Other funding streams for an SWF account include:

Reserves of banks

Surplus profits from businesses concerned with natural resources (e.g. the oil sector)

Surpluses in exchange

The unused money from the government budget

Payments on Government Transition

One of the world's leading sovereign wealth funds is the Norwegian Government Pension Fund Global (Sovereign Wealth Fund (SWF) – Overview, Types, Investing Conditions, 2020). In other words, some of the most important money reserves on the global equity markets are sovereign wealth funds. The Norwegian sovereign wealth fund, which consists of two independent trusts, is the largest and best known, with assets of around USD 1.1 trillion (Sovereign Wealth Fund (SWF), 2020). The Norwegian sovereign wealth fund faced new problems in 2014: The oil reserves from which it draws its income are beginning to dry up.

In order to curb greenhouse gas emissions and combat climate change, Norwegian Prime Minister Erna Solberg announced in March 2014 that her government intended to spend a large part of the state's sovereign wealth fund on clean energy. She noted: 'This government takes environmental concerns very seriously, but we need to look more closely at how we can work with the fund by making productive clean energy investments in sustainable businesses overseas. Solberg emphasized: 'It is important that Norway leads the way beyond its borders Norwegian Finance Minister Siv Jensen said in a statement in April 2014 that the fund would double its commitment to clean energy to around \$8bn. She said that the extended reach we provide for green investments would strengthen the fund's ability to actively manage investments in this area.

However, Siv Jensen pointed out that the fund 'is not an instrument for increasing government spending in emerging economies or on renewable energy' (Rimmer & Wood, 2014) During the climate conference in Lima, the Norwegian sovereign wealth fund and the carbon budget on climate change played an

### 3 Global decision-making process on climate change: Paris Agreement

important role. The Norwegian Sovereign Wealth Fund as a private sector gives first signals that it has understood the financial risk of a “carbon bubble” and is ready to deal with it. The Norwegian SWF is considering divesting from fossil fuels which could pose a threat to the stability of the financial system (COP20: Lima | Heinrich Böll Foundation, 2020).

## 3.2 Summary in plain language

The final section of this chapter summarises the ‘PS-DMP’ and ‘ES-DMP’ in the context of the Global Decision-Making Process (Paris Agreement) and highlights the key features (tipping points) of the process that help us to understand the outcomes.

The author of this study introduces PS-DMP and ES-DMP respectively. The author was active in a PS-DMP during DPS, DOPS, WPS, LPS and PPS. The second step involves analysing ES-DMP, namely DES, DOES, WES and LES. The author has divided the data into two different categories, namely more tangible and less tangible. In the case of review and analysis of PS-DMP, LPS 5, DPS 4 and PPS 4 along with at least 13 potential tipping points that characterize the global decision making (PA) process. In both the review and analysis, ES-DMP 4 clusters were used to represent the second stage. The author points out that DES and LES with almost 12 tipping points are potential steps for global decision making.

Let’s take a closer look at the stages and points that shaped the decision-making process of the Paris Agreement and how the author should use the information and data analysis on each page and in the structure of this section (Table 3). Simply put, a better system for understanding the key drivers of this process is to

**Table 3.** Decision-making process of Paris Agreement and summary of analysis.

Major stages	Indicators of major stages					Results
PS-DMP	(DPS)	(DOPS)	(WPS)	(LPS)	(PPS)	17
Components	4	3	1	5	4	
ES-DMP	(DES)	(DOES)	(WES)	(LES)		14
Components	7	1	1	5	0	

Source: Author own-constructed.

create a summarized, understandable table, one for PS-DMP, which refers to 5 clusters, and another for ES-DMP.

Each cell of the table can contain further information, either data or zero. For example, ES-DMP can be analyzed with only four levels in the table. Three, with one less column containing no data based on a literature review and analysis. To move forward in this regard, the author analyzed five steps based on the literature review. Table 3 illustrates that the global decision-making process related to climate change, i.e., the PA shown in the table, is much more connected to political factors, which are deeply divided by 17 tipping points.

## Conclusion

In this part of the study, the author of this book has tried to understand how the global decision-making process on climate change, the Paris agreement, was organized within the framework of international relations. The author presents the decision-making process – namely the PA – as a series of elements formed by certain variables using a specific structure for global climate change decision-making. The origins of this focus on decision-making are generally attributed to the main approach of this book, namely IID, with the types of literature adding to the complexity and diversity of the approach in this study. Decision-making is located in IID analysis (a subfield of PA), which applies perspectives and methods from different disciplines – political phases, economic phases – to understand how states shape this process and how these phases translate into outcomes.

The literature on global climate decision-making is often compartmentalized based on assumptions about how actors set the political stage for decisions – primarily in COPs; about who is assumed to drive the decision-making process – states, international climate change negotiations and ESDMPs. In addition, the influences on these stages PS DMP are assumed to be most important:

Durban

Doha

Warsaw

Lima

### 3 Global decision-making process on climate change: Paris Agreement

Paris

And ES-DMP

Durban

Doha

Warsaw

Lima.

While much of the literature focuses on the political phases of PA, there have been attempts to apply an analytical table (Table 3) developed as part of the discussion. Factors about DMP-PA and conduct an in-depth and careful analysis. The author of this study suggests that 17 indicators provide an excellent key stage for the IID approach and the process of current and future global decision-making on climate change.

# 4

## **Global decision on climate change: The Paris Agreement**

In this chapter of the study, the author deals with the Paris Agreement as an international decision on climate change. The Paris Agreement is a global decision initiated by more than 196 states to combat climate change and its negative effects. The agreement was the culmination of six years of international negotiations on climate change under the auspices of the UNFCCC and was reached under strong international pressure to avoid another failure of the Copenhagen conference in 2009. The PA sets a target for global warming well below two °C compared to pre-industrial averages. It requires countries to formulate progressively more ambitious climate targets which are consistent with this goal.

It commits all Parties to contribute to climate change mitigation and adaptation. For the first time, all countries will develop plans on how they can contribute to climate change mitigation and communicate their 'NDCs' to the Convention Secretariat. Unlike the KP, the Paris Agreement does not formulate state-specific emission targets. Instead, the Paris Agreement relies on voluntary mitigation contributions and a series of processes to ensure collective and individual progress in meeting initial and progressively more ambitious mitigation contributions. Therefore, the author of this study analyses the PA based on the principles of the Paris Agreement and the rules of the Paris Agreement. The PA has recognised the different starting points of the IID approach. This means that understanding the PA as a decision lead to an intergovernmental integrated decision-making approach. In this respect, the analysis is essential and a step towards practical implementation.

## **4.1 The Paris Agreement on climate change: Critical choice, nature, and structure of analysing an international decision**

This chapter focuses on the nature and structure of PA to explain the decision of the Paris Agreement (DEC-PA), with particular emphasis on the global level. In this chapter, I will attempt to understand the decisions of states in relation to the problems of climate change by using the PA lens of the essence of the decision, which is an analysis of the PA decision provisions in the process of international relations. In this section of the study, the author considers the DEC-PA based on the direct approach – IID – that makes up the entire study. The author highlights the essence and core elements of the Paris Agreement decision in order to maximize its significance as a global decision. This section looks at the principles of the Paris Agreement, the rules and principles of the Paris Agreement and describes how the Paris Agreement decision was designed internationally to respond effectively to climate change.

This chapter proposes equity and common but differentiated responsibility as a possible pathway for principles to limit global warming for PA rules, as the rest of this section is organised around the rules of the Paris Agreement. In this part, the author will take a closer look at the different articles of the PA as an international decision. In this part, the topics of transparency and GST, L&D, voluntary cooperation, sinks and reservoirs, finance, technology, capacity building support, global peaking, climate neutrality, education, training and public awareness on climate change, public participation and public access to information will be introduced and explored.

## **4.2 Advancing decision-making on climate change under the Paris Agreement: A guide to principles, rules**

### **Principles of Paris Decision**

Some of the influential global agreements and principles that have been made to combat climate change are the KP and the Paris Agreement. These two agreements

## 4.2 Advancing decision-making on climate change under the Paris Agreement

were concluded as a result of the increasing global warming caused by greenhouse gases. Both fall under the UNFCCC, which was adopted at the United Nations Conference in Rio in 1992. The UNFCCC was designed to support policies that help stabilize greenhouse gas concentrations in the atmosphere. Although these two global agreements were designed based on the principles of the UNFCCC to combat climate change, there is a significant difference between the principles of the KP and the Paris Climate Agreement.

In order to make the most important principles of the UNFCCC and in particular the Paris Agreement clearer in this section, the author takes a brief look at the principles of the KP:

The KP principles were only addressed to industrialised countries and contained legally binding targets for greenhouse gas emissions.

The KP principles had organized targets for the signatory countries and were linked to sanctions for non-compliance.

The KP was legally binding for the participating countries and had some countries as signatories.

The ultimate goal of PA is to limit the global temperature rise to 1.5°C in the 21st century, and because of this reality, the principle of PA is different. In this research section, the author therefore takes a closer look at the key principles of the Paris Agreement. In particular, the author explains how these principles have been considered in the organization of the PA. These principles, including equity, CBDR, human rights, indigenous peoples' rights, food security, just transition and ecosystem integrity, have been emphasized.

### **i. Equity, Common but differentiated responsibilities**

Its origins go back to the Second World Climate Conference in 1990, where countries agreed to recognize the principle of equity and the common but separate obligation of countries at different stages of growth, and to the Rio Declaration of 1992. When it comes to the Parties' obligations, this and the CBDR&RC concept are also mentioned in Article 4.1 of the Convention; instead of the respective capacities, "their specific national and regional growth targets, strategies and situations" are added (Winkler & Rajamani, 2013). In this article, the

#### 4 Global decision on climate change: The Paris Agreement

Convention distinguishes between developed and developing countries. Annex I of the Convention contains a list of developing countries that should take the lead in combating climate change. The convention was signed in 1992, and the economic differences between rich and developing countries reflect the reality. The “D” – differentiation – has been a hot topic in the debate on equity and CBDR-RC. Differentiation between countries was made possible by the KP (1997), which contained specific mitigation commitments with targets and timetables for developing countries, but not for developed countries. Industrialised countries must help developing countries to reduce their emissions and adapt to climate change by providing finance, technology transfer and other instruments.

Over time, industrialised countries have questioned the distinction between reduction targets. They claim that major emitters should be required to take binding mitigation action, regardless of whether they are listed in Annex I, and that the Convention’s principles are complex and should respond to changing geopolitical realities. Some developing countries argue that the Convention’s principles encourage developing countries to take the lead in efforts to mitigate climate change, as they are traditionally the source of most global greenhouse gas emissions (Cameron, 2012). In the recent UNFCCC negotiations, starting with Durban, the parties have changed their views. The parties wanted to allow countries to determine their own “contribution” to tackling greenhouse gas emissions. This latest climate agreement will “apply to all”. It will differ in that it uses a bottom-up strategy to assess a collective initiative. The meaning of equity (historical and current responsibility for climate change), the role of the annexes and the function each nation can play in the UNFCCC climate negotiations are all thorny issues.

At the talks in Lima in 2014, the parties agreed on a new term: similar but differentiated commitments and respective capacities, considering different national circumstances, which indicates how a Paris agreement will solve the problem (Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) | Climate Nexus, 2021). The key to explaining how the distinction was handled in the Paris Agreement is to look at Decision 1/CP.20, which was implemented in Lima, Peru, in December 2014. The third paragraph emphasises the parties’ commitment to reach an ambitious agreement in 2015 that represents the concept of CBDR-C due to different national circumstances and their

## 4.2 Advancing decision-making on climate change under the Paris Agreement

commitment to reach a realistic agreement in 2015 that reflects the principle of CBDR-RC.

The language was inspired by the November 2014 joint statement by the United States and China, which marked an unprecedented rapprochement between the world's two largest emitters. It was the first time that CBDR-RC was included in an ADP resolution. Given the different national circumstances, the qualifier, as the concept was formulated in the Paris Agreement, has a variety of implications, such as a move away from a rigid, precise distinction formulated in annexes (White House, 2014). The normative legacy of the UNFCCC is strongly recognised in the Paris Agreement. It will be motivated by the values of the Convention, such as equity and the CBDR-RC, and will represent them in its implementation due to the different national circumstances. The Paris Agreement takes a much more nuanced approach to differentiation than the UNFCCC. While the division into states such as “existing” and “developing” countries still applies, the agreement does not specify these terms or refer to the UNFCCC annexes.

The Paris Agreement aims to take into account the commitments, capabilities, and situations of all parties. Differentiation is operationalised in various ways, some explicit, others more implicit, with different considerations for each element of the Agreement. The Paris Agreement recognises the existence of an evolutionary “policy space” in several respects. The Paris Agreement does not use a single, all-encompassing approach to differentiation based on predefined categories of countries. Many of the commitments that become legally binding when the agreement enters into force apply to all parties (Voigt & Ferreira, 2016).

### **ii. Human Rights of Indigenous Peoples**

Between 2008 and 2015, the Human Rights Council adopted five resolutions on climate change and human rights (see e.g. Quirico & Boumghar, 2015; Albers, 2018). With the inclusion of human rights terminology in the Cancun Agreements in 2010, this lobbying campaign had its first success. In addition, paragraph 8 of the Cancun Agreements emphasizes that Parties should fully support human rights in activities related to climate change. These provisions of the Cancun Agreement have led to calls for the use of human rights concepts in the climate

#### 4 Global decision on climate change: The Paris Agreement

regime. In 2014, the mandate holders of the UN Special Procedures for States negotiating in the Ad Hoc Working Group on the Durban Platform published an open letter calling for the adoption of the Durban Platform. The interests of the people would be “included” in a current climate agreement (United Nations human rights office of the high commissioner, 2014). More than thirty countries signed the Geneva Declaration on Human Rights in Climate Change in the run-up to the Paris Conference. The Human Rights and CCWG, an important civil society network in Cancun, organized the NGO. They are calling for the specific language to be used in the work of the ad (Mayer, 2016).

In 2014, the IPCC predicted that the effects of climate change will be “severe, pervasive and irreversible” (IPCC, 2013). Extreme weather conditions jeopardize the right to life, which is a prerequisite for all other human rights, by causing significant disruption to infrastructure for energy, water sources and health and emergency care (see e.g. Short et al., 2015). Food production would decline, leading to malnutrition. An excessive threat from foodborne, waterborne, and vector-borne pathogens would jeopardize the right to health.

When food security deteriorates, the right to food is compromised. Inadequate access to drinking water, irrigation and sanitation would affect rural livelihoods and wages and lead to lower agricultural production. The IPCC estimates that hundreds of millions of people will have to be relocated due to water levels and severe storms. This situation is due to land erosion from coastal and inland flooding, with a high risk of death, injury, extreme disease and threatened livelihoods in low-lying coastal areas and SIDS (Field et al., 2015). While there is no definitive classification of indigenous peoples, Krakoff says they can be distinguished from other minority groups: “First and foremost, indigenous communities claim systems of association that link religious, cultural, and economic relationships with the land and resources of their ancestors. Second, indigenous groups use the word -people- to express their profound questions of community belonging and communal and mutual self-determination (Farber & Peeters, 2016). Due to their geographical location, their theological and cultural ties to the land and the world in general, their history of colonial exploitation and dispossession, the irreversibility of climate damage and their comparatively low adaptive capacity, indigenous peoples are particularly sensitive to the effects of

## 4.2 Advancing decision-making on climate change under the Paris Agreement

anthropogenic warming. Deforestation jeopardizes people's livelihoods and their right to food, water, health and life. It exacerbates the exploitation of traditional areas and jeopardizes the access, use and ownership of land and natural resources by indigenous and local population groups (Savaresi, 2013).

Indigenous peoples are therefore at the forefront of efforts to link human rights and climate change. The Inuit petition to the Inter-American Commission on Human Rights in 2005 is perhaps a good example of this. For more than three decades, indigenous groups in the Brazilian Amazon have been fighting against massive energy projects with dubious long-term viability, such as the Belo Monte dam in Brazil. They hoped that the conclusion of the Paris Agreement would use precise words to protect human rights. The scene was set for COP21 in Paris to put human rights at the centre of the climate regime and its principle, an illusion that was shattered when the final draft of the Paris Agreement was published. The Paris Agreement is the first legally binding multilateral climate agreement to include human rights as a component (Gardiner & Thompson, 2017). Paragraph 11 of the preamble states:

Recognizing that climate change is a common concern of humankind, Parties should, in taking action to address climate change, respect, promote and take into account their respective obligations with regard to human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and persons in vulnerable situations, and the right to development, as well as gender equality, women's empowerment and intergenerational equity. This atmosphere builds on and improves an earlier reference in the overarching part of the Cancun Agreements adopted by COP16 in 2010.

This decision also emphasized the importance of parties respecting human rights in their climate-related activities. The text of the Paris provision, on the other hand, addresses key aspects of human rights – and certain groups of rights holders – that are emphasized as particularly important in the application of the Paris Agreement. Other paragraphs in the preamble further emphasize two similar principles. In addition, the PA lightly mentions the paramount importance of ensuring food security and ending poverty, as well as the requirements of fair labour transformation and the development of good work and better employment (Duyck & Lador, 2016).

### iii. Gender Equality

When public engagement is at the centre of climate change governance and empowers interested people at all levels, it works best. The Rio Declaration on Environment and Development states that individuals at the national level “must have adequate access to information held by public authorities on the environment, including information on hazardous substances and activities in their community, and the opportunity to participate in decision-making processes” (see, among others, 2015; Boute, 2016). Countries that endorse Agenda 21 should make information available to promote public engagement and understanding. The mandate to involve the public in the decision-making process was transferred to the area of international climate policy by Articles 4 and 6 of the UNFCCC.

Article 4 commits to: “Promote and cooperate in the areas of education, training and public awareness related to climate change and encourage the widest possible participation in this process, including the participation of NGOs” (Martinez Blanco, 2021). Today, climate change is causing widespread social and environmental damage and human misery all over the world. Human freedoms are being eroded and choices are being limited by climate change.

On the other hand, climate change does not affect everyone equally, with women bearing the brunt of the impact. Without action on the inequality that climate change brings, those with the lowest incomes, both nations and people, will be the hardest hit by the harmful effects of climate change; and those in a position of wealth and authority will be the first to benefit from economic changes towards a low-carbon society. Any international climate agreement should be long term to ensure the survival, wellbeing and livelihoods of women and men worldwide. It must also be ambitious and equitable to keep temperatures below 1.5°C, act on climate change and defend the human rights of all people. The 2015 Paris climate negotiations will determine whether gender-responsive decisions, programs and policies on climate change are made and supported as part of a comprehensive and equitable overall agreement (Blomstrom & Burns, 2016).

In 2015, a truly transformative plan on climate change and sustainable development was agreed, as well as a ground-breaking treaty on gender equity. Parties to the Paris Agreement agreed to take concrete action to halt global warming,

## 4.2 Advancing decision-making on climate change under the Paris Agreement

minimize greenhouse gas emissions and support, promote and recognize their commitments to gender equity and women's empowerment in addressing climate change. These strategies could serve as a starting point to ensure that the fight against climate change is not only about preserving the one world we have for future generations, but also about making it a 50/50 planet for women and girls today and in the future.

This pledge reinforces and promotes the realization that achieving SDG 5 on gender equality and the empowerment of all women and girls (SDG5) would contribute significantly to progress on all SDGs, including SDG 13 (see e.g. Diaz-Sarachaga et al., 2018; Charnock & Hoskin, 2020) on immediate action to combat climate change and its effects. According to the Paris Agreement, climate policy must be gender-responsive, promote human rights and support women and girls. Governments seized this unique opportunity when they met for the first time in Marrakech as parties to the Paris Agreement. Parties sent a clear warning that now is the time to turn words into action and move forward with an ambitious expanded programme of work on gender and climate change (Puri, 2016).

### **iv. Food Security**

Food security is a universal principle and a major concern of humans (see e.g. Headey & Ecker, 2013; Campbell et al., 2016). However, as communities grow and mature, the definition of food security needs to be regularly reconsidered, updated and redefined. At the 1996 World Food Summit, the Food and Agriculture Organisation of the United Nations (FAO) stated: "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and preferences for an active and healthy life" (Policy Brief, 2006).

Climate change can have catastrophic effects on global food supplies, which is one of the reasons why there is an urgent need to remedy the situation. Climate change is expected to lead to a decline in food production and yields of crops, aquaculture and fisheries. Due to the projected impacts of climate change, based on potential and current greenhouse gas emissions, food security has become increasingly important in recent decades (Kais & Islam, 2018). The new IPCC study

#### 4 Global decision on climate change: The Paris Agreement

reinforces the critical conclusions of previous IPCC reports on climate change and its significant physical impacts, such as temperature changes on land and in the oceans, sea level rise and ocean acidification. It also provides a clearer understanding of possible shifts in the spatial, temporal and seasonal distribution of precipitation. In several areas, climate change has raised significant concerns about potential water supplies, which will affect precipitation, runoff and snow/ice melt and influence hydrological processes, water quality, temperature and groundwater recharge. Rising sea levels have affected the salinity of surface and groundwater in coastal areas (see e.g. Nuttle & Portnoy, 1992). Extreme events are expected to become more frequent and intense due to climate change. Extreme events also have a significant impact on agriculture and the food system. According to a recent FAO report on 78 post-disaster needs assessments conducted in 48 developing countries between 2003 and 2013, the agricultural sector accounts for 25% of all economic losses and damage caused by medium- and large-scale climate hazards such as droughts, floods, and storms in developing countries (FAO, 2015). Increased temperatures and fluctuating precipitation are the two most important factors causing damage to agricultural production.

Temperature fluctuations indirectly influence the structure of the ecosystem, food supplies and the availability of resources, so that changing weather conditions will reduce the productivity of food and agricultural. The predicted rise in sea levels, which would flood agricultural areas, is one of the most critical aspects of climate change. Higher temperatures would have three types of impacts on potential food security: (i) constant impacts: Fluctuations in crop yields due to temperature increases, changes in the length of seasons and increased salinity in coastal regions; (ii) Discontinuous impacts: increased crop losses due to extreme weather developments and climate-related events such as pest infestations and disease outbreaks; (iii) Pessimistic impacts: increased crop losses due to extreme weather systems and climate-related events such as pest infestations and disease outbreaks; (iv) pessimistic impacts: increased crop losses due to extreme weather patterns (Islam & Kieu, 2020).

Agriculture is rarely mentioned in the various drafts of the negotiating document for the Paris Climate Agreement, and even less in the final text adopted at COP21. The only mention is in the provision on finance, which calls on countries

## 4.2 Advancing decision-making on climate change under the Paris Agreement

to integrate climate goals into other policy-relevant areas and practices, such as agriculture. Both references to “agriculture” were removed from the co-chairs’ final negotiating document. As a result, agriculture is not mentioned in the agreement as implemented at COP21. Maintaining food security was mentioned throughout the textual recommendations aimed at setting adaptation targets. However, this reference had disappeared from the Co-Chairs’ final negotiating document, only to reappear in the preamble of the COP draft decision.

The latter reference survived the negotiations in Paris at COP21. The preamble to the Paris Agreement on climate change now states: Recognizing the fundamental priority of ensuring food security and ending hunger, and the particular vulnerability of food production systems to the adverse impacts of climate change. Food distribution was a recurring theme throughout the report. Negotiating texts as a limiting consideration in mitigation efforts. Only one such reference remained in the final version of the Paris Agreement on climate change. Article 2 contains the main objectives of the agreement: to enhance the capacity to adapt to the adverse impacts of climate change and to promote climate resilience and low greenhouse gas emission development in a manner that does not jeopardize food production (Verschuuren, 2016).

### v. Just Transition

Climate change is now widely recognised as one of the greatest – if not the greatest – threats facing humanity in the coming decades. The economic impact of climate change is predicted to be a huge burden by 2050, accounting for between 5 and 20 percent of global GDP. Worse still, the citizens of the world’s poorest countries, who have contributed the least to the crisis, will bear the brunt of the consequences. It is becoming increasingly clear that the best option to get the kind of promise needed to successfully tackle the problem is to form a collective coalition that includes all stakeholders. Such a principle will crystallize when there is a seemingly equitable transition of responsibility in the struggle to keep the world habitable for humans.

This principle is obvious when it comes to the just transition perspective (Climate change and labor: The need for a “just transition,” 2010). In recent years, the

#### 4 Global decision on climate change: The Paris Agreement

idea of a ‘just transition’ ‘has received much attention in both political discourse and academic literature (Heffron and McCauley, 2018). The US labour group, however, had invented and used it in the 1980s (see e.g. Hayward, 1980). Staff responded to new laws to prevent air and water pollution, which led to the closure of many polluting industries. Some credit the first use of the term ‘just transition’ to Tony Mazzocchi, an American activist who advocated for financial assistance and easier access to higher education for jobs affected by environmental policies. Between 1990 and 1995, the president of the Oil, Chemical and Atomic Workers Union proposed the Just Transition Plan. Many US and Canadian unions then publicly adopted the Just Transition theory (Newell & Mulvaney, 2013).

North American trade unions in particular began to develop the idea of just transition in the 1990s. Initially, trade unionists saw the transition as a program to support people who had lost their jobs because of environmental policies. Many people outside the trade union movement still see transition as a measure to cushion job losses in industries such as coal. However, for trade unions and their allies, Just Transition now represents a concerted attempt to prepare for and participate in a transition to economically and socially sustainable jobs, sectors, and economies. As public awareness of the climate crisis grew, trade unions began to link the transition to climate policy. They also began to advocate for just transition to be considered in international regimes, including the UNFCCC negotiations.

The United Nations General Assembly adopted the Sustainable Development Goals in 2015. This goal reflects just transition policies as a whole, including the goals of decent jobs for all (Goal 8), renewable energy for all (Goal 7) (see e.g. Villavicencio Calzadilla and Mauger, 2017), climate security (Goal 13) and poverty eradication (Goal 1) (see e.g. Kamruzzaman, 2016). Following that, in 2015, the United Nations ILO published a final draft for a just transition: For all, principles for a just transition to green economies and communities. The regulations are a multilateral tripartite agreement between trade unions, employers’ organizations, and states (Burrow, 2017). At the global level, the importance of a just transition in the fight against climate change and within the industrial relations system has been recognised by the following multilateral treaties and institutions:

The idea of a just transition is widespread in international organizations such as the Organisation for Economic Co-operation and Development (OECD),

## 4.2 Advancing decision-making on climate change under the Paris Agreement

the UNEP and the UNFCCC. The preamble of the Paris Agreement, adopted at COP21 in 2015, states that transition requirements must be considered in the world of work in order to create excellent and quality jobs in line with nationally determined growth priorities (The just transition, fundamental for achieving climate goals and generating prosperity, 2021). The Paris Agreement on climate change includes just transition as an essential principle. Based on the PA, the just transition is not a fixed set of rules, but a vision and a process based on a dialogue and a common agenda of workers, industry and governments that must be negotiated and implemented in the respective geographical, political, cultural, and social context. It implements a set of guiding principles, such as the “Just Transition Guidelines,” 2021. The Paris Agreement recognises the urgency of addressing the consequences of climate change. Considering PA and the fact that countries plan to evaluate their NDCs in 2020 to increase the level of commitment, only a just transition is crucial to tackle the environmental crisis and ensure that no one is left behind (Van Vuuren & Kojo Agyemang-Bonsu, 2017).

### **vi. Ecosystem Integrity**

According to Webster’s dictionary, the state of being unbroken, intact, consistent, or complete. Thus, when a system is disturbed from the outside, it retains its integrity if all its elements and the functional relationships between them are preserved (see e.g. Kandziora et al., 2013; Roche & Campagne, 2017). Ecosystems are similarly structurally organized into populations, species and groups of organisms that are related to each other and to abiotic features of the environment, as well as fundamentally into components for the production and consumption of energy and resources.

“Measurable definitions of integrity include that of Cairns (1977): the maintenance of community structure and function characteristic of a particular place or deemed satisfactory by society, and that of Karr and Dudley (1981): the ability to support and maintain a balanced, integrated, adaptive community of organisms whose species composition, diversity and functional organization is comparable to that of natural habitats in the region. Integrity is a definition that reflects the ability of the system to provide valuable services to humans. Karr and Dudley’s

#### 4 Global decision on climate change: The Paris Agreement

definition also reflects a human perspective” (De Leo & Levin, 1997). It is worth defining the integrity of the ecosystem. With the destruction and degradation of habitats leading to the loss of biodiversity and ecological resources worldwide, it is more important than ever to pursue and adequately protect what is left.

The size of an ecosystem is not the only factor that determines its benefits to the natural environment and humans; the condition of an ecosystem, or its integrity, is also crucial. Many concepts are relevant to the state of the environment in international or intergovernmental policy contexts, but integrity is the most commonly used and systematic concept (Lieberman, 2020). The 2015 Paris Agreement on climate change refers to the importance of ensuring the integrity of all ecosystems and the protection of biodiversity (Biodiversity, Land Use and Forestry | Fact Sheets on the European Union | European Parliament, 2020).

More specifically, in terms of combating climate change and responding to its consequences, the Paris Agreement emphasizes the importance of measures to protect the integrity of all ecosystems and the conservation of biodiversity. In light of the PA, creating appropriate solution-oriented policies and interventions for habitat conservation and cost-effective adaptation to climate change on an ecosystem basis requires a deeper understanding of the relationships and feedback between natural processes and climate change, as well as evidence-based guidance (see e.g. Cantonati et al., 2020). As smart climate policies will simultaneously mitigate other environmental pressures, such as air pollution, there are also opportunities for habitats and ecosystems to benefit multi-dimensionally from climate change adaptation and mitigation (Funding & tenders, 2021).

### **Rules of Paris Agreement under global decision**

#### ***Transparency and global stock take***

At COP16 (Cancun, 2010), the Parties agreed to assess the overall progress towards achieving the long-term global goal of staying within 2 degrees Celsius. This meeting also looked at how Parties are meeting their commitments under the Convention. The UNFCCC developed the Structured Expert Dialogue (SED) at COP18 (Doha, 2012) (see e.g. Schurer et al., 2018; Lesniewska & Siegele, 2018) to ensure the scientific credibility of such reviews. The SED created a forum for

## 4.2 Advancing decision-making on climate change under the Paris Agreement

Parties to engage in an inclusive and constructive dialogue on scientific expertise and evidence-based climate policy formulation (UNFCCC, 2016).

In addition to collecting and analysing data, technical reviews and open stakeholder forums were conducted to ensure transparency. The SED research report (2015) pointed out that climate policy is not sufficient to keep global warming below 2 degrees Celsius. According to the report, the significant impacts of climate change are increasing at current levels of global warming, and further warming would only increase the likelihood of extreme, systemic and lasting impacts. The report advises pursuing emission pathways in the short term that are compatible with limiting warming to below two °C without losing sight of the 1.5°C targets (Schleussner et al., 2015).

The Parties agreed at COP21 (Decision 10/CP.21) to pursue efforts to limit the global temperature increase to 1.5 degrees Celsius above pre-industrial levels, relying on the conclusions of the SED. The SED report states: “Parties should act urgently and ambitiously under the Convention, while recognizing the technological, economic and institutional challenges. It also encourages the scientific community to address the information and research gaps identified by the SEDs, including the scenarios that limit warming to below 1.5°C above pre-industrial levels by 2100 and the range of impacts at regional and local scales associated with these scenarios” (Prasad, Ganesan & Gupta, 2017). Accordingly, there is nothing in the environment of global organizations that is comparable to the GST created by the Paris Agreement on climate change. In terms of global governance, the GST is a multilateral assessment process that can be found in most multilateral systems.

The GST plans to regularly measure joint progress against the long-term priorities of the Paris Agreement. In particular, the parties will be advised on how to update and improve their actions, support and co-operation. These individual and collective assessment processes are critical to the current “hybrid” rationale of the Paris Agreement, which combines non-binding, nationally determined pledges with international progress monitoring. Article 14 of the Paris Agreement stipulates that the parties shall regularly take stock of the functioning of the Paris Agreement in order to determine their mutual progress in achieving the objective of the Paris Agreement. The main functions and issues of the GST are considered by the states (Milkoreit & Haapala, 2017). These functions are as follows: Peace-maker, Accountability, Driving the NDC and Signaling.

### ***Peacemaker***

As far as the requirements for results are concerned, the PA imposes few legally binding obligations on states. However, in order to act as peacemakers, there are several procedural responsibilities related to the planning and communication of NDCs (Articles 4.2, 4.3 and 4.8) and the accounting and monitoring of greenhouse gas emissions data (Articles 4.13 and 13.7) (Bodansky, 2016). The PA's procedural rules – 5 years – the cycle of NDC amendments, assessment and analysis of national action and support. This collective assessment of progress in the form of the periodic GST helps to stimulate and synchronise climate policy procedures. But what is the special place of the GST in this policy cycle? The GST strengthens the 5-year PA cycle by bridging the assessment phase and the agenda-setting phase for the subsequent NDC cycles. It incorporates the results of individual state-level assessments to draw global conclusions. What is needed for the GST to function as an effective agenda-setting mechanism?

First of all, the GST can only efficiently integrate and finalise the assessments of the individual states if the inputs are available in a timely manner (Obergasse et al., 2016). The results of the GST should be structured to feed into the policy discourse of many states in order to have a significant impact on national policy processes. This can be achieved by presenting detailed information on sectoral transition issues and information suitable for stakeholders. It will also be helpful to coordinate knowledge with other related international agendas, such as the 2030 Agenda for Sustainable Development (see e.g. Leal Filho et al., 2017; Agbedahin, 2019) and its Sustainable Development Goals (SDGs) and UN Habitat's New Urban Initiative. Data and analyses that enable the development of complex policy agendas at a technical level must therefore be (Hermwille et al., 2019).

### ***Accountability***

One of the most prominent rationalist criticisms of the Paris Agreement is its lack of moral coercion. To some extent, this situation has been replaced by accountability, in the expectation that the threat of naming and shaming would inspire politicians to properly enforce their NDCs. Transparency is a crucial criterion for the naming aspect. Without reliable and sufficiently granular data, it is difficult to assess whether and to what extent states have fulfilled their NDCs (Oberthür

## 4.2 Advancing decision-making on climate change under the Paris Agreement

& Bodle, 2016). A crucial level of media interest is for the “shaming” part. In this case, the transparency mechanism is unlikely to be sufficient. This transparency is one aspect where GST could help. The GST could form an echo chamber for the accountability framework by openly receiving, updating, and evaluating the reports of individual states. This GST will serve to generate the necessary public interest (Obergassel et al., 2015).

On the other hand, the GST has only a limited mandate in this area: according to Article 14.1, the GST should only measure mutual success. This seems to be correct in the sense that the GST results must summarize the results of individual states to arrive at global results. Although the GST does not intend to equate the results of states, this would be desirable. Article 6 is crucial for naming and shaming (see e.g. Taebi & Safari, 2017; Seo, 2018). The priority given to environmental integrity and the avoidance of double counting is already an indicator. If the accounting of foreign transfers of carbon reductions under Article 6 is insufficient or ambiguous, the GST transparency mechanism will be seriously hampered. In the absence of a robust Article 6 accounting system, there is a risk that countries will form coalitions with low ambition and use Article 6 to disguise their failure to comply with the Paris Agreement (Hermwille & Kreibich, 2018).

Driving NDC, the current level of ambition is still insufficient to fulfil the requirements. To compensate for this, the Party’s next NDCs must at least be in line with Article 4.3 of the PA, which states that they express the Party’s highest possible ambition and represent a progression beyond the Party’s current NDC (UNFCCC, 2016). The GST should create benchmarks to better operationalize what it means to have the highest possible ambition and what constitutes progress against the current NDC. These indicators make it easy to identify and promote aggressive measures that achieve the benchmark while recognizing the lack of ambition. In this way, the GST helps to highlight the political costs or benefits of action or inaction.

A benchmark will decide what level of ambition is expected in the subsequent NDC cycle, considering the achievements and shortcomings of the current NDC period. In light of the new NDCs, modelling studies have already discussed the necessary increase in global ambition thresholds for 2030 and 2035 and can advise the first GST together with additional assessments (Rogelj et al., 2016). This procedure can then be used as a benchmark for the calculation of the newly proposed NDCs. While it is not within the mandate of the GST to determine individual

#### 4 Global decision on climate change: The Paris Agreement

NDCs, it can allow others, such as national policymakers and civil society organizations, to do so. Another helpful metric will be to recognize and highlight incredibly ambitious NDCs, strategies and initiatives that have been implemented to date. This situation will raise the bar for what is widely recognised as the highest level of ambition. In order to fulfil the last part of Article 4.3: the reference to justice and national conditions, a diverse portfolio of states with different levels of growth and a wide variety of relevant national conditions will be helpful.

This form of benchmarking points to another important contribution that the GST could make to raising NDC ambitions (Hermwille et al., 2019). Use the GST as a peer learning forum to learn how to bring about change, as suggested by Milkoreit and Haapala (2017). This change could be achieved if the GST focuses on identifying synergies and disruptive potential for sustainable growth rather than just mitigation. They go on to argue that raising ambition could be achieved by developing a system that enables Parties to enforce their NDCs on the basis of “pride and glory” rather than “fear and shame”. To this end, they are considering encouraging participants to voluntarily undergo an international review, analogous to the modalities of the voluntary review of the United Nations High-Level Political Platform on Sustainable Development, which assesses progress towards the Sustainable Development Goals (Milkoreit & Haapala, 2017).

### ***Signals***

Another framework for reform that the GST advocates is the fact that concepts and beliefs influence the way we see the future; transformational progress requires a profound change of mind. Change occurs when new collective ideas emerge that alter the cultural principles and worldviews that drive everyday decision making. The GST, in particular, will facilitate progress by formalizing a global vision of a low-carbon, long-term future. The GST will accelerate the normalization of ambitious climate change and align stakeholder priorities at all levels of government by regularly setting and comparing targets (Hale, 2018). The PA guidelines and signaling mechanism are primarily derived from the intent of the PA (Article 2), more specifically the long-term temperature goal (Article 2.1a). The goal of achieving greenhouse gas neutrality in the second half of the century complements this temperature goal (Article 4.1).

## 4.2 Advancing decision-making on climate change under the Paris Agreement

For the first time, the temperature limit is enshrined in international law and has been improved compared to the previous edition. The goal of the agreement is to limit global warming to 1.5°C compared to pre-industrial levels. The 1.5°C goal was therefore formulated in Copenhagen in 2009 and converted into a simple “well below’ 2°C “limit’ one year later in Cancun. The signal given in some sectors seems to be much sharper than in others. There are also many doubts about what the 1.5°C target means in certain sectors. While the issues in the energy sector and electrification of passenger transport are well understood, this is less the case for emissions-intensive industries, agriculture and land use, particularly forestry (IPCC, 2018).

The IPCC Special Report on the 1.5°C targets (see e.g. Jacometti, 2019; Livingston & Rummukainen, 2020) goes into more detail on how 1.5°C can be achieved in terms of sustainable development, as well as the risks of exceeding the Paris temperature limits more specifically, it would be particularly beneficial for mitigation if the GST were to develop and internalize sectoral visions that more clearly highlight the sector-specific transition issues and take into account the interdependencies of the sectors. Replicating the PA’s signal would guide the next round of NDCs and serve as an improved reference point for various governance measures. It will lend legitimacy and direction to international governance efforts and help ‘orchestrate’ climate change (Hermwille, 2016).

### ***Loss and damage***

L&D has a long tradition in climate negotiations, dating back to 1991, when the Alliance of Small Island States called for a compensation scheme for countries affected by rising sea levels (see e.g. Roberts & Parks, 2009; Mechler et al., 2019). Over time, more and more impoverished countries realised that they too are affected by climate change beyond their ability to cope (Loss and Damage under the UNFCCC process, 2021). Therefore, since the Alliance of Small Island States (ASIS), there have been repeated proposals to address the impacts of climate disasters under the UNFCCC regime. ASIS proposed to develop an insurance pool for DCS to be financed by mandatory payments from industrialised countries during the UNFCCC negotiations.

#### 4 Global decision on climate change: The Paris Agreement

However, the proposal was unsuccessful, and the issue was dropped from the negotiating table. It resurfaced briefly in 2001 when the COP decided to discuss insurance-related measures at the next conference, but this was not pursued further. In the years that followed, the UNFCCC negotiations focused almost exclusively on mitigation and adaptation, while the issue of loss and damage largely disappeared from the agenda. At COP-7 in 2001, the issue of insurance briefly resurfaced when the Parties decided to include insurance-related measures in the subsequent climate negotiations. However, this was not pursued further (UNFCCC, 2002).

The word L&D was developed, and the issue was firmly included in the UNFCCC negotiating agenda in 2007. The BAP called for action to mitigate disaster risk and other ways to address L&D in vulnerable states. This issue should correspond with the publication of the IPCC Fourth Assessment Report (see e.g. Schnoor, 2007; Fussler, 2009), which stated unequivocally that record levels of greenhouse gas pollution have made some degree of L&D unavoidable (IPCC, 2007). AOSIS proposed a three-tiered system for loss and damage at COP14 in Poznan in 2008: an insurance element to respond to the risks associated with unfavorable weather events; a recovery and compensation element to deal with slow-onset risks; a mechanism to assess long-term impacts. By this time, however, a split had emerged between developed and developing countries, with the former vehemently opposing any mention of restitution or compensation.

Parties such as the EU and Canada opposed the establishment of new structures within the UNFCCC at the 2010 Bonn climate talks, while the US was mainly interested in the insurance-related elements of the AOSIS proposal. Despite growing disagreement over whether failure and harm can be addressed under the UNFCCC, some progress was made at COP-16 in 2010. L&D Under the 'Cancun Adaptation Framework', a two-year program of work was established, structured around three themes: identifying the threats associated with L&D, exploring approaches to address L&D, and specifying the role of the Convention in putting these approaches into practice (Kreienkamp & Vanhala, 2017). It was not until two years later, at COP-18 in Doha, that the Parties agreed on a more precisely defined scope for loss and damage and decided that the UNFCCC's position should focus on three aspects.

## 4.2 Advancing decision-making on climate change under the Paris Agreement

Increase awareness and understanding of risk management strategies.

Improve interaction, coordination, coherence, and synergies between the actors involved.

Improve L&D response and support, including capital, infrastructure, and capacity building.

The COP also wanted to create specific institutional structures to support the agreed functions of the Convention. This agreement to identify the extent of failure and harm and to establish structural foundations was a significant step that went beyond hypothetical talks and led to more realistic, action-oriented negotiations (Climate Focus, 2016). The Warsaw International Mechanism (WIM) for L&D related to the impacts of climate change, which sits within the Cancun Adaptation Framework, was developed by the COP in Warsaw the following year. The process was to be led by an Interim Executive Committee made up of members of established UNFCCC bodies and was initially due to run until 2016 (at which point it will be reviewed). The committee is tasked with developing and implementing a two-year work plan (UNFCCC, 2014).

The last significant step in relation to this issue was taken in 2015, when the WIM was supplemented at COP21 in Paris with a corresponding L&D clause in Article 8 of the Paris Agreement. This provision meant that L&D were given a structured say in the UN climate change Agreement. As a result, some L&D are only considered if they “do not ‘involve or create responsibility or restitution’”, as stated in paragraph 51 of Decision 1/CP.21 (UNFCCC, 2015). Article 8(4) provides a non-exhaustive list of eight areas of cooperation and facilitation to improve understanding, action, and support through which Parties to the Paris Agreement seek to avert, minimize and address L&D (see e.g. Roberts et al., 2017).

Although some of these areas of co-operation and facilitation, such as Article 8(4) (g), which includes non-economic losses, can easily be classified as L&D. Others, however, such as Article 8(4) (a) on early warning systems, (b) on disaster risk reduction, (e) on robust risk assessment and management, and (h) on the resilience of communities, livelihoods, and the environment, are not (Broberg & Romera, 2020). The Paris Agreement recognises the importance of averting, minimising, and combating L&D. Therefore, COP21 called for the

#### 4 Global decision on climate change: The Paris Agreement

establishment of a clearing house on risk transfer and the creation of a task force on displacement.

##### ***Establish a clearing house for risk transfer***

The Conference of the Parties to the UNFCCC has proposed that the Executive committee of the WIM establish a clearing house for risk transfer (see e.g. Gewirtzman et al., 2018; Dehm, 2020). At its 21st conference (COP21) in France in December 2015, this centre will serve as a data repository for insurance and risk transfer. The position of the clearinghouse was addressed in a working group, as were concerns about the potential stakeholders and the mechanism for forming a clearinghouse. It is emphasized that it should be more than a passive repository for details. Instead, it should allow industrialised nations to create the data needed to implement insurance and risk transfer. (Serdeczny & Dhakal, 2016).

##### ***Creating a task force on displacement***

The PA calls for the WIM Executive Committee (ExCom) to set up a task force on displacement (see e.g. Ferris, 2020; Odeyemi, 2021). Paragraph 50 of the Decision text calls on the WIM Executive Committee to establish a task force, in accordance with its procedures and mandate, to support the work of existing bodies and expert groups under the Convention, including the Adaptation Committee and the Least Developed Countries Expert Group, and relevant organisations and expert bodies outside the Convention, drawing on their work and involving them as appropriate, to develop recommendations for integrated approaches to avert, minimise and address displacement related to the adverse effects of climate change (United Nations Framework Convention on Climate Change (UNFCCC, 2021)).

Subsequently, at its fourth meeting, the Executive Committee established the terms of reference for the task force on displacement (the Task Force). The task force reports daily to the Executive Committee at its meetings. The scope of work of the Task Force is set out in the mandate as follows:

- i. Consider the latest science, most recent evidence, findings, and experience, including research, best practices, data.

## 4.2 Advancing decision-making on climate change under the Paris Agreement

- ii. Consider the three functions of the WIM.
- iii. Consider strategies for preventing, minimizing, and addressing displacement due to climate change's adverse effects at the subnational, national, regional, and international levels.
- iv. Identify legal, policy, and institutional challenges, good practices, lessons learned.
- v. Provide opportunities for Parties to articulate their questions and needs, good practices, lessons learned.
- vi. Share information with, complement, draw upon the work of and involve, as appropriate, existing bodies and expert groups under the Convention, including the Adaptation Committee and the LDCs Expert Group, as well as relevant organizations and expert bodies outside the Convention (see e.g., Bauer et al., 2011 Yamamoto et al., 2018).
- vii. Consider Action Area 6 [of the initial two-year work plan of the Executive Committee] and other relevant action areas of the Work plan (Report on Task Force on Displacement, 2018).

### **Climate change education, training, public awareness, public participation, and public access to information**

The UNFCCC has coined the term “Action for Climate Empowerment” (ACE) to describe the work being carried out under Article 6 of the Convention (1992) and Article 12 of the Paris Agreement. Through research, preparation, environmental education, public engagement, public access to knowledge and international co-operation on these issues, ACE's overarching mission is to inspire all citizens of society to take action on climate change. The global approach to tackling climate change depends on the implementation of all these focus areas.

Everyone must consider and participate in the transition to a low-emission, climate-resilient environment, including and perhaps especially young people. Article 10 of the KP (see e.g. Ott, 1998; Shishlov et al., 2016), adopted in 1997, emphasised the importance of international cooperation in the implementation of Article 6. At (COP11) in New Delhi in 2002, the New Delhi Work Programme' (2002–2007) was introduced (see e.g. Kulovesi et al., 2007) to serve as a

#### 4 Global decision on climate change: The Paris Agreement

multi-faceted platform for state-led action on Article 6 to respond to the specific needs and situations of Parties and to represent their national objectives.

The New Delhi work programme was revised and extended at COP13 (in Bali) for five years (2007–2012) and the UNFCCC Secretariat was invited to host regional seminars to discuss lessons learned and best practises as part of the work programme assessment. The eight-year Doha Work Plan on Article 6 of the UNFCCC was presented at COP18 in Doha in 2012. At the 3rd Annual Article 6 Dialogue in Bonn in June 2015, it was agreed that actions related to the adoption of Article 6 would be referred to as ACE: a user-friendly, easy-to-define concept.

The ‘Lima Ministerial Declaration on Education and Awareness-Raising’ was presented in Lima in December 2014 (see e.g. Jodoin et al., 2015), in which the importance of Article 6 of the UNFCCC for achieving the overarching goal of the UNFCCC and promoting climate-resilient sustainable development was confirmed. In 2015, at COP21 (Paris), governments agreed to cooperate in taking appropriate measures to improve education, training and public awareness on climate change based on various articles enshrined in the PA (United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2016).

#### ***Public participation and access to information***

Successful public participation in the social sciences is the main principle of early intervention or involving people in social activities, making decisions when all options are still available, and actually speaking or empowering people to make the final choice and decision (Gross, 2007). This public participation stems from normative ideas of public engagement that acknowledge the importance of a two-way dialogue between accountable actors and the general public through an iterative mechanism of policy review and revision through active deliberation. On the one hand, the seminal engagement ladder distinguishes between non-participation and tokenism; on the other, between co-operation, delegated authority, and citizen power. Only the upper levels of the engagement hierarchy are considered proper and substantive forms of participation that can help individuals make rational decisions and achieve more socially relevant outcomes (Arnstein, 2019).

## 4.2 Advancing decision-making on climate change under the Paris Agreement

As a result, public participation faces a significant social and environmental obstacle. If well-coordinated, it can enhance democracy while meeting the urgent need for action to combat climate change. On the other hand, if poorly planned, it will fuel opposition and polarization and hinder climate action (Squintani et al., 2019). The United Nations Aarhus Convention is the main legal system that prescribes citizens' access to information and participation in environmental decision-making (United Nations Convention on Access to Information, 1998).

The Aarhus Convention establishes a link between human rights and environmental protection (e.g. palerm, 1999; Lee & Abbot, 2003; Mason, 2010). The parties to the Convention have constitutionally recognised the human desire for a sustainable climate as a human right (Počuča et al., 2018). In support of the human right to a safe climate, Article 1 of the Aarhus Convention defines access to environmental knowledge as the first of three procedural rights – for all citizens. Articles 4 and 5 address the methods for obtaining environmental information from public authorities and the responsibility of Parties to ensure that these authorities effectively disseminate environmental information from a range of sources. Both articles contain the requirement that the obligations be enacted “within the framework of national legislation,” which gives the parties considerable freedom to disclose information, including requirements to refuse requests for information (Mason, 2010). These special rights are complex and include several entitlements that vary depending on the subject matter and the holder.

Furthermore, some of them (articles) overlap, such as the right to transparency and participation in decision-making and climate change mitigation (Roldoljub, 2013). The Paris Agreement emphasized the value of public participation and access to information for successful climate policy (see e.g. Ding et al., 2011; Glucker et al., 2013). A pledge that reflects parties' established commitments to promote procedural rights in environmental governance and the IPCC's findings that participatory policies contribute to more effective and resilient climate action (International Instruments on Public Participation in Environmental Governance and Relevance to the Paris Agreement Implementation and the COP25, 2020). The 2015 Paris Climate Agreement was praised for uniting all countries behind the urgent need to tackle climate change and emphasising the importance of people-centred climate action. People-centred climate change promotes

#### 4 Global decision on climate change: The Paris Agreement

people's rights while engaging them in the implementation of climate policies. When governments take action to combat climate change, they must support, promote, and recognise their human rights obligations, states the preamble of the Paris Agreement, and Article 12 of the Agreement highlights the need to improve citizen engagement and access to information (Duyck, 2018).

#### ***Information and transparency***

The terms “transparent” and “transparency” are finding their way into the general vocabulary and into the academic literature on politics and policy. New laws and administrative regulations have given the public more access to government records over time (e.g. Tucker, 2014; Elliott, 2020). In the wake of Watergate in the 1970s, they have increased the accountability of corporations, public officials, and policymakers for their actions and made decisions more transparent (Ball, 2009). The word “information” in the term “information transparency” refers to what is made available (or “transparent”) to the consumer. In order to decide what type of information to disclose, one must first understand the characteristics of the organization that are to be disclosed.

Information can be interpreted very differently depending on the purpose and objective for which it is used (Turilli & Floridi, 2009). Climate transparency is becoming increasingly heterogeneous and decentralized, with multilaterally negotiated agreements, transnational municipal systems, subnational actors, bilateral agreements and voluntary efforts by companies all playing a role. The demand for and supply of transparency in these circumstances is multidirectional, going to and from a variety of governmental and non-governmental organizations, clients, and individuals, and not just to and from states. As a result, the justifications for greater transparency and the governance benefits resulting from disclosure are varied and even contradictory. Many transparency experts first praise the benefits and then point out the risks associated with focusing on openness when seeking greater accountability and sustainability. Scholars cite a variety of reasons why accountability fails to achieve its goals. For example, inadequate disclosure lies in the type of medium through which information is to be disclosed (whether electronic or otherwise), the characteristics of the information disclosed, such as whether it

## 4.2 Advancing decision-making on climate change under the Paris Agreement

is structured, reliable and understandable, or the amount of information disclosed (Gupta & Mason, 2016).

The ultimate goal of the UNFCCC (see e.g. Prasad & Sud, 2021) and all relevant legislative frameworks adopted by the COP is to stabilize greenhouse gas emissions in the environment to the extent that harmful anthropogenic interactions are prevented. Taking the climate system into account within a given time-frame will allow habitats to respond progressively to climate change and ensure that food production does not suffer from climate change. The Parties want accurate, transparent, and detailed reporting on greenhouse gas emissions, climate action and financing to achieve the objective of the Convention. The Convention requires both Parties to submit information on the implementation of the Convention to the (COP) (Article 12) (What is transparency and reporting?, 2021). Article 4.8 of the Paris Agreement requires governments to provide the information necessary for the transparency, openness and interpretation of their NDCs. The main objective of this mandatory function is to clarify Parties' mitigation contributions (see e.g. Aldy et al., 2003; Afionis et al., 2016) in order to monitor their success and account for their performance. Other benefits include measuring global ambition, building trust among Parties, and sending strong signals that mobilize actors and stakeholders interested in translating NDCs into policies and initiatives (Canada's submission on APA point 3, 2017).

### ***Capacity building and public awareness***

Capacity building is one of the implementation measures aimed at achieving the 17 UN SDGs by 2030. If we are serious about bringing about substantial change in sustainability management and improving the effectiveness of existing approaches, capacity building is the cornerstone (see e.g. Balogh et al., 2017; Bloomfield et al., 2017). It enables all interested parties to move from passive observers to active participants in change. Capacity building lays the groundwork for making the best decisions, whether it is fundamentally rethinking a city's electricity supply strategy, a farmer deciding which seeds to grow in a drought-stricken area, or a commuter evaluating their options for travelling to work.

Capacity building is a universal way to pave the way to growth, to a truly global way of life, whether we live in the North or the South (Hub, 2018). More

#### 4 Global decision on climate change: The Paris Agreement

specifically, capacity building is the mechanism by which people or organizations acquire, develop or maintain the expertise, experience, tools, facilities or other services that enable them to do their work well (see e.g. Khan et al., 2018). It is also about improving one's performance and thus enhancing one's capabilities. In other words, capacity building is an expense item for the productivity and long-term viability of society.

The most common starting point for capacity building activities is to raise awareness and develop information about the potential impacts of climate change and the need to respond to them. Observations, predictions and estimates of current and expected weather- or climate-related (extreme) events or slow-onset loss events, as well as information on future adaptation behaviour, form the basis for building adaptive capacity (Capacity building on climate change adaptation, 2021). Irrespective of capacity building, the UNFCCC recognizes that states, especially developing countries, need support in creating and strengthening their capacities to implement the convention. The UNFCCC therefore identifies the following areas for capacity building:

Provision of financial resources. The industrialised countries must provide the DCS with new financial resources to cover the total cost of meeting its contractual obligations.

Transfer of technology. A wide range of activities have been undertaken to analyze technological needs, identify difficulties in technology transfer and develop financial incentives.

Support for national reporting Most developing countries lack the resources and capacities to carry out their national assessment. Therefore, a CGE was formed to facilitate and support the reporting of developing countries (Wang & Wisner, 2002). As most DCS lack the resources and capacities to prepare their national assessment, a CGE was established in 2001 to support and promote DCS in reporting. Guiding principles for developing countries included instructional design that requires state-led learning and builds on current practices.

The importance of addressing developing country objectives, taking into account the specific situation of LDCs and SIDS, and focusing on and mobilizing existing national, sub-regional and regional structures and the private sector by drawing on existing mechanisms and endogenous capacities was emphasized.

## 4.2 Advancing decision-making on climate change under the Paris Agreement

According to the structure, capacity building can include tasks such as learning and strengthening expertise and understanding, as well as creating opportunities for individuals and organizations to share their perspectives and raise awareness so that they can engage more actively in the climate change process (Sagar et al., 2017).

According to Article 10(d) of the CP, all Parties undertake to promote the development and strengthening of endogenous capacities and capabilities to participate in international and intergovernmental efforts, programs and networks for research and systematic observation (see e.g. Santilli et al., 2005). Both Parties commit to co-operate in and promote the development and provision of education and training systems, e.g. through the strengthening of national capacities in the area of specific human and institutional capabilities, in accordance with paragraph (e) of the same document. COP/MOP 1 addressed the capacity-building needs of the KP and agreed that the mechanisms established by decisions 2/CP.7 and 3/CP.7 relate to the implementation of the Protocol. The capacity-building needs of developing countries in relation to their readiness to participate in project initiatives under the clean development agenda are set out in decision 29/CMP.1 (United Nations Framework Convention on Climate Change, 2006).

In 2011, the SBI established the Durban Forum on Capacity-Building (see e.g. Anastagi, 2015) to improve the monitoring and evaluation of the effectiveness of capacity-building under the Convention. It functions as an annual dialogue forum for the Parties, the members of the bodies established under the Convention and the KP, and relevant experts and practitioners. Members should share their perspectives and exchange insights, best practices and experiences in the implementation of capacity-building activities in different thematic areas. The following objectives guided the 8th Durban Forum:

To provide a forum for different stakeholders to share their views and experiences and learn from each other.

To provide partners with information to help them better coordinate their support for capacity development initiatives related to the adoption of NDCs in industrialised countries. To explore how the best academics, education centers and other national or sub-national institutions can be involved in capacity building projects to support developed institutions in capacity building projects to

#### 4 Global decision on climate change: The Paris Agreement

support developed states in developing and sustaining their capacity to enforce the NDC (8th Durban Forum on Capacity Building, 2021). The COP of the UNFCCC adopted the Doha Work Plan on Article 6 at its 18th session in 2012. The Conference of the Parties agreed that the eight-year work program would be subject to an interim review in 2016 to assess its feasibility, identify existing problems and needs and, if necessary, discuss decisions to strengthen the effectiveness of the work program. The areas of capacity building, climate change education, preparedness, public awareness, public engagement, public access to information and international cooperation are all included in this report. Each segment includes data on successes, lessons learnt and best practices, as well as needs, gaps and barriers. The study also looks at how far Parties have progressed in mainstreaming Article 6 activities into current programs and capacity building strategies, as recommended in the Doha Work Programme (Mitigation Update: Market Mechanisms Analyzed, 2016).

In 2014, the Secretariat launched a platform that provides up-to-date information on capacity-building programmes worldwide. The portal contains an interactive map with a list of activities in the individual regions and a graph showing the percentage of activities completed in the priority areas of the Marrakech Agreement. At COP20 in 2014, the Parties launched a ministerial-level dialogue on understanding climate change and education, which promotes the integration of climate issues into national curricula. In addition, this dialogue prioritizes awareness-raising in the implementation of climate-related measures by governments (Hoffmeister et al., 2016). Capacity building and public awareness are dealt with in Article 11 of the Paris Agreement.

The aims, guiding principles, and procedural commitments of all Parties to the Agreement concerning capacity building are laid out in the five paragraphs of this Article. Developed nation Parties should encourage DCS to improve their capacity (Article 11.3) (see, e.g. James, 1998), and DCS should report on their success in adopting capacity-building strategies, programs, activities, or interventions regularly (Article 11.4). CMA 1 is requested to consider and decide on the initial institutional arrangements for capacity building. In addition, capacity building under the PA must be state-driven, focus on and address national needs, and promote state ownership for members at all levels, including national, sub-national

## 4.2 Advancing decision-making on climate change under the Paris Agreement

and local levels, especially for developed States Parties. Lessons learnt, particularly from capacity building under the Convention, should guide capacity building, which should be an effective, iterative mechanism that is participatory, cross-cutting and gender-sensitive (Capacity Building (Article 11, Paris Agreement, Climate Change) | Lewik, 2018).

### ***Enhanced transparency framework***

With the aim of strengthening the international response to the threat of climate change, states adopted the Paris Agreement in 2015, creating an ETF (Moving towards the Enhanced Transparency Framework, 2021). Like most multilateral environmental systems, the climate regime is based on a transparency mechanism that includes a regular assessment and review mechanism. Transparency fosters optimism and allows us to assess whether we are on track to achieve our goals.

This transparency system can apply both to the activities of individual states and to concerted progress towards larger global goals. In theory, transparency increases overall commitment to the climate system as a whole as well as to reported activities. This transparency prompts more governments to act, and the need to report on their actions and submit them for approval allows nations to take more ambitious action. Moreover, states have only entered into commitments that they intend to honor. So, knowing exactly what countries promise to achieve increases the likelihood that they will honor them. Regular reports and analyses also help to verify and improve the accuracy of the data over time. This system leads to improved strategy development and decision-making at both national and international level.

It also increases confidence in the reported data, allowing for a more streamlined and reliable evaluation. It increases the accuracy of assessments that attempt to look at the bigger picture of how well we are doing as a society in tackling climate change (Barakat et al., 2017). The ETF is central to the design, credibility and functioning of the Paris Agreement (see e.g. Elliott et al., 2017). The development of the transparency part of the rulebook did not start from scratch, as countries were able to draw on previous experience under the UNFCCC (Navigating the Paris Rulebook: Enhanced Transparency Framework, 2021). The “ETF,” as described in Article 13, is one of the most important aspects of the Paris Climate

#### 4 Global decision on climate change: The Paris Agreement

Agreement. Transparency is crucial for the sustainability of the agreement, both in terms of the actions taken by the parties and in terms of the financial and technical support and capacity building provided and received by some parties.

Transparency will help the parties develop trust and respect by clarifying the extent of progress in fulfilling the commitments of the Agreement. Transparency will also help participants to achieve a harmonized assessment of their collective and individual efforts (van Asselt et al., 2016). The PA framework provides “built-in flexibility” in the application of a common framework that recognizes the different capacities of the parties. First, the proposed accountability arrangements will build on the current UNFCCC arrangements, meaning that aspects of the existing monitoring and assessment mechanism will be utilized – although it remains unclear which elements will be retained (see e.g. Weikmans et al., 2019; van Asselt & Kulovesi, 2020).

Moreover, the proposed mechanism would ultimately replace all disclosure agreements. Second, the mechanism includes both action (measures to combat or respond to climate change) and assistance (financial, technical, and capacity-building support), making the latter a stronger and more visible priority of the UNFCCC accountability structures. In particular, the agreement requires developing countries to report on their assistance every two years and encourages all countries to do so on a reciprocal basis. For the first time, industrialised countries are even asked to report on the aid they have received.

Finally, the Paris Agreement requires each participant to submit biennial reports on the greenhouse gas inventory and the information necessary to monitor progress towards the adoption and implementation of the [NDC] (Article 13.7). Fourth, similar to the Cancun Agreements, the international assessment mechanism will include two key elements: a review by a qualified expert and a process of “facilitative, multilateral recognition of development”. The aim of the technical expert analysis is to define “areas of development” for the group under review and to assess the accuracy of the recorded data with multilaterally negotiated criteria (Gupta & van Asselt, 2019).

#### ***Implementation facilitation mechanism***

Article 15(1) of the Paris Agreement provides for a mechanism to facilitate the implementation of the provisions of the Agreement and promote compliance with

## 4.2 Advancing decision-making on climate change under the Paris Agreement

them. This mechanism consists of a committee (see e.g. Zihua et al., 2019). The Article 15 Committee aims to improve the effectiveness of the Paris Agreement by pushing parties to enforce it and holding them accountable for some aspects of their outcomes. This article aims to strengthen trust between the parties. The Committee should be facilitative, transparent, non-adversarial and non-punitive (Article 15.2). It should endeavour to avoid duplication, not act as an enforcement, or dispute settlement mechanism, not impose sanctions or penalties and respect national sovereignty (Voigt, 2019).

Specific complaints could be referred to by the Committee in various ways (including self-referral, party-to-party referral, and referral to non-parties, such as the Committee itself or the Secretariat) to discuss critical implementation issues and possible solutions to non-compliance. In this regard, it would be crucial to ensure that the Committee initiates hearings based on relevant information it receives under Article 13 or from the UNFCCC Secretariat (Oberthur & Northrop, 2018). The Paris Agreement contains a combination of soft and hard commitments, formal and substantive commitments, and commitments on consequences and behaviour. The function of the Article 15 mechanism in relation to this complex combination of obligations is an overarching issue. In the specific context of the Paris Agreement, the choice between the functions is determined by the two main objectives of Article 15: facilitating implementation and promoting compliance.

Where separate tasks are involved, the mandate of the committee and the procedure for each task may vary in terms of the applicable provisions, the procedures for commencing the committee's hearings or the possible outcomes. For example, the committee may facilitate enforcement of all requirements of the agreement by advocating compliance only with those provisions that include specific binding obligations. Similarly, to facilitate enforcement, a greater number of actors may be allowed to initiate committee hearings than to promote compliance (Rajamani, 2017).

It is important to understand the scope of the Article 15 mechanism. According to Article 15, the Committee has the task of promoting the implementation of and compliance with the provisions of this Agreement. If one reads the provisions to mean all provisions, then the question of scope is already settled – although there may still be questions about initiation and role/issue in relation to various provisions.

#### 4 Global decision on climate change: The Paris Agreement

The CMA must define its scope when the scope is open, taking into account the ‘added value’ of the committee and other considerations. For example, if the committee serves as a “support desk”, its scope would certainly be broad. If the focus is on implementation, the complexity of the project could be limited to a subset of the legally binding commitments. Alternatively, the scope could be broad, with restrictions on initiation and role/issue (Biniaz, 2017).

### **Voluntary cooperation approaches**

The approaches for voluntary co-operation are set out in Article 6 of the Agreement. Article 6 gives countries the opportunity to generate and trade Internationally Transferred Mitigation Outcomes (ITMOs) through decentralized cooperative approaches under Article 6.2, to participate in a UNFCCC-administered mechanism under Article 6.4 (the successor to the CDM) and to cooperate through non-market approaches under Article 6.8 (Greiner et al., 2021). This article is broadly defined and is intended to cover all forms of cooperation between Parties in the implementation of their NDCs.

This is made clear by the mention of attenuation and adaptation in the PA. Since the interpretation of “cooperative approaches” (see e.g. Harrison, 1998; Galán-Martín et al., 2018) has been intentionally broad and all types of cooperation can be considered, this means that the formation of so-called “clubs,” including carbon market clubs, is possible under this paragraph.

In this context, it should also be recalled that previous versions of the text on “co-operation” mixed two concepts: (i) that of co-operation between Parties and (ii) that of co-operation between Parties in the context of regional economic integration (the EU provision). The fact that this co-operation is voluntary is often discussed, which can be seen as reassuring. It may reassure parties that are unable to engage in co-operative approaches that they will not be pressurized. In extreme cases, it may be helpful for parties to try to co-operate with private entities or sub-national jurisdictions that do not have the permission of the host party (Marcu, 2016). If Parties wish to use co-operation mechanisms to achieve their NDCs, the Paris Agreement contains a number of rules that must be followed:

Participation in the coordination processes is voluntary and the national government must accept them.

## 4.2 Advancing decision-making on climate change under the Paris Agreement

The co-operation mechanisms are intended to facilitate a stronger commitment to climate change mitigation, leading to increased initiative in climate change mitigation or adaptation.

Co-operation processes should promote long-term development. Although the focus is on reducing greenhouse gas emissions, other facets of sustainability are also discussed.

The coordination processes would ensure the integrity of the environment. This process assumes that the frameworks cannot be used to circumvent participating countries' aggressive climate change mitigation efforts, as this will undermine their pollution reduction targets (Cooperative Action under Article 6 – Carbon Mechanisms, 2021). Specifically, the PA offers three approaches, direct bilateral cooperation (Article 6.2), a new Sustainable Development Mechanism (SDM) (Article 6.4) and non-market-based approaches (NMAs) (Article 6.8), for the use of international cooperation mechanisms.

### ***Direct bilateral cooperation (Article 6.2)***

The current negotiations on Article 6.2 of the Paris Agreement have their origins in the discussions within the UNFCCC around 2010 on the future of market mechanisms in the climate regime. At that time, UNFCCC members were working on a new legislative structure to enter into force after 2012 (i.e., after the end of the first commitment period of the KP), as set out in the 2007 BAP. States decided to address in this plan opportunities to utilize markets, improve cost-effectiveness and promote mitigation actions.

What was really at stake in these debates was the role of multilateralism in market processes. For some UNFCCC parties, international co-operation served only to create a mechanism for the transition from nationally issued emission units. Others saw international co-operation as a way to identify processes for the production of emission units that could be used to enforce the UNFCCC and how actors could use these mechanisms to create and exchange international emission units (de Lassus Saint-Geniès, 2018).

One option is therefore direct bilateral cooperation in accordance with Article 6.2 of the Paris Agreement as part of the new climate regime. Mitigation activities are carried out in one region, with the resulting mitigation outcomes being passed

#### 4 Global decision on climate change: The Paris Agreement

on to another state and counted towards the NDC (see e.g. Schneider et al., 2018; Fuessler et al., 2019). This activity requires transparency and correct crediting of mitigation results. The aim is to avoid double counting carbon reductions, e.g. counting reductions both for the region in which mitigation measures are applied and for the state to which they are exported. As a result, Article 6.2 could serve as a basis for linking different national or regional mechanisms, such as the EU Emissions Trading Mechanism, with related structures to create a single, transnational carbon market.

It is important to emphasize that this type of cooperation does not jeopardize the environmental integrity of the overall system but should instead help to increase the level of ambition on climate change (The Basis for New International Carbon Markets, 2020). Therefore, the guidelines under Article 6.2 would need to discuss the consistency of all ITMOs proposed for use and the quality of the appropriate methodologies for creating, sharing and monitoring these ITMOs in order to maintain environmental integrity (see e.g. Schneider & Siemons, 2021). If stakeholders are allowed to share ITMOs as part of quantified economy-wide targets or quantified emission reduction and limitation targets in specific sectors under Article 6.2, this will be required.

- i. Presentation of an adequate time series of economy-wide and sectorial emission inventories so that the context of any transferred ITMOs is clear.
- ii. Submission of regular GHG inventories
- iii. Third-party technical reviews, for example of inventories, reference points, baselines, assumptions, and methodological approaches (Submission of Views on The Content of Article 6.2 Guidance and Article 6.4 Rules, Modalities and Procedures, Presented By The Republic Of The Maldives On Behalf Of The Alliance Of Small Island States, 2017).

#### ***New sustainable development mechanism (Article 6.4)***

Article 6 creates some types of carbon market. Article 6.4 creates a centralized global market, which is a successor to the CDM under the KP (see e.g. Olsen et al., 2017). The critical questions related to Article 6.4 are whether credits created under the CDM will be transferred to the SDM, how to ensure that the mechanism

## 4.2 Advancing decision-making on climate change under the Paris Agreement

delivers an “overall reduction in global emissions,” and how to ensure that a credit only counts towards a country’s national target (which is referred to as avoiding “double counting”) (Gopalakrishnan, 2019). In other words, Article 6.4 of the PA introduces a new Sustainable Mitigation on Mechanism (SMM) with the dual aim of contributing to the mitigation of greenhouse gas emissions and promoting sustainable development (Arens et al., 2021).

Article 6.4 states that the mechanism shall achieve an overall reduction in global emissions (often referred to as OMGE). For certain parties, overall global emission reductions mean that any credits generated for emission reductions under Article 6.4 are effectively removed from the table and not applied to a Party’s NDC. In other words, rather than passing emission reductions between Parties and encouraging a purchasing party to count them towards its target, these unused emission reductions should be set aside to achieve a net reduction in global emissions.

For example, if ten credits are generated from State A’s wind farm and transferred to another state, a portion of the credits would not be added to either State A’s NDC or a purchasing party’s NDC. In this case, Article 6 is not just an offsetting mechanism where carbon reductions are passed from one state to another without the promise of further emission reductions beyond the NDCs, but rather a mechanism that contributes to reducing emissions. In particular, countries disagree on whether global emission reductions as a whole extend exclusively to Article 6.4 solutions or even Article 6.2 approaches and how global emission reductions as a whole are implemented in reality (Kizzier et al., 2019).

Under the authority and guidance of the CMA, a framework will be developed that contributes to reducing greenhouse gas emissions and promoting sustainable development and can be used by Parties on a voluntary basis. It will be overseen by an agency designated by the CMA with the aim of:

To incentivise and facilitate participation in the reduction of greenhouse gas emissions by public and private entities authorised by a Party.

Contribute to the reduction of emission in the host Party, which benefits from the mitigation actions leading to emission reductions that another Party can also use to fulfil its NDC and achieve an overall reduction in global emissions (Schneider et al., 2016).

### ***Non-market-based approaches (Article 6.8)***

The Parties to the UNFCCC committed in the BAP (2007) to improve emission reduction solutions using various techniques, including market-based approaches. Non-market-based solutions became an important topic of discussion at COP16 in Cancun 2010 to improve mitigation action. Parties were invited in the Cancun Agreement to consider at the seventeenth session of the COP the creation of one or more non-market-based mechanisms to improve the cost-effectiveness of mitigation actions and to promote them (Outcome of the work of the AWG-LCA under the Convention, 2011).

The study on non-market processes was addressed to the SBSTA at COP18 in Doha, as the parties were unable to conclude a post-2012 agreement under the UN AWG-LCA (see e.g. Kati, 2012). Parties agreed at COP19 in Warsaw (2013) that international cooperation, collaboration, and engagement are essential prerequisites for the effective adoption of NMAs to ensure sustainable growth. In September 2014, the SBSTA invited parties to submit their views to the UNFCCC Secretariat on experiences and best practices regarding the nature and implementation of NMAs (Bagchi, 2021).

At the 41st SBSTA meeting there was no consensus on the NMAs, so the topic was put on the agenda for SBSTA 42. It is noteworthy that the elements of the draft negotiating text prepared in Lima contained only one reference to NMAs, and that was in the context of the discussion on REDD+. This was the case in both the draft texts following ADP 2-9 in June and the 25 February 2015 edition produced at ADP 2-8 in February 2015, and in both draft texts following ADP 2-9 in February 2015. The last ADP meeting, ADP 2-12, took place in the first week of COP21 in Paris, France, and discussed much of the conceptual issues that had been debated. The debate on the NMAs began on Tuesday 1 December. A committee was formed to deal with mitigation, including Articles 3, 3(bis) and 3(Ter).

The work of ADP 2-12 came to an end on Saturday. The ADP produced a final negotiating document for the Paris Agreement. In the case of NMAs, the controversial Article 3(Ter) on mitigation strategies was reduced from five to two alternatives, with NMAs remaining as the second option, and the draft clause on the Joint Mitigation and Adaptation Mechanism (JMAM) also remained in Article 3(bis). At that time, the co-operative approaches included two options: one focused on

## 4.2 Advancing decision-making on climate change under the Paris Agreement

globally validated but non-transferable mitigation outcomes, and another based on ITMOs. However, Article 6.8 remained insufficiently specified and required significant additional research by the SBSTA before organizational frameworks or non-market cooperative methods could be developed (Anderson, 2021).

### ***Sinks and reservoirs***

Land use and land change have long been recognised as a source of greenhouse gas emissions, releasing carbon into the environment through deforestation, burning and surface degradation, or as sinks that store carbon from the environment in biomass, soils, and processed wood products. The IPCC has produced a special report on this topic by the year 2000. The Land Use, Land-Use Change and Forests (LULUCF) sector (see e.g. García-Oliva & Masera, 2004; Schlamadinger et al., 2007) is expected to emit about 4 tons of CO<sub>2</sub> per year (average for the period 2000–2009), accounting for about 10% of global CO<sub>2</sub> emissions, mainly due to deforestation in developing countries.

The LULUCF sector, on the other hand, serves as a significant carbon sink, sequestering one third of global CO<sub>2</sub> emissions per year (Savaresi and Perugini, 2020). Carbon should be sequestered (extracted) from the environment and stored in reservoirs. A “reservoir” is a part of a climate system that can store a greenhouse gas or a precursor of a greenhouse gas. A method, process or system that eliminates a greenhouse gas, aerosol, or precursor of a greenhouse gas from the atmosphere is called a “sink” Sinks can theoretically be either oceanic or terrestrial (Gillespie, 2003).

During the negotiations on climate change, the KP then makes specific demands on sinks and reservoirs. To offset even a small percentage of carbon dioxide emissions in the North, millions of hectares of land must fall under the KP. The KP requires Annex 1 countries (industrialised countries) to reduce carbon dioxide emissions by 5.2 percent below 1990 levels in the first commitment phase, which runs from 2008 to 2012 (see e.g. French, 1998). The articles force industrialised countries to account for the increase in emissions caused by human-induced land-use change and forestry practices that are limited to afforestation, reforestation and deforestation and simulate afforestation, reforestation, and deforestation since 1990.

#### 4 Global decision on climate change: The Paris Agreement

Simply put, the Protocol allows the use of afforestation as a sink to reduce CO<sub>2</sub> in the atmosphere. As a result, Annex 1 countries will now use afforestation programs to demonstrate carbon reductions and meet their stated commitments without doing anything to minimize emissions from fossil fuel combustion (Jamal Qaiyum, 1998). Article 5 of the Paris Agreement (see i.e., Harris & Stolle, 2016) encourages countries to protect and improve greenhouse gas sinks and wetlands, such as forests. The article also recommends incorporating and supporting the current Warsaw Framework for REDD+, which was implemented at COP19, as well as complementary policy options such as sustainable forest management (Buszko-Briggs, 2021).

In other words, according to this article, all states should take measures to preserve and improve the importance of “greenhouse gas sinks and reservoirs”. These include biomass, trees and oceans, as well as other things such as ecosystems on land, at sea and in the air. Several options are seen for implementing the Warsaw Framework for REDD+, in particular through results-based payments. REDD+ measures would also aim to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, as mentioned in Article 4 of the Paris Agreement (Forests and Land Use in the Paris Agreement, 2015).

#### ***Global peaking and climate neutrality***

Low-emission development strategies (LEDS) were first proposed in 2008 in the run-up to the UNFCCC climate negotiations in Copenhagen (COP15) (see e.g. Martius et al., 2015). According to the Copenhagen Accord, a low-emission development strategy is essential for sustainable development. LEDS have emerged in the form of national climate policies or green growth initiatives to help countries reconcile sustainable development goals with climate change mitigation goals, although there is no standardized approach in this sense. Long-term low emission development strategies (LT-LEDS) are governmental, subnational or supranational long-term solutions for setting national targets that are consistent with decarbonization mechanisms while providing for low-emission development. LT-LEDS are voluntary measures that help policy makers think strategically and in a coordinated way about climate change reduction and national socio-economic growth

## 4.2 Advancing decision-making on climate change under the Paris Agreement

(Rocha & Chiara, 2019). The Paris Agreement is a legally binding international agreement on climate change (Oguntuase 2021).

In 2015, the Paris Agreement set long-term temperature targets to reduce the impacts and potential risks of climate change. To limit global warming to 1.5 degrees Celsius with a 50 percent probability, global combined anthropogenic CO<sub>2</sub> emissions would need to remain below a global carbon budget of 580 Gt CO<sub>2</sub> compared to 2010. Countries need to peak global anthropogenic CO<sub>2</sub> emissions as soon as possible and achieve net CO<sub>2</sub> emissions by the mid-twentieth century to control global warming (Huang et al., 2021). The Paris Agreement has thus lowered the long-term temperature target below the previous threshold of 2 degrees Celsius. Its position as a reference point in previous discussions on climate change mitigation has been widely criticized for not being sufficient to prevent extreme negative impacts of climate change (Tschakert, 2015).

The global coalition of nations has taken into account the interests of both experts and the country's most vulnerable to climate change by lowering the long-term temperature target to "well below 2°C and probably to 1.5°C" (Samadi et al., 2018). Parties endeavour to establish and coordinate long-term low greenhouse gas emission development strategies (LT-LEDS) in accordance with Article 4, paragraph 19 of the Paris Agreement and are encouraged to communicate them to the Secretariat by 2020, as provided for in Decision 1/CP.21 (Global Meeting on Long-Term Low Emissions and Development Strategies (LT-LEDS), 2021).

LT-LEDS (see e.g. Levin et al., 2018) is an essential aspect of PA because it provides the basis for implementation and engagement strategies. LEDS should be designed to complement and inform the NDC process in 4 aspects.

- I. Short-term policies must be linked to the longer-term structural change that is expected. The LT-LEDS system should be used to investigate the long-term consequences of short-term policy decisions on the Deep DE Carbonization (DDC) of emitting sectors.
- ii. Setting standards for the analysis of national mitigation policies. LT-LEDS will help organize a policy debate at the national level by providing a consistent and open forum for examining the ramifications of various policy alternatives.

#### 4 Global decision on climate change: The Paris Agreement

- iii. It is bringing together the goals of sustainable development, adaptation, and mitigation. LT-LEDS will provide a mechanism for exploring cross-sectoral relations in the various policy agendas of prevention, socio-economic growth, and adaptation unique to each national context by situating human, oral sect policies within a structural perspective.
- IV. They are putting the national and international perspectives together. LTLEDS will disclose critical strategic details about a state's future expectations, such as what technology it will deploy, what strategies it will enact, what commitments it will make, and what business opportunities it will build, among other things (Henri et al., 2016).

The most important aspects of the LT-LEDS are aligned with the NDC cycle to achieve climate neutrality. According to PA, the LT-LEDS provides the necessary guidance to improve NDCs. The implementation of the LT-LEDS emphasizes the importance of NDCs that are actionable, achievable and ambitious. Ambitious NDCs help to implement and enforce the LT-LEDS. In addition, common analytical elements (e.g. sectoral modelling and socio-economic assessment) and MRV programmes link the LT-LEDS and NDCs. These elements developed by the NDCs can be explicitly included in the design of the LT-LEDS and vice versa. Such synergies are crucial to ensure a coherent climate change process for the implementation of the Paris Agreement (Grafakos, 2020).

#### ***Finance, technology***

Recognizing the critical role that technology plays in achieving the UNFCCC's objectives, the UNFCCC is now coordinating its technology-related activities through the Technology Mechanism (TM), an umbrella mechanism developed at COP16 in 2010. The Technology Mechanism will consist of two bodies: The Technology Executive Committee (TEC) is the policy arm and the Climate Technology Centre and Network (CTCN) (see e.g. Lee & Mwebaza, 2020) is the implementation arm. Both bodies are now operational. In the meantime, technology is playing a role in the negotiations leading up to the Paris Summit, as evidenced by the submissions from states and the NDCs (de Coninck & Ambuj, 2015).

## 4.2 Advancing decision-making on climate change under the Paris Agreement

The technology framework is defined by Article 10, paragraph 4 of the Paris Agreement. To facilitate the enforcement of the Agreement, the process will provide an overarching direction for the functioning of the Technology Mechanism by stimulating and promoting improved progress in technology development and transfer in order to fulfil the long-term vision of technology development and transfer mentioned in Article 10, paragraph 1. The countries participating in the SBSTA are actively working to finalise the specifications of the framework.

Tackling climate change requires financial instruments and sound investments to minimize emissions, promote adaptation to existing impacts and build resilience. However, the benefits resulting from these investments far outweigh the initial costs (What Is Technology Development and Transfer? 2021). The term climate finance refers to national, private, and alternative financial resources used to finance mitigation and adaptation measures to combat climate change at local, global, or transnational level. The Convention has developed a financial framework to provide financial services to Parties in developing countries to promote climate finance. The KP and the Paris Agreement all benefit from the financial system. Since the entry into force of the Convention in 1994, the GEF has functioned as the operational body of the financial mechanism. The GCF was established by the Parties at COP16 in 2010 and appointed as the operating body of the financial system in 2011. The COP is responsible for the financial mechanism's procedures, policy objectives and eligibility requirements (Introduction to Climate Finance, 2021).

In fulfilling their current commitments under the Convention, developed world Parties must have financial solutions in place to assist developing country Parties in prevention and adaptation, in accordance with Article 9 of the Paris Agreement. Developing country Parties should continue to take the lead in mobilizing climate finance from a range of sources, instruments, and platforms, emphasizing the critical position of public finance through a variety of measures such as promoting public action and taking into account the interests and priorities of developed country Parties. According to Article 9, the provision of financial services on a larger scale should aim to strike a balance between adaptation and mitigation, taking into account the policies pursued by the State and the emerging State objectives and needs. Members, especially those vulnerable to the adverse effects of climate change and with severely limited capacities, such as LDCs, are encouraged to participate (Climate Finance in the Negotiations, 2021).

### 4.3 Summary in plain language

Some conclusions can be drawn from the analysis and results presented in chapter four and from the aim of the Paris Decision. Although the topics on which elements were collected are rather insignificant, the author believes that the results provide meaningful findings and insights that could feed into the outcome of the DEC-PA (Intergovernmental Integrated International Decision). The in-depth assessment based on the available literature has shown that the DEC-PA consists of 7 critical provisions. Thus, if seven critical points characterize the decision-making of the Paris Agreement, then it should be underpinned by transparency and GST, L&D, education, training, public awareness, public participation and public access to information, voluntary cooperation, sinks and reservoirs, global peaking and climate neutrality, finance, and technology.

The observation of content elements also places more emphasis on the observation of content elements than on the link to element types. The analysis of the rules has shown that the content elements transparency and GST mostly have different indicators, namely peacemaker, accountability, advancing NDC, signaling. L&D is held responsible for elements such as the establishment of a clearing house for risk transfer and the creation of a task force on displacement. The author also recognizes the problem of education, training, public awareness, public participation, and public access to DEC-PA information around intergovernmental integrated international decision-making. Key elements include, for example, public participation and access to information, information and transparency, capacity building and public awareness, an ETF, and a mechanism to facilitate implementation. I argue that voluntary co-operation through direct bilateral co-operation, the new SDM and the NMAs constitute another category of rules. This leads to the identification of sinks and reservoirs with elements such as sustainable management of forests. Transparency and GST as well as L&D are conducive rules that tend to be linked to the decisions of the Paris Agreement. The researcher believes that it is crucial to include all the crucial rules to understand the substantive elements of the Paris Agreement to facilitate intergovernmental integration (types of elements), which would be helpful at the DEC-PA level.

Numerous findings emerged from the evaluations presented in this chapter. The most important results are listed in Table 1. This shows the identifications

**Table 4.** Identifications decision of Paris Agreement.

<b>Issue</b>	<b>Elements</b>	<b>Content type of elements</b>	<b>Level</b>	<b>Output DEC-PA</b>
Transparency and global Stocktake	Peacemaker accountability driving NDC signals	Inter-governmental Integrated	International	Inter-governmental Integrated Decision
Loss and damage	Establishing a Clearing House for Risk Transfer Creating a Task Force of Displacement	Inter-governmental Integrated	International	Inter-governmental Integrated Decision
Climate change education, training, public awareness, public participation, public access to information	Public participation and Access to information information and transparency Capacity building and public awareness Enhanced transparency framework Implementation facilitation mechanism	Inter-governmental Integrated	International	Inter-governmental Integrated Decision
Voluntary cooperation	Direct bilateral cooperation New sustainable development mechanism Non-market-based approaches	Inter-governmental Integrated	International	Inter-governmental Integrated Decision
Sink and reservoirs	Sustainable management of forests	Inter-governmental Integrated	International	Inter-governmental Integrated Decision

Source: Author own-constructed.

#### 4 Global decision on climate change: The Paris Agreement

of the content elements influence the strategy of the elements (type of elements) within the central process of the seven rules. Second, the analysis focuses not only on identifying or listing the content elements that influence strategy in the Paris Agreement decision, but also on providing the level that has a greater influence on outcomes. Based on the results presented in this section, the level of rules can be grouped by international terms, as shown in Table 1. It is therefore clear that understanding the outcome of the Paris Decision is a complex task. The author's intention is therefore to use substantive elements, types of elements and levels to develop the primary approach – Intergovernmental Integrated Decision – that can support the primary strategy for implementing the Paris Agreement. It is also important to point out that the assessments and findings in this chapter will only help with implementation, but for successful implementation, all post-PA communications (COP22, 23, etc.) are of utmost importance.

### **Conclusion**

In this chapter of the book, the author has analyzed the Paris Agreement as a global decision. The author's analysis has revealed the following main points: The first section of the review and analysis reflected the principles of the Paris Agreement in different categories and areas of global decision-making. For example, the author examined CBDR, human rights of indigenous peoples, gender equality, food security, just transition and ecosystem integrity.

The rules of the Paris Agreement specify how national governments should develop and communicate their climate action plans (known as NDCs). For example, the most stringent point of the Paris Decision was followed up at the international level through the formulation of the co-operative approach. This section implies possible future changes for NDCs. The use of the Paris Agreement rules can be seen as a response to understanding how the PA establishes findings with substantive elements, type of elements and level. These findings are consistent with the elements of transparency and GST, L&D, education, training, public awareness, public participation, and public access to information on climate change, voluntary cooperative approaches, sinks and storage,

### 4.3 Summary in plain language

global peaking and climate neutrality, and finance and technology. The author has looked for patterns between the Paris rules of the Decision (see Table 1) to see if anything is being tested in relation to the IID and the Decision. As the IID is included in the IMP in the next chapter of this study, many variables related to the outcome of the Paris Decision, i.e., the Intergovernmental Integrated International Decision, have been analyzed to answer the main question of the research and provide a more flexible process to understand the IID. There is also a detailed analysis on improved transmission and knowledge uptake convened by the IID itself.



# 5

## **Implementation of mega-conferences such as Paris**

In this chapter, the author focuses on the implementation process of the Paris Agreement (IMP-PA). At the centre of the review and analysis is the question of how implementation has taken shape, which may bring about changes for future global climate negotiations. The author will focus on three important sections in this chapter: The importance of implementation for global climate change Decision making, Lessons learnt from global climate change Decision making: from Marrakech to Glasgow, the implementation of the Paris Agreement: toolkit for global climate change Decision making. The author tries to take a close look at these criteria to understand how global climate negotiations need to change in the upcoming COPs. In reviewing and analysing them in this section, the author will consider the key elements for each step.

### **5.1 The importance of implementation politics for decision-making on global climate change**

In this section, the author would first like to provide brief information on the general topic of the importance of the implementation of decisions in international relations. Based on the old-fashioned and current literature from the Cold War era, the world community experienced varying degrees of security, uncertainty, and predictability, as well as an atmosphere of decision-making with dynamic international relations and the implementation of decisions. The implementation of decisions and globalisation have changed international relations and their decisions. Knowledge, information, and experience are the prerequisites for demonstrating a certain situation and knowledge of a new decision in international affairs, namely climate change. An important aspect of the new knowledge and implementation

## 5 Implementation of mega-conferences such as Paris

of international decisions can be applied to the Paris Agreement. Therefore, the last chapter deals with the plans for the future of the PA.

This chapter assesses the implementation of the global decision on climate change, the Paris Agreement, as part of the main approach of this study. The chapter analyses and draws on the scientific literature, the assessment, and the results of the previous phases (chapters CH1, CH2, CH3 and CH4). This chapter (CH5) helps the author to understand how to implement the Paris Agreement (IMP-PA) among states and to assess the effectiveness of the Paris Agreement Decision (PA-DEC) to address the global climate negotiations to combat the effects of climate change.

This chapter is primarily concerned with assessing the key elements of IMP-PA, focusing on COP22, COP23, COP24, COP25 and 26. These COPs highlight some of the integrated components that are the responsibility of states to implement the Paris Agreement. Therefore, COP22, 23, 24, 25 and 26 address some similar and important issues such as Article 6 of the Paris Agreement and finance, which are assessed and explained in detail in the following sections.

### **5.2 The lessons of global decision-making on climate change: From Marrakech to Glasgow**

Climate change is a common global problem where states need to act on lessons learnt to achieve better policy and implementation. Therefore, negotiations between states and policy makers on climate change on the global stage are of great importance. Building on the successes and failures of previous negotiations, countries at COP21 have reached a landmark agreement to tackle global climate challenges. Some 196 countries of the UNFCCC have adopted a historic climate agreement for global climate targets. With the Paris Agreement, the states have recognised the groundbreaking provisions for implementation. The states have learnt new global lessons and reached consensus on further interpretation and future implementation by transferring them to the next COP such as Marrakech, Bonn, etc.

#### **Marrakech conference**

The Paris Agreement has created a broad basis for tackling climate change in the coming decades. However, it cannot solve the crisis itself, and nations must now

## 5.2 The lessons of global decision-making on climate change

work out the details (YEO, 2016). From 7 to 18 November 2016, the COP held its twenty-second session (COP22) and the twelfth session of the COP acting as the Meeting of the Parties to the KP (CMP 12) in Bab Ighli, Marrakech, Morocco (COP22, 2021). The 45th meetings of SBSTA 45 and SBI 45 and the second half of the first meeting of the ad hoc working group on the Paris Agreement also took place (APA 1-2) (Hub, 2016). COP22 in Marrakech introduces the theme of the hard work that states would need to do to put the Paris Agreement commitments into action (Schwartz, 2016). Each state participating in COPs is responsible for working with others on greenhouse gas mitigation, financial and technical support and adaptation.

COP22 is important because it is the first major event to put the Paris Agreement into action. The states' climate pledges needed to be discussed and implemented more, and COP22 made progress in this regard. The Paris goals remain cloudy and dependent on the political opinions and will of the individual heads of state and government who participated in the Agreement. The urgency of defining these principles and agreements beyond the Paris Agreement is emphasized by the severity of climate change (From Paris to Marrakech – global climate change action at COP22, 2016).

The outcomes of COP22 were a collection of topics such as financing, adaptation, transparency, GST, L&D, Mid-Century Strategies (MCS), orphan issues and market and non-market mechanisms (Table 1. Reference to the target area of the IMP-PA section).

**Table 5.** COP22 features.

<b>Features</b>	
<b>COP22</b>	Finance
	Transparency
	Global Stocktake
	Loss and damage
	Mid-century strategies
	Orphan issues
	Market and Non-Market Mechanisms

*Source:* Author own-constructed.

### **Bonn, COP23**

The summit, officially known as COP23/ CMP 13/ CMA 1-2, took place in Bonn, Germany, and was chaired by Fiji. It is organised by the UN Framework Convention on Climate Change (UNFCCC) (see e.g. Winkler & Depledge, 2018; Benjamin et al., 2018). To ensure a full and successful conference, the UNFCCC Secretariat and the Government of Fiji worked closely with the German Government, the State of North Rhine-Westphalia and the City of Bonn (UN Climate Change Conference – November 2017, 2021).

In other words, COP23 was the first climate conference to be convened under the presidency of a small island state. Fiji belongs to a group of vulnerable and impoverished countries that are already affected by climate change (see e.g. Pelling & Uitto, 2001; Turvey, 2007). Fiji's presidency was expected to add momentum to the meeting, as 2017 was proclaimed the warmest non-El Niño year on record and was characterized by extreme weather events. The German government supported the event at the UNFCCC Secretariat in Bonn to facilitate COP23. This dual hosting by a developed and vulnerable state was unique (Dröge & Rattani, 2018). First and foremost, the meeting was divided into two zones: the Bula Zone (Bula means welcome in Fijian) and the Bonn Zone (Bonn means welcome in German) (named after the host city).

The official climate talks took place in the Bula Zone (in the World Conference Centre Bonn (WCCB), on the United Nations campus and in some temporary buildings). The Bonn zone, which consisted of a series of temporary buildings erected on the lawns of the Rheinaue, Bonn's central park, hosted the many events and programs on climate protection. Around 800 staff from the WCCB, the UNFCCC Secretariat, the German Federal Ministry for the Environment (BMUB) and the event management agency commissioned by the BMUB oversaw all aspects of COP23, in particular its environmental and sustainability performance.

Approximately 1,000 people were involved in the preparation, organisation, implementation, and follow-up of the conference, with up to 2,000 people active during the conference itself (Stah et al., 2017). The development of themes such as adaptation, transparency, GST, implementation and compliance, finance, L&D, market, and non-market mechanisms (Article 6 of the PA) were influential during the meeting (Table 2. Reference to the target area of the IMP-PA section).

## 5.2 The lessons of global decision-making on climate change

**Table 6.** COP23 features.

<b>Features</b>	
<b>COP23</b>	Adaptation
	Transparency
	Global Stocktake
	Implementation and Compliance
	Finance
	Loss and Damage
	Market and Non-Market Mechanisms

*Source:* Author own-constructed.

### **Katowice, COP24**

COP24, the United Nations Climate Change conference, took place in Katowice, Poland, in the first two weeks of December 2018. The Katowice Rulebook (see e.g. Streck et al., 2019), which implements the Paris Agreement, was negotiated for a fortnight by 196 nations and the European Union. Numerous presidents, heads of government and around 100 environment and foreign ministers from all over the world took part in COP24 in the city of Upper Silesia, the most industrialised region in Poland. According to the agreement of the parties, Katowice is another milestone on the path to sustainable global climate policy after Kyoto and Paris (see e.g. Gills & Morgan, 2019). Twelve days of intensive efforts culminated in the fulfilment of the implementation provisions of the Paris Agreement (Katowice Rulebook – the Historic Success of Climate Policy at COP24, 2018).

The Polish Presidency also initiated three declarations at COP24, which met with broad approval among the Parties (see e.g. Asadnabizadeh, 2019). On the opening day of COP24, President Andrzej Duda spoke of a just transformation based on solidarity. The adoption of the declaration was the most important outcome of the Summit of heads of state and government. Prime Minister Mateusz Morawiecki and the President of COP24, Micha Kurtyka, presented a joint initiative of Poland and the United Kingdom, the Katowice Partnership for Electromobility, to UN Secretary-General António Guterres.

## 5 Implementation of mega-conferences such as Paris

**Table 7.** COP24 features.

<b>Features</b>	
<b>COP24</b>	Adaptation
	Market and Non-Market Mechanisms
	Finance
	ETF
	Global Stocktake

*Source:* Author own-constructed.

The “Forests for the Climate” declaration was presented in the second half of the conference. The Minister of the Environment, Henryk Kowalczyk, the President of COP24, Michał Kurtyka, and Paola Deda, representing the UNECE, attended the event (Success of COP24 – we have the Katowice Rulebook, 2018). During this time, a wide range of topics such as adaptation, market and non-market mechanisms, finance, ETF and GST were discussed (Table 3. Reference to target area of IMP-PA section).

### **Madrid, COP25**

The UN Climate Change Conference COP25 (2–13 December 2019) took place in Chile under the presidency of the Chilean government, with logistical support from the Spanish government. SBSTA 51/ SBI 51 took place from 2 to 9 December 2019 (UN Climate Change Conference – December 2019, 2019). In early December, nearly 27,000 delegates gathered in Madrid to finalise the Paris Agreement’s “rulebook” – the operations manual that will be needed when the agreement enters into force in 2020 – by agreeing on rules for carbon markets and other forms of international cooperation under “Article 6” of the Agreement.

They also intended to send a statement of intent to the rest of the world, pointing out that the UN climate process remains essential – and recognizing the gap between current progress and global warming targets (COP25: Key outcomes agreed at the UN climate talks in Madrid, 2019). Furthermore, the Chilean Presidency declared that this COP25 could be a “Blue COP”, raising the hopes of the ocean community by promising to pay special attention to the ocean and

## 5.2 The lessons of global decision-making on climate change

its ecosystems throughout the discussions (see e.g. De Sola Pueyo, 2020; Castillo Esparcia & López Gómez, 2021).

This Blue COP has exceeded expectations, with over a hundred marine-related side activities and discussions planned over the two weeks, including Presidency-led events. Despite difficult talks due to the large number of parties involved and their conflicting interests, the ocean prevailed thanks to the strong mobilization of civil society and the political leadership of several member states, notably Chile, Monaco, Costa Rica, and major ocean states such as Fiji (Climate negotiations in Madrid: COP25 was a resounding success – Ocean Literacy Portal, 2020). The conference, officially known as the 25th round of the UNFCCC COP or COP25, was the first since the USA announced its withdrawal from the Paris Agreement. However, it was characterized above all by the large and growing gap between the efforts required to avert climate catastrophe and the still hesitant response of the major economies.

The official agenda of Madrid was relatively small compared to the outstanding outcome of COP24 in Katowice, Poland, which provided an almost complete guide for the implementation of the Paris Agreement (The Centre for Climate and Energy Solutions, 2019). The negotiations during COP25 addressed a number of issues, namely Article 6 of the PA (carbon market), L&D, common timeframes, finance, second periodic review, common metrics, CAP and Koronivia Joint Work on Agriculture (KJWA) (Table 4 Reference to the objective scope of the IMP-PA section).

**Table 8.** COP25 features.

<b>Features</b>	
<b>COP25</b>	Article 6 of PA (Carbon market)
	Loss and damage
	Common timeframes
	Finance
	Second periodic review
	Common metrics
	Gender action plan
	Koronivia joint work on agriculture

*Source:* Author own-constructed.

## 5 Implementation of mega-conferences such as Paris

**Table 9.** COP26 features.

<b>Features</b>	
<b>COP26</b>	Finance for Climate Adaptation
	Loss and damage
	Market mechanisms and non-market approaches

*Source:* Author own-constructed.

### **COP26**

Almost 200 countries came together in the UK to commit to action on climate change and forge the Glasgow Climate Pact. For a fortnight, the world was captivated by all facets of climate change – the science, the solutions, the political will to act and the clear evidence for action. While the agreement is not legally binding, it will set the global agenda for climate change for the next decade. The package of decisions consists of a number of agreed key points, including Finance for Climate Adaptation, transparency and reporting (L&D), market mechanisms and non-market approaches (Article 6).

### **5.3 Implementation of the Paris Agreement: Guidance for the implementation of global decision-making on climate change**

The milestone of global climate change, the Paris Agreement, has the central goal of implementing the global response to the problems of climate change. The main objective of the Paris Agreement was to drive the implementation process and achieve collective progress towards long-term objectives (e.g. reducing global greenhouse gas emissions). The goal of the Paris Agreement and its progress can be measured through the process of COPs and their outcomes (i.e., funding, GST, transparency, etc.), which are designed to inform countries on how to improve climate action and increase support.

#### **Conference of parties (22) and its outcomes**

##### ***1. Conference of parties (22) – Finance***

The 22nd session of COP22 of the UNFCCC and the 12th session of the Conference of the Parties serving as the meeting of the Parties to the KP (CMP 12),

at which a number of decisions were taken in connection with climate finance, including guidelines for the COP's operational bodies, dominated the multilateral news on climate finance in November. Various initiatives and declarations on climate finance were also issued at the Climate Change conference in Marrakesh. The largest annual meeting of leading global financial organizations involved in climate finance took place in Marrakesh (November 2016 Climate Finance Update: COP22 Moves Climate Finance Agenda Forward 2016).

#### ***2. Conference of parties (22) – Long-Term Climate Finance (LTF)***

The LTF agenda item is officially located under COP22 (see e.g. Chai et al., 2017). The LTF has been working since COP15 in Copenhagen in 2009, initially focusing on capital mobilisation by 2020 in light of the USD 100 billion pledge from DC. Within the framework of the UNFCCC, special LTF workshops have proven to be an important instrument for driving the discussion forward. The LTF workshops have taken place in two phases in recent years. Following the COP17 declarations, the first process between 2012 and 2013 was comparatively rigorous, with two seminars in 2012, an in-session workshop in 2013 and three additional expert meetings between July and September 2013.

The official LTF work programme was formally concluded at COP19 in 2013. Governments are encouraged to consider the summary report of the workshop held earlier this year at COP22 and take appropriate action (Eckstein et al., 2016). In Marrakech, Morocco, the conclusion was problematic due to significant differences between industrialised and developing countries on some of the key climate finance issues. The ‘roadmap’ for the USD 100bn, scaling up of climate finance, adaptation finance, the calculation, monitoring, reporting and verification (MRV) (see e.g. Schakenbach et al., 2006) of funding and the mention of Article 9 of the Paris Agreement in the preamble of the LTF decision were among the most contentious topics, according to sources (Third world network, 2016).

#### ***3. Conference of parties (22) – AF***

The AF was put at the service of the Paris Agreement following the decisions on governance and other topics in Marrakech. The KP established the AF, which provided over USD 14 million to five Pacific Island nations. Therefore, the AF will continue

## 5 Implementation of mega-conferences such as Paris

to be open to Pacific Island countries to implement climate change adaptation programs (Tofa soifua, 2016). For example, the President of COP22, Moroccan Foreign Minister Salaheddine Mezouar (Nicolai, 2020), hosted a high-level event on 'Progress in Advancing National Adaptation Plans' to emphasize the crucial role of the GCF and other institutions in promoting adaptation. The event on 14 November 2016 provided an incentive to recognised positive achievements and present new initiatives (COP22-Focus on National Adaptation Plans, 2018).

In Marrakech, several new financial pledges were made for climate change adaptation, but they were in the tens of millions, not billions. Germany can contribute 50 million euros to the AF, which is still on the verge of financial collapse. However, this does not change the overall picture or the inadequacies of adaptation aid to developing countries (Fuhr et al., 2014). It seems that most countries did not support a decision on the future of the AF at COP22. In the negotiations, many DCS proposed that a decision be made next year during COP23, while most DCs argued in favor of postponing the decision until COP24 in 2018. Both outcomes are likely to disappoint environmentalists and others, particularly in Africa, who are critical of climate change adaptation. However, the news is not all negative (Webb, 2016).

### **4. Conference of parties(22) – Transparency**

At COP22, delegates are Almost focussed on transparency and accounting. The experience of adequate transparency provisions at COP22 provides an opportunity to inform the development of the “ETF” that will be critical to the success of the Paris Agreement (Meyer, 2016). The session examines the existing state of transparency mechanisms under the COP and the proposals in the Paris documents, including possible directions. COP22 will examine the implications for AF and implementation, transparency, and how capacity would need to be developed and financed among adaptation managers, implementers, community and national civil society organisations and research institutes, and national and international monitoring agencies (Mercer & Bel, 2021).

During COP22, the topic of transparency will take centre stage via the transparency of measures and support (Leonard, 2016). The Paris Agreement creates a more transparent structure for all parties, with monitoring and evaluation

### 5.3 Implementation of the Paris Agreement

responsibilities for all parties and “built-in flexibility” for DCSs with limited capacity. This mechanism would build on the current UNFCCC transparency processes, which are different for industrialised and developing countries. During COP22, the question is whether the “flexibility” of the Paris framework “would maintain this bifurcated policy – a position held by some DCS but vehemently opposed by the DC. This is likely to be a major source of contention throughout 2018. Another question is whether the specifications should instead be aligned with the various NDCs (COP22 Marrakech, 2016).

#### ***5. Conference of parties (22) – Global stocktake***

From 2023, the Paris Agreement provides for a “GST” every five years to measure mutual success against the long-term goals of the Agreement. The stocktake will serve as a framework for the Parties to submit subsequent rounds of NDCs. Parties began discussing the design, inputs, timing, duration and outcomes of the stocktake, as well as its link to other elements of the Paris architecture, in Marrakech (22nd session of The Conference of the Parties to the United Nations Framework Convention on Climate Change, 2016).

In other words, the Parties worked together to develop key aspects of the Paris Agreement’s ambition process to continuously improve climate change over time. There were constructive discussions on the design of the GST, which takes place every five years and allows countries to measure their success and make changes to become more competitive and optimistic. The negotiators emphasized the importance of a comprehensive GST that includes both mitigation and adjustment. Some countries have asked for a discussion on how a facilitative discussion in 2018 could serve as a springboard for further action before 2020. This discussion would be crucial to accelerate climate change and close the emissions gap. COP22 is expected to provide a transparent framework for the design of the GST and a conducive dialogue, ensuring that 2018 is a turning point for climate change (Elliott et al., 2016). During COP22, the G-77/China negotiating group (Lovisa, 2017) emphasized the role of adaptation in the GSTs and the need for recommendations to improve adaptive capacity to climate change. The EU focused on the need for stocktaking to enable an assessment of collective progress. Some members had concerns about the protocol. Australia suggested that debates

## 5 Implementation of mega-conferences such as Paris

in 2018 should be captured in co-chairs' notes rather than structured outcomes or resolutions. Others emphasized the need for guidelines for a transparent policy (COP22 Marrakesh, 2017).

## **6. Conference of parties (22) – L&D**

L&D addresses the impacts of climate change to which affected communities are unable to adapt (see e.g. Fekete & Sakdapolrak, 2014; Wallimann-Helmer, 2015). At COP22, the Parties called for a revision of the WIM to improve action and support and to adopt a revised five-year structure for the task plan. After lengthy deliberations, the meetings on loss and damage were finalized, with ministers adopting several decisions. In the first decision, the WIM Executive Committee report was commended and endorsed, outlining the following rolling five-year rolling job schedule.

Comprehensive risk assessment, migration in the wake of climate change and a cross-cutting focus on increasingly distressed communities are the concerns addressed in the indicative work strategy requested by the parties. The work plan will include a specific area of work on facilitating action and support, a notable and contentious outcome of the COP22 negotiations. Governments and observer organizations have until 28 February 2017 to submit proposals for specific activities for the next five-year work plan. In the second part of the L&D talks on the structural assessment of the Warsaw Mechanism, countries succeeded in discussing certain aspects of the review while setting the stage for future routine assessments and ensuring the continued presence of the Warsaw Mechanism. Overall, this decision is a strong signal that the WIM will be permanently strengthened. This leaves the question of how the WIM will serve the Paris agreements unanswered (COP22 in Marrakesh: Moving Together, But NOT Fast and Aggressive Enough to Deliver for the Poorest, 2021).

In addition, the issue of L&D policy was hotly debated in Marrakech, but no clear decisions were taken. After many requests for additional support for the WIM, this issue was effectively postponed: the Secretariat will prepare a technical report as an input to the upcoming analysis of the WIM in 2019 to discuss “sources of financial support” In addition, draft decision FCCC/SB/2016/L.8 emphasizes the need for the Executive Committee to include in its five-year work

plan a strategic work area for improving policies and support, including funding, infrastructure and capacity development. The indicative five-year work plan already included a placeholder for the finance-related work area at the time of the negotiations (Kreienkamp & Vanhala, 2017).

## ***7. Conference of parties (22) – Mid-century strategies***

The Paris Agreement enables countries to develop long-term plans to reduce greenhouse gas emissions. As they usually extend to 2050 or beyond, these tactics are referred to as “mid-century” strategies (see e.g. Iyer et al., 2017). According to Article 4.19 of the Paris Agreement, Parties shall endeavour to coordinate and communicate long-term, low MCS allows countries to communicate long-term transformation goals that go beyond their NDC scope and to illustrate the expected long-term impacts of the policies they intend to use to achieve their goals. Although the agreement requires Parties to use MCS, the Paris decisions do not provide a mechanism to guide the content of these proposals and, as a result, action points on this were not included in the outcome of the UNFCCC Subsidiary Bodies (SB44) meetings in May 2016 (Blandford & Cozzi, 2016).

At COP22, four countries were the first to publish their long-term strategies: the USA, Canada, Mexico and Germany (COP22: Strengthening the World’s Response to Climate Change, 2016). The Mid-Century Strategy is a technical report that lists the priorities for the coming decades: Shifting to a low-carbon economy, sequestering carbon, and reducing non-CO<sub>2</sub> emissions (Chen, 2016). Marrakech has shown how countries can combat climate change while expanding their markets and resources. During COP22, the United States, along with Mexico, Canada and Germany, presented a Mid-Century Strategy for DDC—a long-term vision to reduce pollution by 80% by 2050 while maintaining strong economic development (Making Change Decisive, 2016). At COP22, the Obama administration presented a mid-century strategy for deep decarbonisation and outlined ways to reduce net GHG emissions to a quarter of 2005 levels by 2050 (Erbach, 2016).

During COP22 in Marrakesh last month, 48 of the most vulnerable countries pledged to switch to 100% renewable energy by 2050. The world’s largest economies must ensure that their economic policies are in line with the pledges they made in Paris and the trajectory of the global economy. The development

## 5 Implementation of mega-conferences such as Paris

of MCS for sustainable development and decarbonization was critical to ensuring stable and resilient economies during COP22. Such long-term planning was a direct message to the private sector and provided a basis for projects that aligned with the growth priorities and goals of the Paris Agreement (Parthasarathy, 2016).

### **8. Conference of parties (22) – Orphan issues**

The orphaned issues of the Paris Agreement are tasks for which no one has been given responsibility. These include expected timeframes for future climate pledges and a new target for climate finance (A K Muir, 2016). The UN Climate Change Conference (COP22) was due to end on 18 November at 18:00. However, it did not end until almost 3:00 am on Saturday 19 November. On Friday, the draft COP decision on the entry into force of the Paris Agreement and the draft CMA 1 were the main topics of discussion. Friday's discussions were the culmination of the COP President's informal consultations during the conference. The debate centered on where "orphan issues" should be placed, the date of the next or revived CMA session (2017 or 2018) and whether the AF should be used to support the Paris Agreement (Hub, 2016). The so-called "orphan issues", which were mandated in the Paris outcome but had no place on the agendas of the subsidiary bodies, became a new topic of discussion in Marrakech.

According to an informal communication from the APA co-chairs, these included: Timeframes for NDCs, amending the current NDCs, the Committee on Response Measures, understanding emerging economies' adaptation activities, financing guidelines, setting a new collective financing target, biennial financial communications from developed countries, and training, education and knowledge. Parties disagreed on which "orphan" issues should be resolved (including whether only issues needed for CMA 1 should be included), which bodies should do similar work, and finally, how more work should be mandated, which was discussed in the first week under an APA sub-item on planning for the convening of CMA 1.

The "orphans" were one of the last issues to be addressed before the parties could follow the decisions of the COP and the CMA on the Paris Agreement in Marrakesh. They were finally resolved by mandating the APA to complete its consideration of possible additional matters related to the adoption of the Paris

Agreement and to convene CMA 1 (Summary Report 7–18 November 2016, 2016).

#### ***9. Conference of parties(22) – Market and non-market mechanisms***

The Marrakech outcomes included procedural decisions on Article 6 mechanisms (Tänzler et al., 2019). When it comes to market mechanisms, all states need to improve their capacity to ensure that markets are well designed and workable, provide comprehensive mitigation and preserve environmental integrity. The World Bank Partnership has produced two articles on market readiness (PMR) (see Ahonen et al., 2017; Diniz Oliveira et al., 2019), which facilitate the design and implementation of carbon pricing mechanisms such as carbon taxes and emissions trading systems (ETS).

Guidance on Regulation, Development, and Administration of Emissions Trading Registries”, ‘Emissions Trading in Practise: A Handbook on Design and Implementation,’ and ‘Emissions Trading in Practise: A Handbook on Design and Implementation”. The first article deals with the details of setting up legal and institutional frameworks, managing registries and IT systems, after discussing numerous design alternatives for registries that issue, record and monitor carbon units. According to the authors, a well-designed ETS can mobilize the private sector, attract investment and create international cooperation.

The SBSTA addressed Article 6 of the Paris Agreement during COP22, which contains provisions for appropriate methodologies, including internationally transferable mitigation outcomes (ITMOs), a methodology that contributes to greenhouse gas (GHG) emission reductions and supports sustainable development, and non-market options (see e.g. Mace & Verheyen, 2016; van Asselt et al., 2016). The parties reviewed plans to improve the guidance needed for cooperative approaches, the rules, modalities and processes of the mechanism and the work program of the framework for non-market methodologies. The SBSTA agreed to seek proposals from the Parties on the components to be addressed in each of these three categories, as well as on cross-cutting concerns and linkages between the three components of Article 6 and other essential components of the Agreement, including their operationalisation. The ICAO, whose sector is not covered by the Paris Agreement, has opted to reduce emissions through a global

## 5 Implementation of mega-conferences such as Paris

market-based measure (GMBM) (UNFCCC Reports on Education, Training, Public Awareness, 2016). The COP22 agreement also calls for a framework for non-market-based approaches, and parties have begun to explore what this might include. Ideas include the coordination of measures such as feed-in tariffs and fossil fuel subsidy reforms. Parties have until 17 March 2017 to submit their views on the individual points. A round table discussion will then take place in Bonn in May 2017 (Asian Development Bank, 2017).

### **Conference of parties (23) and its outcome**

#### ***1. Conference of parties (23) – Adaptation***

At the Bonn Climate Change Conference COP23, adaptation and climate finance once again proved to be a sensitive issue (Kowalzig, 2017). At this COP, it was recognised that successful adaptation to climate change will determine our economy, our wellbeing and possibly our ability to continue living on the land we inhabit. Some cities will choose to build dykes, dams or walls to keep flooding at bay, while others will choose to relocate people and businesses away from flood-prone regions.

Farmers may choose to grow crops that are better suited to higher temperatures or drought than the ones they currently grow. Communities that have never had to think about water conservation may be forced to develop methods to store rainwater or upland runoff during periods of drought. Many cities, particularly in DCS or tropical regions, may need to change their building codes to make homes, schools, and public facilities more resilient to extreme weather conditions (Chan & Mogelgaard, 2017). States debated the role of the AF in supporting the Paris Climate Agreement, but only reached an agreement early on Saturday morning, 18 November (see e.g. Corsi, 2018). The CMP decides that: the AF should serve the Paris Agreement in accordance with and consistent with the decisions of the CMA 1-3 in December 2018. Following a CMA recommendation to CMP 15 in November 2019, it considers whether the AF should exclusively serve the Paris Agreement; and it will take note of the APA's progress in addressing governance and institutional arrangements, safeguards, and operational modalities for the AF to serve the Paris Agreement (International Institute for Sustainable Development, 2017).

### 5.3 Implementation of the Paris Agreement

The establishment of the Global Centre of Excellence on Climate Adaptation (GCECA) was more focused on adaptation and climate risk (COP23 roundup: the outcomes and implications for climate adaptation, 2017). During COP23, the Dutch government founded the GCECA in cooperation with UNEP, NIES Japan and the Philippines (HandWiki, 2021). The GCECA aims to improve global preparedness for climate change by improving understanding of climate adaptation, stimulating information sharing and promoting international cooperation (Nicolás, 2019). In other words, the GCECA aims to accelerate climate adaptation by collecting and disseminating information and best practices from local, national, and regional stakeholders from around the world. Participants emphasize the importance of knowledge sharing and analysis for effective climate adaptation (Earth negotiations Bulletin, 2021).

#### ***2. Conference of parties (23) – Transparency***

The parties debated the future of the Paris Agreement following the withdrawal of the United States. They made significant progress in the run-up to COP23 by proposing binding decisions and common norms and standards for the implementation of the agreement, including transparency (Global Forum on Sustainable Energy, 2017). The event, which took place at the Bonn Climate Planet Space, a project of the German Federal Ministry for Economic Cooperation and Development, showed how civil society's contribution to openness can help build confidence and ensure climate finance is effective. During COP23, Sebastien Duyck from the Centre for International Environmental Law updated the discussion on the transparency framework.

The non-binding nature of the Paris Agreement, due to the lack of a compliance mechanism, is one of its biggest drawbacks. A robust transparency system will be a crucial tool in this regard, as it will show the emission reductions and financial contribution of each party, incentivize nations to exceed their pledges and build public intergovernmental pressure. As a civil society representative from a developing country, Zakir Hossain Khan from Transparency International Bangladesh shared his perspective on the transparency framework negotiations and their potential impact on climate finance. The transparency framework also offers an opportunity for transparency in climate financing. For example, it can provide data on total government climate finance, distinguishing between adaptation support and

## 5 Implementation of mega-conferences such as Paris

mitigation support. In terms of maintaining good governance, industrialised countries have more important obligations than developing countries. Both developed and developing countries need to be proactive in developing robust and meaningful modalities for a transparency framework that focuses on the whole-of-governance approach to the practical use of climate finance (Hossain Khan et al., 2017).

In addition, the transparency framework and informal discussions resulted in a first substantive document that used a notation key created by the co-moderators to reduce the length of the document, which led to some misunderstandings. Key points emphasised were support for the preparation of NDCs and the adaptation communication, the facilitative multilateral consideration of progress and technical expert review (TER), and the requirement that support under the framework must be exclusively focused on meeting Paris Agreement commitments (Mombauer, 2017).

The issue of differentiation became a major point of contention in Bonn when it came to including the flexibility provisions in the framework for greater transparency. The positions taken in the negotiations mainly reflected the views of Parties expressed in a round of submissions prior to COP23, in which Parties (with the exception of the Alliance of Small Island States (AOSIS)) called for differentiating between developed and developing economies in the MPGs and allowing the latter to decide for themselves. In Bonn, on the other hand, some DCs emphasized the need for common, uniform modalities, procedures, and guidelines (Modalities, Procedures, and Guidelines so-called-MPGs) for all parties. Despite these challenges and the political problems related to the issue of differentiation, the parties finally agreed on a document. This short text will serve as a starting point for further discussions during the negotiating process. However, the parties in Bonn did not succeed in significantly reducing the number of realizable transparency framework formulations and options (Obergassel et al., 2018).

### **3. Conference of parties (23) – Global stocktake**

A discussion among countries scheduled for COP23 (2018) will initiate the process of taking stock of Parties' collective efforts to achieve the long-term goal and inform the process of scaling up NDCs (see e.g. Higgins et al., 2017; Benzie et al., 2018). To ensure that the GST process is implemented effectively and efficiently, there should be no duplication of efforts, and the COP, which serves as the

meeting of the Parties to the Paris Agreement (CMA), should consider these results as well as previous relevant work (Prasad et al., 2017). Another critical item on the COP23 agenda is therefore the design of the modalities for the GST (see e.g. Huang, 2018; Winkler, 2019), which is referred to in Article 14 of the Paris Agreement. The GST is a process by which our collective progress towards achieving the goals of the Paris Agreement is regularly assessed. As the GST is a new topic in the UN climate negotiations, several countries are pushing for it to be given a prominent place on the agenda of the Bonn meeting. The aim of Fiji's COP chairmanship, titled the Talanoa Dialogue, is to "take stock of the collective efforts of Parties towards the development of the long-term" mitigation goal of the Paris Agreement and "guide the development" of the next round of NDCs. The facilitated discussion is sometimes seen as an early form of GST, given its objective (de Lassus Saint-Geniès & Kai Phillips, 2018).

The development and discussion of methodologies and inputs used in GST, as outlined in the Ad Hoc Working Group on the Paris Agreement (APA) under agenda item 6, was an important focus of COP23 regarding GST. Identifying sources of GST and creating GST modalities are the two main goals of this process, and this year's COP was well on its way to achieving both of these goals. These building blocks were discussed informally for nearly 9 hours, and the informal note from the co-moderators was about six pages long, capturing the main themes and arguments of the parties. This atmosphere includes possible titles and sub-headings for the building blocks and issues, decisions, concepts and positions put forward by various parties during the numerous meetings. Parties and stakeholders will prepare the necessary contributions to the dialogue in the run-up to the May 2018 intersessional meeting and COP24 in November 2018. This dialogue is the place where stakeholder organisations can lead the process (Godshalk & Fallon, 2017).

#### ***4. Conference of parties (23) – Implementation and compliance***

In Bonn, the states continued to work on Article 15 of the Paris Agreement. The debates in the APA have evolved in a meaningful way (see e.g. Campbell-Durufflé, 2018). However, during the climate conference in Bonn, the seemingly never-ending discussion on the need for different treatment of developed and developing

## 5 Implementation of mega-conferences such as Paris

countries resurfaced, essentially centred on the design of the Committee's modalities and procedures to facilitate implementation and promote compliance with Article 15 of the Paris Agreement (Freedom and DE Lassus Saint-Genies, 2017). Little progress was made at the Bonn Summit in defining the way forward. The Committee decided to support the establishment of an informal note, following the APA's approach on other matters.

Nevertheless, the parties could not agree on how the mechanism could take shape in certain critical areas of discussion, such as the principles, the systemic difficulties and the links with other organizations and activities. Although there is broad agreement that the process should be "facilitative, transparent, non-adversarial and non-punitive" (Article 15.2 of the Paris Agreement), opinions differ on whether the Committee should play a more active role, whether it should seek information directly or indirectly from other bodies, and whether it should be able to define its rules. The Committee has summarized the views in an updated informal note documenting the positions of the parties (FCCC/SBSTA/2017/L.26, 2017).

On the issue of scope, it appeared that the parties could only provide the Committee with broad direction, such as focusing on legally enforceable elements that apply to specific parties and are detailed enough to be objectively evaluated. There seems to be support for the Committee to focus on "systemic" problems, including the tendency towards non-compliance. The parties seemed to be comfortable with the idea of self-reporting – i.e., a party bringing a case against itself – but not so much with the possibility of parties bringing each other before the Commission. In terms of outcomes, there appeared to be broad support for the committee advising parties on how to improve their implementation and compliance. However, there is considerable reluctance to allow the committee to take actions that could appear punitive, such as declaring a party non-compliant (centre for climate and energy solutions, 2017).

### **5. Conference of parties (23) – Finance**

The UN Climate Change Conference in Bonn was supposed to be a busy event where nations would work out the details of how to implement the Paris Agreement from 2020. Countries gathered in Bonn to clarify how they will assess their

### 5.3 Implementation of the Paris Agreement

carbon reduction targets from next year. Nevertheless, the question of who should pay for it (financially) remains a challenge (Tamma, 2017). This will be no small problem, as much more progress was expected in Bonn, says David Levai, Director of Climate Programs at the Institute for Sustainable Development, and International Relations (IDDRI) (see e.g. Chan et al., 2021). Following Donald Trump's decision to withdraw the USA from the Paris Agreement, Levai recognizes a serious lack of leadership (for more see also Asadnabizadeh, 2019).

The issue of 100 billion dollars remains a problem for the parties involved. The advanced nations must provide funds to help poorer countries fulfil their commitments to adapt to climate change (Dupin, 2017). In relation to the mandate of COP23, the UNFCCC Secretariat has been working on the needs-based finance (NBF) project, which aims to facilitate and mobilize climate finance to support developing countries' needs for priority mitigation and adaptation actions as highlighted in their NDCs, national adaptation plans and national mitigation plans. The NBF initiative intends to promote and utilize alliances with other mandates and processes of the UNFCCC and the Paris Agreement to expand and complement existing climate finance activities of Member States to enable cooperation and avoid duplication. The Secretariat has the honor of being the first to develop a climate finance strategy, as this government-led project focuses on several pilot partner countries in the regions of Latin America and the Caribbean, Africa, Asia and the Pacific, and the Melanesian sub-region (Climate Finance Strategy, 2019).

In addition, as part of the climate finance announcements at COP23, funds were announced to support the most vulnerable populations in adapting to climate change and extreme weather events. For example, Germany has pledged an additional USD 125 million for the 'Insu Resilience Initiative' to support the provision of insurance to 400 million people in the V20 countries, a group of the world's most vulnerable states that includes SIDS such as Fiji. In addition, the AF exceeded its 2017 target by nearly USD 13 million, thanks to contributions from Germany (EUR 50 million) and Italy (EUR 7 million). The African Sub-National Climate Fund's (R20 and Blue Orchard Finance) offer to provide "investment-ready projects" and funding for the construction of at least 100 infrastructure projects by 2020, as well as HSBC Bank's pledge of USD 100 billion for green investments announced at COP23 (International Institute for Sustainable Development, 2017).

## **6. Conference of parties (23) – L&D**

At COP23, climate-related L&D was raised and recognised as a critical issue that needs to be addressed, having been included as a stand-alone item in the Paris Agreement (Article 8). The fact that Fiji hosted this year's UNFCCC Conference of the Parties raised high hopes for greater momentum to advance the UNFCCC L&D agenda and advocate for concrete action to address these issues. However, these expectations have not been fully realized as L&D is not particularly highlighted on the COP agenda. The aim was that the vulnerability of SIDS would allow the Presidency to raise awareness of this issue, even if it did not dominate the COP agenda (Künzel et al., 2017).

In his speech at the COP General Assembly of the United Nations, Fijian Prime Minister and COP23 President Frank Bainimarama emphasized: “For the Fijian people, climate change is real. It has an impact on all our lives. Whether it's all the villages we are moving out of the way to escape rising seas, the loss of our ancestral burial grounds, the salinity affecting our crops, or the constant threat of destruction of homes and infrastructure” (Climate home, 2017). Many developing countries and organizations, including the G77 and China (see e.g. Vihma et al., 2011), AOSIS, the Least Developed Countries and the Likeminded Group of DCS, have stated in their opening remarks that significant progress needs to be made on L&D (Allan et al., 2017). The report of the WIM ExCom on the developments of its work and the WIM review mechanisms for 2019 was discussed at the COP23 session on L&D. Industrialised countries resisted the issues raised by DCS and other groups during the negotiations and tried to argue that resources for L&D should include more than just financial support and that it was unnecessary to include L&D as a standing agenda item of the SB as this could hinder the progress of the ExCom.

In the context of the launch of the Fiji Clearinghouse for Risk Transfer, which was requested at COP21 and is a database for information on insurance and risk transfer, as well as additional commitments and support for the Insu Resilience Global Partnership for Climate and Disaster Risk Finance and Insurance Solutions, COP23 was able to note some isolated developments on L&D (Fiji Clearing House for Risk Transfer, 2021). The Global Partnership provides data and risk analyses, technical assistance and capacity building tailored to the needs and objectives of individual nations, solution design for specific risk finance and

### 5.3 Implementation of the Paris Agreement

insurance solutions, smart implementation support, and monitoring and evaluation initiatives (UNFCCC, 2017). The final decision on L&D represents a compromise reached after long and arduous discussions at COP23.

While the resolution recognizes the parties' concerns about L&D and calls for some initiatives to alleviate them, it falls far short of the expectations and objectives put forward by the vulnerable nations during the discussions. The current Working Group on Displacement was asked to address global and internal displacement and to develop recommendations for preventing, mitigating and addressing climate-related migration. An expert dialogue on approaches to promote better L&D support was sought at the next SB meeting, with a technical paper and report to be produced as outcomes of the discussion. Parties were asked to: (i) provide feedback on the WIM's terms of reference for 2019; (ii) establish national focal points for L&D; (iii) participate in the WIM's ExCom meetings; and (iv) include L&D in national procedures (UNFCCC Decision 5/CP.23, 2018).

The request to include L&D as a permanent agenda item in the twice-yearly SB discussions and not just at the COPs was not taken up. No preparations were made for adequate funding of the WIM ExCom's activities. The decision recognizes the limited financial resources of the WIM ExCom by stating that the recommended activities should be carried out subject to the availability of financial resources. Despite this recognition of limited gains, the parties were merely "encouraged" to provide "adequate resources" for the implementation of the WIM ExCom's work plan (Benjamin et al., 2018).

## **7. Conference of parties (23) – Market and non-market mechanisms**

The parties meet in Bonn to develop a set of rules for the implementation of the various clauses of the Paris Agreement. The NMM (see e.g. Sterk et al., 2014; Gao et al., 2016), which is described in Article 6 of the Paris Agreement, is one of these provisions. According to the pact, cooperative approaches would incorporate ITMOs for NDCs that promote sustainable development and ensure environmental integrity and transparency (see e.g. Institute of the Francophone World for Sustainable Development, 2017). Observers were not allowed to participate in the Bonn roundtable debate on NMMs. The nature of the work program, the

## 5 Implementation of mega-conferences such as Paris

organizational structures to help implement the NDCs and the reporting institutions to monitor activities were discussed.

Subsequently, the talks focused on the design of the rules and details of Article 6 (Rattani, 2017). The COP23 negotiations resulted in an informal note that illustrates the conflict between two schools of thought on cooperative action under Article 6.2 of the Paris Agreement. The first line aims to limit international monitoring to an absolute minimum, preferably to ITMO accounting, while the second line proposes to introduce international monitoring on an equal footing with Art (Greine & Michaelowa, 2018).

First and foremost, some recommendations were proposed during COP23 as follows. The modalities and procedures of the CPU were reviewed. Plan the phase-out of the CDM at the end of the second commitment period. End project registration from COP24. Establish a CDM grievance mechanism. Increase civil society engagement. Create conditions that allow only nations with a measurable macroeconomic aim to participate in the markets. Ensure that all foreign transfers are recorded using the same accounting system. Require countries participating in the markets to demonstrate that mitigation actions do not violate human rights or harm the environment. To achieve a net reduction in total greenhouse gas emissions and revenues for adaptation, the playing field between co-operative initiatives and the SDM must be levelled. Define, track, report and verify actual, quantifiable and long-term mitigation and development benefits (Kachi, 2017).

## **Conference of parties (24) and its outcome**

### ***1. Conference of parties (24) – Adaptation***

The AF was well represented at the United Nations Climate Change Conference (COP24/CMP 14/CMA 1.3) in Katowice, Poland, from 2 to 14 December. An important issue for developing countries was to ensure that adaptation is given the same weight in climate discussions as mitigation (along with implementation methods). Therefore, there was a push for the communication of adaptation measures and the inclusion of adaptation components in the NDCs. While the rule-book contains a significant amount of language on the adaptation components of the Paris Agreement, it lacks the depth and clarity of mitigation provisions (see e.g. Sitek, 2020; McGinn & Isenhour, 2021).

### 5.3 Implementation of the Paris Agreement

The focus remains on ‘take it or leave it’ reporting instructions, the search for metrics to assess adaptation activities, cautious consideration of methods to facilitate aid, and ‘urging’ rich nations to support LDCs and other developing countries (The Outcomes of COP24 for Adaptation and Loss and Damage-Plan Adapt, 2018). The main debate on adaptation during COP24 is the following: The Katowice Rulebook provides nations with rules for communicating and reporting on adaptation actions. These measures ensure that information on adaptation to climate change is regularly made available so that nations can share experiences, learn from each other, and cooperate more effectively and efficiently at regional and international levels. These rules will be revised in 2025. The regular dissemination of information at international level should also encourage countries to improve the quality of their adaptation efforts without having to make additional commitments. In addition, a global assessment will be carried out every five years to determine the overall adequacy of adaptation measures and to discuss how the impacts of climate change can be better managed.

However, the Katowice framework does not leave the Parties to their own devices, as it also includes a UNFCCC-wide comprehensive action plan to support their efforts. Institutions such as the Adaptation Committee and the Least Developed Countries Expert Group, to name but a few, have been tasked with further analysing the need for adaptation and coordinating with the IPCC to improve the recommendations. In addition, the Standing Committee on Finance, in collaboration with the TEC and the Paris Capacity Building Committee, will work on methods to mobilize resources for adaptation (The Katowice Rulebook – main principles of the document, 2019).

## ***2. Conference of parties (24) – Market and non-market mechanisms***

Despite the “victory leap” of the Polish energy minister (the designated president of COP24), the conclusion of COP24 in Katowice failed on many fronts. The failure of nations to agree on a draft Article 6 dealing with market-based mechanisms in the Paris Agreement made headlines (Coalition, 2019). The implementation procedures for the market mechanisms of Article 6 of the Paris Agreement, including those under Article 6.2 (which deals with the so-called “ITMOs”) and Article 6.4 (which deals with “ITMOs”), were one of the key aspects that remained

## 5 Implementation of mega-conferences such as Paris

unresolved at last year's COP24 discussions in Katowice, Poland (it is about a mechanism that also supports sustainable development) (see e.g. Asadnabizadeh, 2019). These instruments have the potential to help countries implement their NDCs under the Paris Agreement by enabling market-based transactions to play a role. The NDCs are the backbone of the Paris Agreement and document what each nation intends to do to reduce greenhouse gas emissions. Many experts believe that it is important to allow market forces to play a role in the fulfilment of the NDCs (Coddington, 2019).

In other words, no guidelines for international cooperation on the implementation of national pledges, such as voluntary carbon markets, were negotiated (Erbach, 2019). Technically, the lack of a structure will not prevent countries from developing international markets among themselves, and several participants stated that so-called “carbon clubs” (see e.g. Panopoulou & Pantelidis, 2009; Keohane et al., 2015; Haider & Akram, 2019), which are groups of countries developing regional platforms, will step in with their guidance, as allowed by the Paris Agreement. However, market participants have secretly recognised that the lack of a clear global direction risks hampering regional initiatives. “The risk of moving forward without a rulebook for the Paris Agreement is huge for us,” added an insider.

“We are creating something new, and without a global reference, it's difficult to get international Agreement.” While the carbon clubs will continue with uncertainty without the rulebook, the endeavour to create a single, global market under the UNFCCC will continue. Brazil's proposal was put on hold until the next round of negotiations in Spain (Zwick, 2021). Brazil, in particular, actively fought until the final hours of COP24 to prevent such double counting – both in the implementing provisions for Article 6 and in the context of transparency. The fact that other countries did not give in to Brazil's pressure is quite encouraging. Without strict rules, market systems are very complicated and can do more harm than good. The negotiators made the right decision by giving themselves another year (COP25) to develop these rules (Schwarz et al., 2019).

### **3. Conference of parties (24) – Finance**

Accounting and reporting on climate finance were perplexing but equally essential concerns during COP24. The Paris Agreement contains two important provisions

### 5.3 Implementation of the Paris Agreement

on financial flows: Article 2.1(c), which sets out a general framework for climate resilience of financial flows, and Article 9, which sets out transparency of ex-post and ex-ante finance in addition to the general climate finance obligation. One of the main objectives of COP24 was to operationalize the latter.

In terms of long-term finance, COP24 reaffirmed the goal of mobilizing USD 100 billion annually by 2020 and the need to scale up climate finance and improve the enabling environment for members to support the mobilization and effective use of climate finance (see e.g. Streck et al., 2016). In relation to the SCF assessment, the COP24 decision included a summary of the overview of climate finance flows and the proposals of the Standing Committee on Climate Finance (SCF) on the biennial assessment of climate finance flows in 2018. In addition, the GCF (see e.g. Cui et al., 2014; Cui & Huang, 2018), which focused on progress in 2018, including (i) strengthening the institutional capacity of the GCF, (ii) transparency, standards and safeguards to be implemented by the GCF, (iii) initiating a process to review the GCF's progress, (iv) improving access to the GCF, (v) increasing the number of accredited entities, and (vi) establishing a process to review the GCF's progress (Alexandraki, 2019).

The discussions on communicating indicative quantitative and qualitative information on climate finance, for example, illustrate the importance of convening high-level ministerial dialogues every two years, such as the one held at COP24, to discuss the progress of current and past global climate finance flows and how developed countries plan to increase their contributions in the future. The countries finally agreed on a solution to this problem. There are some points of contention, such as the lack of mention of grant equivalence in the text and the exclusion of L&D as a category. Nevertheless, there was consensus on the inclusion of gender equity as a metric that nations must report on (Kasteel, 2021).

France, Sweden, and Switzerland have also made pledges to the LDC Fund. Germany and Norway have taken the lead and confirmed that they will double their contributions for 2014. During the discussions, the Russian Federation stated that it would contribute to the GCF for the first time, but the amount has yet to be confirmed. At COP24, it was disappointing that more nations did not make commitments to international climate finance. Wealthy nations need to make aggressive pledges to the GCF (Thwaites & Niranjali, 2018).

#### **4. Conference of parties (24) – Enhanced transparency framework**

The Paris Agreement lays the foundation for the most comprehensive climate change transparency framework ever created. The structure of the agreement sets a clear goal for all parties to strive for, while providing the flexibility for nations with limited resources to implement it. Article 13 provides an ETF for action and support, including mitigation, adaptation, climate finance and other forms of support. While the role and structure of the ETF were defined, a standard set of modalities, processes and principles were agreed at COP24 to implement and further develop the ETF (Aragon & Dorji, 2018).

The parties in Katowice have opted for a standard set of standards that offer flexibility to those who need it. According to the Modalities, Processes and Guidelines (MPGs), the use of flexibility for developing countries that they need based on their capacities is self-determined. However, developing countries should explicitly state which provisions are subject to the flexibility, explain capacity constraints and provide a timetable for improving these capacity constraints. TER teams cannot analyze how developing countries apply flexibility measures (see e.g. Mayer, 2019; Campbell-Durufflé, 2018). The US and some Umbrella Group countries have tried to limit this flexibility in time but have failed.

It is not applied everywhere where flexibility is required: MPCs specify which provisions are subject to flexibility. There are also provisions that allow for better reporting and transparency over time, such as the identification of capacity-building assistance needs and the provision of this assistance. The MPGs also include the process of reviewing the data provided by Parties, which consists of two parts: a one-year TER (of the mandatory information submitted in the BTR and NIR) and a facilitated multilateral review of progress (FMCP) (see e.g. Weikmans et al., 2019) with regard to the implementation and realisation of a State's NDC and Article 9 efforts; and a facilitated FMCP with regard to the implementation and realisation of a State's NDC and Article 9 efforts.

Countries and multinational organizations are invited to nominate experts for the expert list. BTR synthesis reports, TER reports and FMCP protocols are all prepared by the Secretariat. These are published on the UNFCCC website. The role of the GEF is to help developing countries fulfil their growing reporting

obligations. The CGE, which will now be at the service of the Paris Agreement, is tasked with helping developing countries by facilitating technical advice and support (Sharma et al., 2018).

#### ***5. Conference of parties (24) – Global stocktake***

Parties must urgently step up their climate action to achieve the goal of keeping the global temperature increase well below 2°C and making every effort to stay below 1.5°C. The GST is crucial as it will serve as a catalyst for greater ambition over time. This mechanism will assess the Parties' collective progress towards the Agreement's goals on a five-year cycle.

This study is intended to help national governments prepare their NDCs in the future (Obergassel et al., 2019). At COP24 in Katowice, Poland, in 2018, the foundations for the first GST in 2023 were adopted. It takes into account both the provision of support for developing countries to mitigate and adapt to climate change and the alignment of all financial flows with climate targets. The GST can also be used to learn more about the effectiveness of spending and how, if at all, L&D finance should be included. Although equity is included in the GST, it may be up to external actors to assess progress on this issue (Watson & Roberts, 2019). The parties agreed on three phases of the GST in Katowice:

They have collected and processed information to take stock of progress. The latest NDCs, the latest scientific findings of the United Nations IPCC and the reports of individual nations on their progress in meeting their commitments under the transparency framework will be compiled in 2022 (see e.g. Milkoreit & Haapala, 2018; Hermwille et al., 2019). Technical assessment period. This is an assessment of the data collected to recommend best practise, which took place over a year of UN climate conferences – communication and implementation of results.

The main results of the assessment will be handed over to high-level national officials by the end of 2023. The countries will then assess how far they have come and what impact this will have on future national and international climate action. Countries agreed at COP24 in Katowice, Poland, to take into account efforts to reduce and manage unavoidable climate impacts – known to climate negotiators as L&D – and any unintended social and economic impacts of these actions in order to meet mitigation, adaptation, and finance goals. However, there is currently no

## 5 Implementation of mega-conferences such as Paris

obvious way to integrate these efforts into the global stocktake. While there is an expectation that collective efforts will be assessed against the criterion of equity, there is no single definition of equity or standard that should be used to measure global efforts (Dagnet & Anderson, 2019).

### **Conference of parties (25) and its outcomes**

#### ***1. Conference of parties – Article 6 of PA (Carbon market)***

At the United Nations climate negotiations in Madrid in December 2019, international carbon trading under Article 6 was a hot topic (COP25). Negotiations on carbon markets pushed last year's climate discussions in Katowice, Poland, into overtime, leaving the rulebook of Article 6 of the Paris Agreement unfinished. Countries attempted to finalise the last remaining component of the rulebook in Madrid (COP25: Tracking progress on the path to implementing the Paris Agreement, 2019). At COP25, the parties were close to agreeing on the guidelines for Article 6.2. The draft judgement texts from all three streams were also converted into logical structures with little repetition.

On the other hand, the parties could not agree on some critical policy issues regarding the modalities, processes, and guidelines under Article 6.4. Article 6.4 – refers to market mechanisms in the carbon and emissions trading system through a centralised governance system known as SDM. Countries and private sector parties can trade through this system (Abdellatif, 2020). Countries have made significant progress in the following areas:

ITMOs are classified in different ways (e.g. as accurate, verified, and additional)

Parties that choose to participate in cooperative methodologies under Articles 6.2 and 6.4 are accountable for their participation.

Parties that use non-GHG indicators or have emissions intensity targets (instead of absolute reduction targets) are eligible to participate in procedures 6.2 and 6.4 (see e.g. Kumar, 2020; Obergassel et al., 2020). The use of appropriate adjustments (i.e., accounting techniques that ensure that mitigation outcomes are not double counted when transferred between parties). The inclusion of different types of NDCs, such as annual vs. multi-year NDCs and greenhouse gas vs. non-greenhouse gas indicators. More than 30 nations, led by Costa Rica and

### 5.3 Implementation of the Paris Agreement

Switzerland, including the United Kingdom, Germany, France, and several Pacific Island countries, published the San Jose Principles for High Ambition and Integrity in International Carbon Markets in the final days of the talks. They urged for a set of rules under Article 6 that at least provides for the following:

Ensures the integrity of the environment and enables the most ambitious reduction targets possible.

Ensures global emissions reductions that go beyond zero-sum offsetting and helps accelerate the reduction of global greenhouse gas emissions.

Pre-2020 units, Kyoto units, allowances and any underlying reduction towards the Paris Agreement and other international targets are prohibited.

Ensures that there is no double counting and that all market-based approaches to achieving international climate targets are subject to appropriate modification.

Collects, tracks, and shares the information needed for comprehensive and transparent accounting through centralised and publicly accessible infrastructure and processes.

Contributes to the development of measurable and predictable financial resources for DCS. Parties that are particularly vulnerable to the negative impacts of climate change must pay for adaptation expenditures (Galarraga et al., 2011).

## ***2. Conference of parties – L&D***

The COP took place at the same time as the WIM for L&D in connection with the effects of climate change. Therefore, L&D played an important role in the talks (Puig et al., 2019). This situation was particularly pronounced when it came to L&D, which was a stumbling block in the discussions. Numerous delegates from nations emphasised that L&D finance will either “make or break” the COP. Several emerging economies, particularly SIDS and LDCs, called for new and additional funding to compensate them for the impacts of climate change they are experiencing.

Nevertheless, several delegations diverted the talks in the negotiating rooms away from the financing of L&D. According to the Global Campaign for Climate Justice, Australia and the United States have continued to “block and undermine the demands of poor nations” (see e.g. Jenkins, 2018) and have not responded to the concrete recommendations for a new L&D fund. Instead of providing much-needed cash and compensation, the focus was on forming a task force or

## 5 Implementation of mega-conferences such as Paris

expert group to focus on information sharing and discourse on loss, damage, and risk analyses (Shawoo, 2019). The main outcomes of COP25 for L&D were as follows:

New and additional funding is urgently needed to tackle L&D and this needs to be increased.

Improved institutional arrangements to facilitate action and assistance in the event of damage.

In short, developing countries called for an improved and strengthened WIM that could enable action and support for developing countries in their attempts to address L&D related to the negative impacts of climate change through a coordinated effort by the G77 and China.

Wealthy nations urgently need to increase their funding and provide new and additional resources.

Stronger links between the ExCom and the Convention's Standing Committee on Finance (SCF). In particular with regard to feedback on the SCF's proposed advice to the Convention's financial institutions.

There is a direct link between the ExCom and the GCF to support nations in identifying and raising available funding for L&D (see e.g. Serdeczny, 2018).

By next year, an expert group on action and support will be set up within the ExCom to focus on improved action and support.

The Santiago Network for L&D Management provides direct technical assistance to developing countries to address L&D.

It is worth noting that the WIM review decision includes provisions for linkages to the SCF and GCF, as well as to COP and CMA decisions on finance, in particular the SCF and GCF, which should support the WIM's efforts to improve these linkages. The overarching COP decision (1/CP.25) contains an overarching requirement that encourages international entities, including financial institutions, to continue to support the development and implementation of initiatives to avert, minimise and remedy the adverse effects of climate change (Pierre-Nathaniel et al., 2019).

### ***3. Conference of parties – Common timeframes***

The parties were unable to agree on the necessary standards for the content of the NDCs in the run-up to the Paris Summit. As a result, the NDCs currently

### 5.3 Implementation of the Paris Agreement

differ significantly in many respects, including the time periods they cover. While some Parties' NDCs set a target date of 2025, the majority set 2030, and some set much longer timeframes. COP21 therefore mandated the CMA to consider standard timeframes at its first session. As a result, it was decided at the Katowice conference that the NDCs for the period after 2030 should correspond to a standard timeframe, although the parties could not agree on a specific plan. COP24 therefore mandated the SBI to further examine the issue (Obergassel et al., 2020). At COP25, states debated – several alternatives for expected timeframes (see e.g. Common timeframes for nationally determined contributions under Article 4, paragraph 10 of the Paris Agreement, 2019) for the implementation of climate action plans (Evans & Gabbatiss, 2019), but did not agree.

One of the main debates at COP25 was whether countries should “update” their original NDC targets by COP26, five years after it began, in light of new events during that time. States debated whether paragraphs 23 and 24 of decision 1/CP.21, which define the Paris ambition process, are sufficient to call for an update for 2020. Compared to Katowice, however, the SBI talks at COP25 showed a clear shift in the Parties' stance on this issue. In Katowice, there was little sense of urgency to make a decision. In Madrid, the parties pushing for the fastest possible decision far outweighed the procrastinators.

Several Parties and organisations, notably the LDCs, the African Group and the EIG (see e.g. Hjerpe & Linner, 2010; Stephenson et al., 2019), have also stated that NDC endpoints should be distributed at five-year intervals rather than longer periods and disseminated in the 5+5 pattern suggested by the Dynamic Contribution Cycle. The lack of movement on this issue during COP25 sparked outrage and prompted Brazil to make a formal request in the SBI plenary to give this agenda item more time in future sessions to resolve Glasgow. Civil society has also loudly expressed its dismay at the lack of progress on the timeframe issue (Sharma et al., 2020).

#### **4. Conference of parties – Finance**

In December, financing climate adaptation for vulnerable countries was one of the main topics at the United Nations Climate Summit in Madrid, Spain, alongside reducing greenhouse gas emissions. As climate-related disasters such as rising seas, rising temperatures, severe droughts and floods increase, scientists estimate that

## 5 Implementation of mega-conferences such as Paris

between 110 and 275 billion US dollars will be needed annually to protect vulnerable populations. Gustavo Alberto Fonseca, the GEF's Program Director, told a group of journalists during the 25th Conference of the Parties to the UN Climate Change Conference (COP25) that financial mechanisms are crucial to address the challenges associated with strengthening the resilience of developing countries to the impacts of climate change (Abano, 2019).

At the UN Climate Change Conference COP25 in Madrid, the Coalition of Finance Ministers for Climate Action presented the Santiago Action Plan, which aims to accelerate their countries' transition to a low-carbon and climate-resilient economy (see e.g. Malpass, 2020). It was established in April 2019, with members endorsing six principles – the so-called “Helsinki Principles” – that promote national climate action, primarily through carbon pricing, macro-fiscal policies, public budgeting, and financial sector activities. Argentina, Austria, Bangladesh, Canada, Chile, Colombia, Costa Rica, Cyprus, Denmark, Dominican Republic, Ecuador, Equatorial Guinea, Finland, Fiji, France, Germany, Ghana, Greece, Guatemala, Iceland, Côte d'Ivoire, Ethiopia and signed the Helsinki Principles and the Santiago Plan of Action, Indonesia, Ireland, Italy, Jamaica, Kenya, Latvia, Lithuania, Luxembourg, Madagascar, Maldives, Marshall Islands, Mexico, Monaco, Netherlands, New Zealand, Nigeria, Norway, Paraguay, Philippines, Poland, Portugal, Spain, Sri Lanka, Sweden, Switzerland, Tonga, Uganda, United Kingdom and Uruguay (Araya & Moren, 2020).

As part of the Coalition of Finance Ministers for Climate Action, 51 finance ministers reaffirmed their commitment to tackling climate change together in Madrid. The coalition aims to strengthen collective action on climate change and its impacts in six key policy areas, as set out in the six Helsinki Principles (see e.g. Lawlor and Morley, 2017).

- a. Align our policies and procedures with the obligations made under the Paris Agreement.
- b. To offer mutual encouragement and enhance collective knowledge of policies and actions for climate change, we should share our experience and expertise.
- c. Support the development of policies that result in effective carbon pricing.

### 5.3 Implementation of the Paris Agreement

- d. Macroeconomic policy, fiscal planning, budgeting, public investment management, and procurement procedures should all consider climate change.
- e. Facilitate investments and establish a financial sector that supports climate mitigation and adaptation to mobilize private sources of climate funding.
- f. Participate actively in the national planning and execution of the Paris Agreement NDC (Climate Action in Financial Institutions Initiative, 2017).

In addition, new financial pledges and contributions to the AF totaling around USD 90 million were made during COP25 by Germany, Ireland, Norway, Poland, Spain, Sweden and Switzerland, as well as by the governments of Brussels-Capital, Flanders and Wallonia and the provincial government of Quebec (Fernández & Pergolini, 2021).

#### ***5. Conference of parties – Second periodic review***

The long-term global goal is to keep the increase in the global average temperature well below 2°C above pre-industrial levels, while endeavoring to limit the temperature increase to 1.5°C above pre-industrial levels, as this would significantly reduce the risks and impacts of climate change. The Parties have committed to regularly assessing the adequacy of the long-term global goal and progress towards its realization (Periodic Review, 2021).

In the adopted resolution, the countries agreed that the second periodic review should be carried out in accordance with the applicable principles and articles of the Convention and on the basis of the best available scientific evidence (see e.g. Bäckstrand et al., 2017; Schleussner & Fyson, 2020) should improve Parties' understanding of (i) the long-term global goal and the scenarios for achieving it in light of the ultimate objective of the Convention; (ii) the progress made in addressing information and knowledge gaps since the completion of the 2013–2015 review, including the scenarios for achieving the long-term global goal and the range of associated impacts–; (iii) Challenges and opportunities for achieving the long-term global goal to ensure the effective implementation of the Convention; and B) Assessment of the overall impact of the steps taken by Parties to achieve the

## 5 Implementation of mega-conferences such as Paris

long-term global goal towards the ultimate objective of the Convention (Raman, 2020).

The conclusion of the second periodic review during COP25 did not lead to a change or reinterpretation of the long-term global goal set out in Decision 10/CP.21; the parties were also in agreement (The objective is to keep the increase in the global average temperature to well below 2°C above pre-industrial levels and to take action to limit the temperature increase to 1.5°C above pre-industrial levels). Developing countries have pushed for a review of the overall progress and implementation of the Parties' activities under the Convention and the KP in the period before 2020, while industrialised countries have argued that such a review is unnecessary. In other words, the disagreement centred on a bullet point on the roundtable on implementation and ambition before 2020 that took place at COP25. Two groups of emerging economies emphasised that pre-2020 work is an ongoing process and that the summary report "serves" rather than "served" as input to the second session of the first meeting of the SED under the second periodic review. Members also debated whether and how to refer to the scope of the second periodic review (International Institute for Sustainable Development, 2021).

## **6. Conference of parties – Common metrics**

A climate parameter must be selected to assess the impact, e.g. radiative forcing, temperature response. As a result, several options are required for the stages and the cause-effect chain from emissions to climate change and impacts. A modelling framework is required for each stage of the cause-effect chain (Schleussner et al., 2019; Tanaka et al., 2021). As an alternative to models that explicitly include physical processes that lead to forces and reactions, simpler measurements or metrics based on insights from complicated models can be used for assessments and judgements. Metrics are used to assess the contributions of different components to climate change and can therefore be used as "exchange rates" in multi-component policies or comparisons of emissions from different regions/countries or sources/sectors (Common metrics, 2021).

The reduction target of the Paris Agreement is listed in Article 4 and aims to formulate the long-term temperature target of the Paris Agreement. It also refers to achieving net-zero GHG emissions in the second half of the twenty-first

### 5.3 Implementation of the Paris Agreement

century. The most fantastic research available on emission routes consistent with achieving the long-term temperature target of the Paris Agreement would determine when net-zero GHG emissions will be achieved. The timeline for achieving net-zero greenhouse gas emissions in relation to the global average temperature target depends on the measurement used to account for the different greenhouse gases (Fuglestvedt et al., 2018). The Paris Agreement does not specify a clear measure for accounting. However, this situation does not mean that the measure is undefined. The use of GWP100, which was agreed as the default metric for investigation under the UNFCCC, adopted at COP2 in 1996 for Annex I countries and 2002 for all states, was first introduced in the IPCC First Assessment Report in 1990, subject to a special report on radiative forcing in 1994, with the use of GWP100 as the common metric for reporting under the UNFCCC agreed at COP2 in 1996 for Annex I countries and 2002 for all states. Since then, GWP100 has been used as the basis for assessing mitigation options and net-zero targets, including in the IPCC Fourth Assessment Report of 2007.

The mitigation pathways assessed in IPCC AR5 Working Group III (IPCC 2014) provided the scientific basis for the Paris Agreement and its Article 4.1, and they were all published using GWP100 metrics. As the Paris Agreement is based on current research and linked to the UNFCCC, it is only natural that GWP100 assesses the Agreement. Assessing the consequences of using alternative metrics in the context of the global mitigation architecture outlined in Article 2.1a and 4 of the Paris Agreement can also provide helpful insights into the alignment of metrics with the Agreement (Climate Analytics, 2019).

During COP25, negotiations continued in camera and focussed on more specific Article 6.2 concerns. These included how to deal with NDCs based on non-GHG metrics, the timing of such changes, whether adjustments should be made annually or over longer periods, and NDC calculation techniques. The second draft of the text arrived late on the Saturday of the first week. The goal of the drafters was to get the language to the point where only the essential components requiring policy decisions remained: Limits and safeguards; metrics (whether Article 6 methods should use tonnes of CO<sub>2</sub> only or other metrics as well).

Observers and Parties found the material in the metric question sections during the COP25 discussion to be inconsistent and poorly written (The International

## 5 Implementation of mega-conferences such as Paris

Emissions Trading Association, 2019). In addition, Clifford Mahlung (Jamaica) and Riccardo de Lauretis (Italy) facilitated informal meetings and presented draft text on common metrics for calculating the carbon equivalence of greenhouse gases. A group of DCS stated that they were not in a position to reach an internal Agreement. Several parties expressed their dissatisfaction, and co-facilitator Mahlung proposed to revisit the issue of default metrics at either SBSTA 52 or 55. The parties were unable to reach an agreement (Earth Negotiations Bulletin, A Reporting Service for Environment and Development Negotiations, 2019).

## **7. Conference of parties – Gender action plan**

The improved GAP sets targets and activities in five key areas to improve knowledge and understanding of gender-specific climate action (see e.g. Sauer and Stieß, 2021). It is about consistent inclusion in the implementation of the UNFCCC and the work of Parties, the Secretariat, UN agencies and all stakeholders at all levels, as well as the full, equal, and meaningful participation of women. Gender aspects could be incorporated into the Paris Agreement of 2015 and several UNFCCC resolutions, such as the Lima Work Programme on Gender (LWP) of 2014 and its extension in 2016, the GAP of 2017 and the Enhanced LWP and GAP in 2019. The first phase of implementation of the LWP and GAP was reviewed at COP25 in Madrid in 2019 (Granat et al., 2020).

At the UN Climate Change Conference COP25 in Madrid last December, countries took action to advance a more gender-equitable strategy for climate action by adopting a comprehensive enhanced Lima Work Program on Gender Equality (LWPG) and GAP, which sets out the activities that countries and the international community as a whole can and will take to achieve this goal. Ministerial officials from Costa Rica, Colombia, Egypt, Germany, Luxembourg, and Spain, chaired by a former Irish President at a high-level meeting hosted by the COP Presidency and Germany, reaffirmed the need for nations to agree on an ambitious expanded GAP (see e.g. Advances for Gender Equality at COP25 – WEDO, 2019). It is not a slogan to say that it is time to act, and it is a choice. It is a moral demand. Therefore, it is crucial to include gender perspective in climate policies, explained COP President Carolina Schmidt during the meeting (Strengthened 5-year Action Plan on Gender Adopted at COP25, 2020).

### 5.3 Implementation of the Paris Agreement

To summarize, the COP25 women gender constituency (WGC) called parties to:

- a. Ensure that climate action is founded on human rights and is gender balanced.
- b. Make a transition that is fair for everyone.
- c. Ascertain that climate ‘solutions’ are gender balanced.
- d. Health, particularly sexual and reproductive health, and rights, should be promoted.
- e. Break free from the shackles of fossil fuels and unreliable energy systems.
- f. Invest in social and environmental solutions instead of war and polluting energy.
- g. People, not profit, should be taken into consideration.
- h. Encourage the democratic use of energy.
- i. Ecological food systems must be protected.
- j. Ecosystem-based methods should guide.
- k. Ensure the long-term viability of fisheries and aquaculture.
- l. Recognize that water is essential to life (Key demands COP25, 2020). In June 2022, the updated GAP will evaluate, and the improved Lima Work Program on Gender (LWPG) will evaluate in December 2024 (Cooke, 2020).

### ***8. Conference of parties – Koronivia joint work on agriculture***

The KJWA is a historic UNFCCC decision that recognizes the unique potential in the fight against climate change: (Koronivia Joint Work on Agriculture | Food and Agriculture Organisation of the United Nations, 2021). The primary objective of the KJWA should be to improve the enforcement of the Convention and the Paris Agreement. The objective should clarify that the activities of the KJWA will guide food security, gender equality and human rights. The objective should represent the shared nature of the KJWA between SBI and SBSTA, drive science and technology advice, and inform and catalyze implementation (see e.g. Hönle et al., 2018). The following activities can be carried out:

## 5 Implementation of mega-conferences such as Paris

- a. Commission the Secretariat to do a quick landscape analysis of the activities of other UNFCCC bodies on agriculture in SB 48.
- b. SB 48: Direct the Secretariat to quickly evaluate possible implementation methods, current financing requirements, and environmental and social protections.
- c. Requested submissions and held technical expert meetings on the new topics for COP24 through COP25 in order to (1) examine good practices, (2) identify gaps in technical guidance and means of implementation, (3) consider critical criteria to guarantee environmental and social integrity, and (4) recommend response, including by other bodies under the Convention, to close those gaps (UNFCCC, 2018).

By December 2019, Madrid, Spain – At the United Nations Climate Change Conference (COP25) in Madrid, NAP-Ag partner countries and members of the global team came together to share countries' experiences in integrating the agricultural sector into national climate policies, as well as international commitments such as the KJWA (United Nations Development Programme, 2019). At COP25, governments recognised the “full potential of improved productivity to contribute to food security, resilience and adaptation benefits, and to increase carbon sinks” and pointed out that continued engagement of financial institutions is crucial to ensure more action on the ground. Brenda, a young farmer from South Africa, and Francisco, a farmer from Chile, represented KJWA. Brenda farms a total of 1,000 hectares, divided between animals (cattle, goats, pigs and game) and crops (cereals and vegetables) (COP25: A happy family in Koronivia, 2019).

In addition, the delegates from the various parties discussed the lessons learnt from the Koronivia road map and the KJWA. Fahmuddin Agus (Indonesia, representative of the ASEAN Negotiators Group on Agriculture) described how his group has harmonized its positions within the framework of the KJWA and is applying for funding from the GCF for the preparations. Herwig Ranner (EU) emphasized that there are different forms of support from the UNFCCC and UN agencies, that there are no “one size fits all” solutions for resilience and sustainability, that more research is needed, and that stakeholder involvement is important. Julia Wolf, FAO, and Janie Rioux, GCF, highlighted the lessons learnt from Koronivia and how they could help in further discussions at COP25.

The workshops, Wolf said, have succeeded in identifying needs, gaps and constraints and building trust. She explained that the FAO supports knowledge sharing by facilitating exchanges, providing technical assistance and facilitating exchanges (Earth Negotiations Bulletin is a division of the International Institute for Sustainable Development, 2021).

## **COP26 and its outcomes**

### ***1. Finance for climate adaptation***

The Paris Agreement includes a global target for adapting to the effects of climate change. At COP26, new financial pledges were made to support DCS in achieving this goal. To achieve the adaptation finance goals, every company, financial institution, bank, insurer and investor must change. Countries need to come to grips with the increasing impact of climate change on their citizens, and they need the means to do so. The Glasgow Climate Pact, while imperfect, has taken important steps to close this gap.

It includes the unprecedented goal that development cooperation will double the funds it provides for adaptation to climate change by 2025, increasing them to around 40 billion dollars per year. The increase in AF is widely regarded as one of the successes of COP26. More than \$450 million has announced for “locally-led adaptation approaches” and the AF has received a record \$356 million in new pledges. At COP26, donors pledged \$413 million to the LDC Fund, which is managed by the GEF and is “the only climate resilience fund focused exclusively on LDCs” (What does COP26 mean for adaptation?, 2021).

### ***2. Loss and damage***

The delegates gathered in Glasgow negotiated on a number of issues related to transparency and reporting and L&D on which no agreement could be reached at the previous COP. The most important of these issues are the financing of L&D, the governance of the international Warsaw Mechanism and the operationalisation of the Santiago L&D Network, which was established in 2019 to catalyse technical assistance to avert, minimise and manage L&D in vulnerable DCS (Puig & Roberts, 2022). The CMA approved resolutions to establish the Santiago Network

## 5 Implementation of mega-conferences such as Paris

under the WIM for damage and loss. The Santiago Network will “catalyse” technical assistance to avert, minimise and manage L&D in developing countries vulnerable to climate change. The decisions did not include any financial commitments (COP26 Summary Report, 2021).

### **3. Market mechanisms and non-market approaches (Article 6)**

At COP26, countries agreed on new arrangements for market mechanisms and non-market approaches under Article 6 (see also Asadnabizadeh and Moe, 2024; Asadnabizadeh, 2024). The first set of market-based instruments is a co-operation that leads to a transfer of emission reductions between countries – from the country that has achieved the reduction to the country that will buy that reduction. The instruments are designed to enable and incentivize private sector participation. Under Article 6 of the Paris Agreement and non-market-based approaches, countries can work together to achieve mitigation and adaptation as well as sustainable development and poverty reduction (COP26 Summary Report, 2021).

### **5.4 Summary and conclusion in plain language: Is the decision-making architecture of the Paris Agreement a mirage, a dummy or reality**

The main objective of this chapter was to explore the main question of this study, namely how the Paris Agreement as a global decision on the politics of climate change negotiations is actually structured and what will be the politics of implementing the Paris decision in the future phase? In order to provide a conceptual framework for this question and to find a different approach to the Paris Agreement at the level of global climate policy, the author has started to critically examine, analyse, and discuss COP22, COP23, COP24, COP25 and COP26 as well as the main provisions of the COPs in the implementation process.

The author has analysed the extent to which the Paris Agreement is a mirage, a dummy, or a real architecture for decision-making on global climate change. To understand this, in addition to the previous chapters and analyses, the author has focused on the most important criterion, namely the implementation phase and

**Table 10.** Major provisions of Implementation.

COP	22	23	24	25	26
	Article 6 and carbon market	Article 6 and carbon market	Article 6 and carbon market	Article 6 and carbon market	Article 6 and carbon market
	Finance mechanisms	Finance mechanisms	Finance mechanisms	Finance mechanisms	Finance mechanisms
	Transparency	Transparency	Transparency		Loss and damage
	Global stocktake	Global stocktake	Global stocktake		
	Loss and damage	Loss and damage		Loss and damage	

*Source:* Author own-constructed.

its complex provisions defined by the PA architecture under the UNFCCC (see Table 6).

With the help of this table, the author attempts to clarify the complicated relationship between the provisions of the COP and the future phase of the Paris Agreement on global climate change. The information from the table shows that the architecture of the Paris Agreement on climate change is formed by the 5 main provisions such as Article 6 and the carbon market, financial mechanisms, transparency, GST, and mitigation. These rules play an important role from COP22 to COP23. From COP24 to COP25, the architecture reflects the shift of key rules in global decision-making on climate change.

The transition from COP25 to COP26 is a more far-reaching change compared to COP22 and the starting point for reshaping the future architecture of global decision-making on climate change under the Paris Agreement. This analysis and conceptualization of the main rules implies that Article 6 and the carbon market and financing mechanisms are the most important criteria not only in the context of the first part of the research question of this study (i.e., what is the actual structure of the Paris Agreement as a global decision on climate change), but also in the second part (i.e., the future phase of the Paris decision) (see Table 6 for the

## 5 Implementation of mega-conferences such as Paris

use of these statements). As for the main conclusion of this study, the author argues that the main arguments and issues such as Global Climate Change Situation, Global Climate Change Decision Centre, Global Climate Change Decision Process, Global Climate Change Decision: Paris Agreement, Implementation of Mega Conferences like Paris have been documented and analyzed. The Paris Agreement is an important part of the global climate problem.

This agreement has played a decisive role in the run-up to and aftermath of global decision-making on climate change. It is important to understand the situation and process of global climate change in the past to assess the Paris decision and its progress in the post-Paris implementation phase. I have argued that the Paris Agreement embodies a “real architecture” in global decision-making on climate change, linking intergovernmental and integrated international decision-making. This approach – IID – is explained and expanded in detail in Chapters 1 to 5. In this section, the author considers these steps across 6 multidimensional<sup>1</sup>, interactive<sup>2</sup>, emergent<sup>3</sup>, iterative<sup>4</sup>, dynamic<sup>5</sup> and synergistic<sup>6</sup> factors. Finally, this book leaves us with some conclusions. The Paris Agreement has created a real architecture for global decision-making on climate change, which the author calls “IID”, linking the 5 steps on three different axes (Figure 7). The step of exploration, First, is defined by global climate change and the decision centre of global climate change. In both features, this step formally reviews and analyses the pre- and post-Paris agreement, which consists of areas with different functions. In the second step of the IID, the debate and analysis focus on the interpretation of the decision-making process and decision. How and under what conditions was this IID interpreted. Finally, the finalization step (considering the criteria that are crucial for implementation) is important to understand the IID and to consider the Paris Agreement as a real architecture.

One thing is clear, the focus of global climate change decisions from the Paris decision to Glasgow and beyond will be Article 6 and carbon market mechanisms.

---

1 Multidimensional, means that each axis has several components or dimensions.

2. Means that each axis is dependent on all the others.

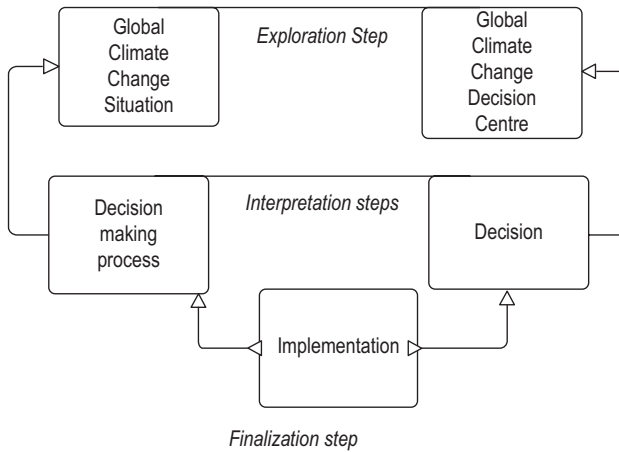
3. Means that IID is to be followed in the 3-axis as it arises and develops.

4. Means that the axes are recursive. That is, any or all axes can be repeated as often as necessary.

5. Dynamic means that the 3-axis is pulsating, energetic, lively, and exciting.

6. Means that the axis follows the basic principles of international cooperation.

## 5.4 Summary and conclusion in plain language



**Figure 7.** Overview of the 3-axis model for intergovernmental integrated decision.

*Source:* Author own-constructed.

For those who analyze the stringency of the PA provisions and its implementation mechanism, international climate change negotiations are not always perfect, but the architecture of the Paris Agreement is a real opportunity for global climate change decision-making, especially implementation, which offers a better chance of achieving the main objective of the UNFCCC.



# Bibliography

1. Arikan, Y., Kathrine B. (2015). A Brief History of Local Government Climate Advocacy: The Local Government Climate Roadmap – Mission [Almost] Accomplished. Bonn, Germany: ICLEI Briefing Sheet. <http://www.iclei.org/briefing>.
2. A K Muir, M. (2016). COP22 Final Outcomes and Decisions. *Coastal & Marin E-News*. <https://euccnews.wordpress.com/2016/11/21/cop-22-final-outcomes-and-decisions/>.
3. Agriculture to Play Key Role at UN Summit. (2014 September 14). UNFCCC. Int. <https://unfccc.int/news/agriculture-to-play-key-role-at-un-summit>.
4. Antholis, W. (2014). The Modi-Obama Summit: What This Means for Climate Change. Brookings.
5. Allegra, N., Grande, L., Anchukaitis, K., von Gunten, L., Goodwin, L. (2015). Volcanoes and Climate. *Past Global Changes*, (23).
6. Abano, I. (2019). A call to scale up climate finance, adaptation action. COP25: Earth Journalism Network.
7. Achievements | LG Climate Roadmap. (2014, 11 November). Old.iclei.org, <http://old.iclei.org/index.php?id=1192>.
8. Addressing the Impact of Climate Change on Labour. (2017). Geneva: International Labour Office.
9. Alice, T., Sonali, M. (2011). Bloomberg-Are you a robot? <https://www.bloomberg.com/company/press/bloomberg-new-energy-pioneers-award-calls-for-entries-3/>.
10. Al Mubarak, R., Tanzeed, A.( 2012 April 26). *The role of NGOs in tackling environmental issues-emirates* Wildlife Society-World Wild Fund for Nature. <https://www.mei.edu/publications/role-ngos-tackling-environmental-issues>.
11. ADP bodies. Unfccc.int. (2020). <https://unfccc.int/adp-bodies-page#c>.
12. Advances for Gender Equality at COP25 - WEDO. (2019, December 13).WEDO. <https://wedo.org/advances-for-gender-equality-at-cop25/>.
13. AF at COP25. (2021). <https://www.adaptation-fund.org/adaptation-fund-at-cop25/previous-cops-2/cop24/>.

## Bibliography

14. Arowolo, S. (2015). *COP21: Towards an Inclusive Climate Negotiation in Paris*. The University of Cape Town. <http://www.acdi.uct.ac.za/acdi/blog/cop-21-towards-inclusive-climate-negotiation-paris>.
15. Asian Development Bank Report. (2017). *United Nations Climate Change Conference Marrakech*. <https://www.adb.org/sites/default/files/institutional-document/230761/in42-7.pdf>.
16. Aragon, I., Dorji, T. (2018). *COP24: LDCs' moment to shape an inclusive climate transparency framework*. The International Institute for Environment and Development. <https://pubs.iied.org/sites/default/files/pdfs/migrate/17489IIED.pdf>.
17. Anastagi, R. (2015). *Enhancing the monitoring and evaluation of Capacity-building through the Durban Forum (master)*, LUISS.
18. Abdenur, A. (2014). *China and the BRICS Development Bank: Legitimacy and Multilateralism in South-South Cooperation*. IDS Bulletin, 45(4), 85–101. <https://doi.org/10.1111/1759-5436.12095>.
19. Adamson, L., Brown, N. (2020). *Full Speed Ahead with Climate-Change Measures at IMO Following Paris Agreement*. <http://www.imo.org/en/MediaCentre/PressBriefings/Pages/55-paris-agreement.aspx>.
20. Australian Government. (2010). *Problem 1.4: Helping to Shape a Global Climate Change Solution*. Department of Climate Change and Energy Efficiency.
21. Araya, J., Moren, P. (2020). *COP25: Finance Ministers from over 50 countries join forces to tackle climate change*. Coalition of Finance Ministers for Climate Action.
22. Allan. (2017). *22Nd Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change*. The CaribbeanCommunityClimateChangeCentre. <https://www.caribbeanclimate.bz/blog/2018/02/20/outcomes-of-the-u-n-climate-change-conference-in-marrakech/>.
23. *Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP)*. (2020). United Nations Framework Convention on Climate Change, [unfccc.int](https://unfccc.int/process-and-meetings/bodies/bodies-that-have-concluded-work/ad-hoc-working-group-on-further-commitments-for-annex-i-parties-under-the-kyoto-protocol-awg-kp). <https://unfccc.int/process-and-meetings/bodies/bodies-that-have-concluded-work/ad-hoc-working-group-on-further-commitments-for-annex-i-parties-under-the-kyoto-protocol-awg-kp>.
24. *A Brief Introduction to the United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol*. (2009). [https://enb.iisd.org/process/climate\\_atm-fccintro.html](https://enb.iisd.org/process/climate_atm-fccintro.html).
25. Abbott, K. (2012). The Transnational Regime Complex for Climate Change. *SSRN Electronic Journal*.
26. Abdellatif, N. (2020). *How on Earth Are We Discussing Article 6?* The Heinrich-Böll-Stiftung. <https://ps.boell.org/en/2020/03/27/how-earth-are-we-discussing-article-6>.

27. Adama, B., Eyo, J., Mohammed, A., Yisa, A., Ibrahim, S. (2019). Anthropogenic stressors induced climate change and ecological implications on fisheries resources in tropics: a review. *Tropical Freshwater Biology*, 28(2), 67. <https://doi.org/10.4314/tfb.v28i2.6>.
28. *Adaptation Communications under Article 7 of the Paris Agreement*. (2016). UN-FCCC. <https://unfccc.int/topics/adaptation-and-resilience/workstreams/adaptation-communications>.
29. Adger, W., Brown, K., Fairbrass, J., Jordan, A., Paavola, J., Rosendo, S; Seyfang, G. (2003). Governance for Sustainability: Towards a ‘Thick’ Analysis of Environmental Decision making. *Environment and Planning A: Economy and Space*, 35(6), pp. 1095–1110.
30. Afinotan, L. (2014). Decision making in International Relations: A theoretical Analysis. *Canadian Social Science*, 10(5). <https://doi.org/10.3968/4970>.
31. AWG-LCA bodies page. (2020). Institut E.V. <https://unfccc.int/awg-lca-bodies-page>.
32. Afionis, S., Sakai, M., Scott, K., Barrett, J., Gouldson, A. (2016). Consumption-based carbon accounting: does it have a future? *Wires Climate Change*, 8(1). <https://doi.org/10.1002/wcc.438>.
33. Agbedahin, A. (2019). Sustainable development, Education for Sustainable Development, and the 2030 Agenda for Sustainable Development: Emergence, efficacy, eminence, and future. *Sustainable Development*, 27(4), 669–680. <https://doi.org/10.1002/sd.1931>.
34. Ahonen, H., Judström, A., Upston-Hooper, K. (2017). Carbon Markets and Flexible Mechanisms. *Carbon & Climate Law Review*, 11(2), 150–155. <https://doi.org/10.21552/ccdr/2017/2/10>.
35. Arens, Ch., Mersmann, F., Olsen, KH. (2021). *Learning from CDM SD tool experience for Article 6.4 in the Paris Agreement*. UNEP.Partnership. <https://unepccc.org/publications/learning-from-cdm-sd-tool-experience-for-article-6-4-in-the-paris-agreement/>.
36. Albers, J. (2018). Human Rights and Climate Change. *Security and Human Rights*, 28(1–4), 113–144. <https://doi.org/10.1163/18750230-02801009>.
37. Aldy, J., Barrett, S., Stavins, R. (2003). Thirteen plus One: A Comparison of Global Climate Policy Architectures. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.385000>.
38. Amanatidis, G., Mirela Curmei, M. (2020). *Biodiversity, land use, and forestry | Fact Sheets on the European Union*, European Parliament. (2020). <https://www.europarl.europa.eu/factsheets/en/sheet/73/biodiversite-nature-et-sols>.

## Bibliography

39. Alexandraki, C. (2019). COP24 and Climate Finance: A Steppingstone or a Blurred Line? *European Journal of International Law*. <https://www.ejiltalk.org/cop-24-and-climate-finance-a-stepping-stone-or-a-blurred-line/>.
40. Anderson, Ro. (2021). *A Seat at the (Trading) Table: Non-Market Mechanisms in the Paris Agreement*. Master dissertation, University of Eastern Finland, Law School.
41. Andreae, M., Jones, C., Cox, P. (2005). Strong present-day aerosol cooling implies a hot future. *Nature*, 435(7046), 1187–1190. Doi: 10.1038/nature03671.
42. Antoniadou, A. (2003). Epistemic Communities, Epistemes, and the Construction of (World)Politics. *Global Society*, 17(1), 21–38. <https://doi.org/10.1080/095373203200053980>.
43. A Summary Report of the UN Climate Summit 2014. (2014). International Institute for Sustainable Development (IISD). <http://WWW.IISD.CA/CLIMATE/CS/2014>.
44. Araral, E., Fritzen, S., Howlett, M., Ramesh, M., Xun, Wu. (2012). *Routledge Handbook of Public Policy* (1ed) UK: Taylor Francis.
45. Archana, K. (2013). Impact of Deforestation on Climate Change. *Journal of Environmental Science, Toxicology and Food Technology*, 4(2).
46. Arnstein, S. (2019). A Ladder of Citizen Participation. *Journal of the American Planning Association*, 85(1), 24–34. doi: 10.1080/01944363.2018.1559388.
47. Asadnabizadeh, M. (2019). Development of UN Framework Convention on Climate Change Negotiations under COP25: Article 6 of the Paris Agreement perspective. *Open Political Science*, 2(1), 113–119. <https://doi.org/10.1515/openps-2019-0012>.
48. Asadnabizadeh, M. (2021). ‘The failure of deep decarbonising of Europe (DDE) by 2050 in line with the Paris Agreement: A losing player analysis’, *International Journal of Global Energy Issues*, 43(5/6), p. 522. doi:10.1504/ijgei.2021.10042556.
49. Asadnabizadeh, M. and Moe, E. (2024). ‘A review of global carbon markets from Kyoto to Paris and beyond: The persistent failure of implementation’, *Frontiers in Environmental Science*, 12. doi:10.3389/fenvs.2024.1368105.
50. Asadnabizadeh, M. (2020). Iran security dilemma behind Paris Climate Change Agreement, SCIRP Open Access. Available at: [https://www.scirp.org/\(S\(lz5mq-p453edsnp55rrgjt55\)\)/book/detailedinforofabook.aspx?bookid=2657](https://www.scirp.org/(S(lz5mq-p453edsnp55rrgjt55))/book/detailedinforofabook.aspx?bookid=2657).
51. Asadnabizadeh, M. (2024). ‘Did the glasgow cop26 negotiations meet or miss article 6 (carbon markets) of the Paris Agreement? A&nbsp;systematic review of the literature’, *Politics & Policy*, 52(4), pp. 757–777. doi:10.1111/polp.12621.
52. Asadnabizadeh, M. (2022). In search of Decision-making Situation (DMS) in international relations: A review of unpacked Paris climate change Agreement. *Teka Komisji Politologii I Stosunków Międzynarodowych*, 15(2), 59. <https://doi.org/10.17951/teka.2020.15.2.59-77>.

53. Asadnabizadeh, M. (2019). Analysis of Internal Factors of the Swing States in the International Climate Change Negotiations: A Case Study of Poland in COP24. *American Journal of Climate Change*, 08(02), pp. 263–283.
54. Asadnabizadeh, M. (2019). Climate change in the foreign policy of the Trump administration. *Environmental Policy and Law*, 49(2–3), 195–202. <https://doi.org/10.3233/epl-190157>.
55. Asadnabizadeh, M. (2022). Critical findings of the sixth assessment report (AR6) of working Group I of the intergovernmental panel on climate change (IPCC) for global climate change policymaking a summary for policymakers (SPM) analysis. *International Journal of Climate Change Strategies and Management*, 15(5), 652–670. <https://doi.org/10.1108/ijccsm-04-2022-0049>.
56. Asadnabizadeh, Majid. Meta-Events: The Tale of the Outbreak of the Arab Spring and the Connection with Climate Change. *Wschodnioznawstwo*, vol. 16, 20 Dec. 2022, pp. 43–61, <https://doi.org/10.4467/20827695wsc.22.004.16753>.
57. Asadnabizadeh, M. (2020). Status of impacts of extreme climate events at the UN Climate Change Conference (COP25). *the International Journal of Climate Change. Impacts and Responses*, 13(1), 1–11. <https://doi.org/10.18848/1835-7156/cgp/v13i01/1-11>.
58. Asadnabizadeh, M. (2023). Bump in the Road to Global Energy Transition: The Bottlenecks of the Carbon Markets. *Athenaeum Polskie Studia Politologiczne*, 1. <https://www.ceeol.com/search/article-detail?id=1235278>.
59. Bausch, C., Mehling, M. (2011). Addressing the Challenge of Global Climate Mitigation. Berlin: Friedrich-Ebert-Stiftung | *Global Policy and Development*. <http://www.fes.de/GPol/en>.
60. Blandford, L., Cozzi, P. (2016). *Submission on Supporting NDC Conversion and Implementation through Post-Paris UNFCCC Processes (various agenda items)*. Center for clean air policy. <http://ccap.org/assets/Driving-NDC-Conversion-through-the-UNFCCC.pdf>.
61. Barichella, A. (2017). *How Europe Can and Should Become the Guardian of The Paris Agreement on Climate Change?*. Foundation Robert Schuman.
62. Bowering, E. (2011). *Griffith University Page 1 after Kyoto: the Cartagena Dialogue and the future of the international climate change regime*. Ethan Bowering Griffith University <https://static1.squarespace.com/static/56635f09e4b078c56b4d110b/t/5bd8f52bb8a045ba1d5f6b09/1540945208275/unfccc+research+report+-ethan+bow>.
63. Burrow, S. (2017). *Just Transition a Report for the OECD*. Just transition center. <http://Just-Transition-Centre-report-just-transition.pdf> (oecd.org).

## Bibliography

64. Balogh, W., St-Pierre, L., Di Pippo, S. (2017). Towards a results-based management approach for capacity-building in space science, technology, and applications to support the 2030 agenda for sustainable development. *Acta Astronautica*, 139, 385–389. <https://doi.org/10.1016/j.actaastro.2017.07.029>.
65. Bennett, L. (2017). *Deforestation and Climate Change*. The Climate Institute.
66. Ball, C. (2009). What Is Transparency?. *Public Integrity*, 11(4), 293–308. doi: 10.2753/pin1099-9922110400.
67. Bio Carbon Fund Initiative for Sustainable Forest Landscapes (ISFL). (2013). Climate Initiatives. [https://climateinitiativesplatform.org/index.php/BioCarbon\\_Fund\\_Initiative\\_for\\_Sustainable\\_Forest\\_Landscapes\\_\(ISFL\)](https://climateinitiativesplatform.org/index.php/BioCarbon_Fund_Initiative_for_Sustainable_Forest_Landscapes_(ISFL)).
68. Bagchi, C. (2021). Non-Market Based Approaches: Status of Discussions under the UNFCCC. Climate Policy Info Hub. [https://climatepolicyinfohub.eu/non-market-based-approaches-status-discussions-under-unfccc#footnote1\\_e524lrj](https://climatepolicyinfohub.eu/non-market-based-approaches-status-discussions-under-unfccc#footnote1_e524lrj).
69. Blomstrom, E., Burns, B. (2016). *Gender equality in the climate agreement*. CIFOR. [https://www.cifor.org/publications/pdf\\_files/Brief/5904-GenderClimateBrief.pdf](https://www.cifor.org/publications/pdf_files/Brief/5904-GenderClimateBrief.pdf).
70. Breitmeier, H., Rittberger, V. (2000). *Environmental NGOs in an Emerging Global Civil Society*. Eberhard-Karls-University, Tübingen, Germany Center for International Relations/Peace and Conflict Studies. <https://archive.unu.edu/ona/PDF/Papers/Rittberger,%20V%20PAPER.pdf>.
71. Benzie, M., Adams, K., Roberts, E., Magnan, A., Persson, Å. Nadin, R. (2018). *Meeting the global challenge of adaptation by addressing transboundary climate risk*. Stockholm Environment Institute. <http://file:///C:/Users/User.User-PC/Downloads/meetingtheglobalchallengeofadaptation.pdf>.
72. Biniaz, S. (2017). *Elaborating Article 15 of the Paris Agreement: Facilitating Implementation and Promoting Compliance*. Institut du développement durable et des relations internationales. [https://www.iddri.org/sites/default/files/import/publications/pb1017\\_art-15-pa\\_sue-biniaz.pdf](https://www.iddri.org/sites/default/files/import/publications/pb1017_art-15-pa_sue-biniaz.pdf).
73. Bonsey, A., Rotenberg, A. (2016). *Rockefeller Brothers fund: A case study in impact investing*. The ImPact. <https://search.issuelab.org/resource/rockefeller-brothers-fund-a-case-study-in-impact-investing.html>.
74. Bonnie, S. (2017). Adapting the Paris Agreement. *Ermont Journal of Environmental Law*.
75. Bäckstrand, K., Kuyper, J., Linnér, B., Lövbrand, E. (2017). Non-state actors in global climate governance: from Copenhagen to Paris and beyond. *Environmental Politics*, 26(4), 561–579. <https://doi.org/10.1080/09644016.2017.1327485>.
76. Badruddin, ST. (2015). Role of NGOs in the Protection of Environment. *Journal of Environmental Research and Development*, 9(3).

77. Bagliani, M., Bravo, G., Dalmazzone, S. (2008). A consumption-based approach to environmental Kuznets curves using the ecological footprint indicator. *Ecological Economics*, 65(3), 650–661. Doi: 10.1016/j.ecolecon.2008.01.010.
78. Baker, A., Underhill, G. (2015). Economic Ideas and the Political Construction of the Financial Crash of 2008. *The British Journal of Politics and International Relations*, 17(3), 381–390. <https://doi.org/10.1111/1467-856x.12072>.
79. Bang, G., Lahn, B. (2019). From oil as welfare to oil as risk? Norwegian petroleum resource governance and climate policy. *Climate Policy*, 20(8), 997–1009. <https://doi.org/10.1080/14693062.2019.1692774>.
80. Batalha, L., Reynolds, K. (2012). Aspiring to Mitigate Climate Change: Superordinate Identity in Global Climate Negotiations. *Political Psychology*, 33(5), 743–760. <https://doi.org/10.1111/j.1467-9221.2012.00896.x>.
81. Bauer, A., Feichtinger, J., Steurer, R. (2011). The Governance of Climate Change Adaptation in Ten OECD Countries: Challenges and Approaches. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2343568>.
82. Belén Sanchez, A., Gueye, MK. (2015). *A Guide to Climate Change Negotiations for ILO Constituents*. International Labor Office Green Jobs Program.
83. Benjamin, L., Thomas, A., Haynes, R. (2018). And ‘Islands’ COP? Loss and damage at COP23. Review of European, *Comparative & International Environmental Law*, 27(3), 332–340. <https://doi.org/10.1111/reel.12255>.
84. Betzold, C., Castro, P., Weiler, F. (2012). AOSIS in the UNFCCC Negotiations: From Unity to Fragmentation? *Climate Policy*, 12(5): 591–613. doi:10.1080/14693062.2012.692205.
85. Bhopal, A. (2021). The Norwegian Oil Fund in a Warming World: What are the Interests of Future Generations? *Ethics, Policy & Environment*, 1–15. <https://doi.org/10.1080/21550085.2021.1940451>.
86. Blaxekjær, L. (2015). Korea as green middle power: green growth strategic action in the field of global environmental governance. *International Relations of the Asia-Pacific*, 16(3), 443–476. <https://doi.org/10.1093/irap/lcv023>.
87. Blaxekjær, L., Nielsen, T. (2014). Mapping the narrative positions of new political groups under the UNFCCC. *Climate Policy*, 15(6), 751–766. <https://doi.org/10.1080/14693062.2014.965656>.
88. Bloomfield, G., Bucht, K., Martínez-Hernández, J., Ramírez-Soto, A., She-seña-Hernández, I., Lucio-Palacio, C., Ruelas Inzunza, E. (2017). Capacity building to advance the United Nations sustainable development goals: An overview of tools and approaches related to sustainable land management. *Journal of Sustainable Forestry*, 37(2), 157–177. <https://doi.org/10.1080/10549811.2017.1359097>.

## Bibliography

89. Bodansky, D. (2010). The Copenhagen Climate Change Conference: A Postmortem. *American Journal of International Law*, 104(2), 230–240. <https://doi.org/10.5305/amerjintelaw.104.2.0230>.
90. Bodansky, D. (2016). The Paris Climate Change Agreement: A New Hope? *American Journal of International Law*, 110(2), 288–319. <https://doi.org/10.5305/amerjintelaw.110.2.0288>.
91. *Bank of England investigating risk of carbon bubble.* (2014 December 1). CBC. <https://www.cbc.ca/news/business/bank-of-england-investigating-risk-of-carbon-bubble-1.2856241>.
92. Bainimarama, F. (2017, September 21). Fiji PM Frank Bainimarama's speech to the UNGA—in full. *Climate home*: Available at: <http://www.climatechange-news.com/2017/09/21/fiji-pm-frank-bainimaramas-speech-to-theunga-in-full/>.
93. Boston, J. (2008). Global climate change policies: from Bali to Copenhagen and beyond. *Policy Quarterly*, 4(1). <https://doi.org/10.26686/pq.v4i1.4247>.
94. Boute, A. (2016). The Rio Declaration on Environment and Development: A Commentary. By Jorge E. Viñuales (ed.) [Oxford: Oxford University Press, 2015. 665 + liii pp. Hardback £120. ISBN 9780199686773.]. *The Cambridge Law Journal*, 75(1), 166–169. <https://doi.org/10.1017/s0008197316000039>.
95. Bracking, S. (2014). The Anti-Politics of Climate Finance: The Creation and Performativity of the Green Climate Fund. *Antipode*, 47(2), 281–302. <https://doi.org/10.1111/anti.12123>.
96. Buszko-Briggs, M. (2021). *Implementing Article 5 of the Paris Agreement and Achieving Climate Neutrality Through Forests: From COFO24 To COP24 | REDD+ Reducing Emissions from Deforestation and Forest Degradation*. Food and Agriculture Organization of The United Nations. Fao.Org. <http://www.fao.org/redd/news/detail/en/c/1146132/>
97. Bradford, C., Linn, J. (2012). A History of G20 Summits: The Evolving Dynamic of Global Leadership. *Journal of Globalization and Development*, 2(2). <https://doi.org/10.1515/1948-1837.1239>.
98. Braun, W. (2006). *World Health Organization*. Human Rights & Human Welfare.
99. Broberg, M., Romera, B. (2020). Loss and damage after Paris: more bark than bite. *Climate Policy*. 20(6), 661–668. doi: 10.1080/14693062.2020.1778885.
100. Brulé, D; Mintz, A; DeRouen, K. (2013). *Political Leadership and Decision Analysis*. Oxford University Press.
101. Brunnee, t., Doelle, I., Rajamani, v. (2012). *Promoting compliance in an evolving climate regime*. Cambridge University Press.

102. Bulkeley, H., Newell, P. (2015). *Governing Climate Change (2nd Edition)*. Routledge. doi: 10.4324/9781315758237.
103. Bustos, E., Vicuna, S. (2016). Decision Making and Adaptation Processes to Climate Change. *Ambiente & Sociedade*, 19(4), 215–234. <https://doi.org/10.1590/1809-4422asocex0004v1942016>.
104. *Carbon Tracker Initiative*. (2020 October 30). <https://carbontracker.org/about/>.
105. *Climate Change Topics*. (2020). IEA. <https://www.iea.org/topics/climate-change>. <https://www.ilo.org/global/topics/green-jobs/areas-of-work/climate-change/lang-n/index.htm>.
106. Cochrane, K; Bahri, T. (2009). Climate Change implications for fisheries and aquaculture: overview of current scientific knowledge., *FAO Fisheries and Aquaculture Technical Paper*, No. 530. UNEP. The climate change fact sheet.
107. *Concept note: LCIPP workplan activity 7 Climate change policies and actions: Mapping existing policies and practices for participation*. (2021 January 25). Local Communities and Indigenous Peoples Platform, Concept note for LCIPP activity 07, version of April 2020\_0.pdf (unfccc.int).
108. *Cooperative Action under Article 6 - Carbon Mechanisms*. (2021). Federal Ministry for Economic Affairs and Climate Action (BMWK), <https://www.carbon-mechanisms.de/en/introduction/the-paris-agreement-and-article-6>.
109. *COP21 Climate Agreement – Moving Towards Healthier People and a Healthier Planet*. (2015 December 15). WHO, United Nations Development Program.
110. *COP22-Focus on National Adaptation Plans (Naps)*. (2018 November 21). United Nations Development Program. <https://www.adaptation-undp.org/cop22-focus-national-adaptation-plans-naps>.
111. *COP22 in Marrakesh: Moving Together, but NOT Fast and Aggressive Enough to Deliver for the Poorest*. (2021). CARE Climate change. COP22-judgement-paper.pdf (careclimatechange.org).
112. *COP22: Strengthening the World's Response to Climate Change*. (2016). KPMG International. <https://home.kpmg/content/dam/kpmg/xx/pdf/2016/11/cop22-strengthening-the-worlds-response-to-climate-change.PDF>.
113. *COP25: Discussing opportunities for improved land use management to achieve climate action*. (2019 December 18). United Nations development program. <https://www.adaptation-undp.org/cop25-discussing-opportunities-improved-land-use-management-achieve-climate-action>.
114. Cogswell, N., Dagnet, Y. (2019). *Why Does the Paris Climate Agreement Need a Rulebook? 7 Questions and Answers*. World Resources Institute. Retrieved from <https://www.wri.org/blog/2019/06/why-does-paris-climate-agreement-need-rulebook-7-questions-and-answers>.

## Bibliography

115. Chu, E. (2011). *With nations lagging, cities take the lead in adapting to climate change*. International Institute for Environment and Development. <https://www.iied.org/nations-lagging-cities-take-lead-adapting-climate-change>.
116. C40 Cities Climate Leadership Group (C40). (2020 November 9). Climate Initiatives-Platform. [http://climateinitiativesplatform.org/index.php/C40\\_Cities\\_Climate\\_Leadership\\_Grou](http://climateinitiativesplatform.org/index.php/C40_Cities_Climate_Leadership_Grou).
117. *Capacity building on climate change adaptation*. (2021 April 1). <https://climate-adapt.eea.europa.eu/metadata/adaptation-options/capacity-building-on-climate-change-adaptation>.
118. *Capacity-building (Article 11, Paris Agreement, Climatic Change)*. (2018 April 6). Lewik. <https://www.lewik.org/term/11981/capacity-building-article-11-paris-agreement-climatic-change/>.
119. Canada's submission on APA Item 3. (2017). *Features, up-front information & accounting for Nationally Determined Contributions (NDCs)*. 175\_321\_131354641033598304-canada\_submission\_on\_apa\_item\_3\_[english].pdf (unfccc.int).
120. Center for Climate and Energy Solutions. (2011). *Outcomes of the U.N. Climate Change Conference in Durban, South Africa*. Arlington.
121. Center for Climate and Energy Solutions. (2014). *Outcomes of the U.N. Climate Change Conference in Lima*.
122. Center for climate and energy solutions. (2017). *Outcomes of the U.N. Climate Change Conference in Bonn*. <https://www.c2es.org/content/cop-23-bonn/>.
123. Campbell, B., Vermeulen, S., Aggarwal, P., Corner-Dolloff, C., Girvetz, E., Loboguerrero. (2016). Reducing risks to food security from climate change. *Global Food Security*, 11, 34–43. <https://doi.org/10.1016/j.gfs.2016.06.002>.
124. Campbell, D. (2013). After Doha: What Has Climate Change Policy Accomplished? *Journal of Environmental Law*, 25(1), 125–136. <https://doi.org/10.1093/jel/eqt001>.
125. Campbell-Durufilé, C. (2018). Accountability or Accounting? Elaboration of the Paris Agreement's Implementation and Compliance Committee at cop23. *Climate Law*, 8(1–2), 1–38. <https://doi.org/10.1163/18786561-00801001>.
126. Campbell-Durufilé, C. (2018). Clouds or Sunshine in Katowice? Transparency in the Paris Agreement Rulebook. *Carbon Climate Law Review*, 12(3), 209–217. <https://doi.org/10.21552/cclr/2018/3/7>.
127. Cantonati, P., Pringle, S., Turak, H. (2020). Characteristics, Main Impacts, and Stewardship of Natural and Artificial Freshwater Environments: Consequences for Biodiversity Conservation. *Water*, 12(1), 260. <https://doi.org/10.3390/w12010260>.
128. Cashman, K., Rust, A. (2019). Far-traveled ash in the past and future eruptions: combining tephrochronology with volcanic studies. *Journal of Quaternary Science*, 35(1–2), 11–22. <https://doi.org/10.1002/jqs.3159>.

129. Castillo Esparcia, A., López Gómez, S. (2021). Public Opinion about Climate Change in United States, Partisan View, and Media Coverage of the 2019 United Nations Climate Change Conference (COP25) in Madrid. *Sustainability*, 13(7), 3926. <https://doi.org/10.3390/su13073926>.
130. Chai, Q., Fu, S., Xu, H., Zhong, Y. (2017). The gap report of global climate change mitigation, finance, and governance after the United States declared its withdrawal from the Paris Agreement. *Chinese Journal of Population Resources and Environment*, 15(3), pp. 196–208.
131. Chan, S., Boran, I., Asselt, H., Ellinger, P., Garcia, M., Hale, T. (2021). Climate Ambition and Sustainable Development for a New Decade: A Catalytic Framework. *Global Policy*, 12(3), 245–259. doi: 10.1111/1758-5899.12932.
132. Chan, S., Ellinger, P., Widerberg, O. (2018). Exploring national and regional orchestration of non-state action for a < 1.5 °C world. *International Environmental Agreements: Politics, Law, and Economics*, 18(1), 135–152. <https://doi.org/10.1007/s10784-018-9384-2>.
133. Charnock, R., Hoskin, K. (2020). SDG 13 and the entwining of climate and sustainability met governance: an archaeological–genealogical analysis of goals-based climate governance. *Accounting, Auditing & Accountability Journal*, 33(7), 1731–1759. <https://doi.org/10.1108/aaaj-12-2018-3790>.
134. Chen, C., Gütschow, J., Vieweg, M., Macey, K., Schaeffer, M. (2013). Impact of the Doha outcome on surplus emission allowances and their effect on developed state emissions. *Climatic Change*, 120(4), 845–857. <https://doi.org/10.1007/s10584-013-0841-1>.
135. Chow, J. (2003). Energy Resources and Global Development. *Science*, 302(5650), 1528–1531. Doi: 10.1126/science.1091939.
136. Christoff, P. (2016). The promissory note: COP21 and the Paris Climate Agreement. *Environmental Politics*, 25(5), 765–787. <https://doi.org/10.1080/09644016.2016.1191818>.
137. Clarke, G. (1998). Non-Governmental Organizations (NGOs) and Politics in the Developing World. *Political Studies*, 46(1), 36–52. <https://doi.org/10.1111/1467-9248.00128>.
138. Cunniah, D. (2010). Climate change and labour: The need for a just transition. (2010). *International Journal of Labour Research*, 2(2). doi: 2076-9806.
139. Cochran, I., Pauthier, A. (2019). A Framework for Alignment with the Paris Agreement: Why, What and How for Financial Institutions? *Climate Policy Initiative*.
140. Coddington, K. (2019). Status of Article 6 Market Mechanisms under the Paris Agreement. United States: Center for Energy Regulation & Policy Analysis. <https://www.linkedin.com/pulse/status-article-6-market-mechanisms-under-paris-kipp-coddington>.

## Bibliography

141. Cole-Dai, J. (2010). Volcanoes and climate. *Wiley Interdisciplinary Reviews: Climate Change*, 1(6), 824–839. Doi: 10.1002/wcc.76.
142. Cooper, M. (2018). Governing the global climate commons: The political economy of state and local action, after the U.S. flip-flop on the Paris Agreement. *Energy Policy*, 118, 440–454. <https://doi.org/10.1016/j.enpol.2018.03.037>.
143. Cordonier Segger, M. (2016). Advancing the Paris Agreement on Climate Change for Sustainable Development. *Cambridge International Law Journal*, 5 (2): 202–237. doi:10.4337/cilj.2016.02.03.
144. Cross, M. (2012). Rethinking epistemic communities twenty years later. *Review of International Studies*, 39(1), 137–160. <https://doi.org/10.1017/s0260210512000034>.
145. Cross, M. (2018). Partners in Paris? Climate negotiations and transatlantic relations. *Journal of European Integration*, 40(5), 571–586. <https://doi.org/10.1080/07036337.2018.1487962>.
146. Cross, Maiia K. D. (2012). Rethinking Epistemic Communities Twenty Years Later. *Review of International Studies*, 39 (1): 137–160. doi:10.1017/s0260210512000034.
147. Cui, L., Gui, H. (2015). Sharing the burden of financing the green climate fund in the post-Kyoto era. *International Journal of Climate Change Strategies and Management*, 7(2), 206–221. <https://doi.org/10.1108/ijccsm-11-2013-0125>.
148. Cui, L., Huang, Y. (2018). Exploring the Schemes for Green Climate Fund Financing: International Lessons. *World Development*, 101, 173–187. <https://doi.org/10.1016/j.worlddev.2017.08.009>.
149. Cui, L., Zhu, L., Springmann, M., Fan, Y. (2014). Design and analysis of the green climate fund. *Journal of Systems Science and Systems Engineering*, 23(3), 266–299. <https://doi.org/10.1007/s11518-014-5250-0>.
150. Climate Action in Financial Institutions Initiative. (2017 April 13). *COP25 Round-up: Negotiations stall, but financial institutions set high climate ambitions for 2020*. <https://www.mainstreamingclimate.org/cop25-roundup/>.
151. Climate Analytics. (2019). *Greenhouse gas accounting Metrics under the Paris Agreement*.
152. Climate Finance in the Negotiations. (2021). UNFCCC. Int. <https://unfccc.int/topics/climate-finance/the-big-picture/climate-finance-in-the-negotiations>.
153. *COP26 summary report*. (2021). IETA. <https://www.ieta.org/resources/Resources/COP/COP26-Summary-Report.pdf>.
154. Cameron, E. (2012). *What Is Equity in the Context of Climate Negotiations?* World Resources Institute. <https://www.wri.org/blog/2012/12/what-equity-context-climate-negotiations>.
155. Climate Finance Strategy. (2019). *Melanesian Spearhead Group*, [Msgsec.info](http://msgsec.info). [MSG-Climate-Finance-Strategy-2019-2021.pdf](http://msgsec.info/MSG-Climate-Finance-Strategy-2019-2021.pdf) (msgsec.info).

156. *Climate Change Realities in Small Island Developing States in the Caribbean*. (2017). Frankfurt: Internationale Zusammenarbeit (GIZ). giz2021\_Grenada-Study.pdf.
157. Climate focus. (2016). *Loss and Damage in the Paris Agreement*.
158. *Climate negotiations in Madrid: COP25 made a splash*. (2020 July 2). Ocean Literacy Portal.<https://oceanliteracy.unesco.org/climate-negotiations-in-madrid-op25-made-a-splash/>.
159. *Climate negotiations: If we fail in Lima, we will fail in Paris*. Under2 Coalition. (2014 November 7). <https://www.under2coalition.org/news/climate-negotiations-if-we-fail-lima-we-will-fail-paris>.
160. *Causes of Climate Change*. (2019 October 19). Climate Science Investigations (<http://www.ces.fau.edu/nasa/module-4/causes-2.php>).
161. *Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC)*. (2021 Mrach 4). Climate Nexus.<https://climatenexus.org/climate-change-news/common-but-differentiated-responsibilities-and-respective-capabilities-cbdr-rc/>.
162. *Common metrics*. Unfccc.int. (2021 June 29). <https://unfccc.int/process-and-meetings/transparency-and-reporting/methods-for-climate-change-transparency/common-metrics>.
163. *Common time frames for nationally determined contributions referred to in Article 4, paragraph 10, of the Paris Agreement*. (2019). Unfccc.int. <https://unfccc.int/sites/default/files/resource/IN.SBI51.i5.pdf>.
164. *COP15 Copenhagen*. (2019). Center for Climate and Energy Solutions. <https://www.c2es.org/content/cop-15-copenhagen/>.
165. *COP22*. (2021). UNFCCC. Int.<https://unfccc.int/process-and-meetings/conferences/past-conferences/marrakech-climate-change-conference-november-2016/cop-22>.
166. *COP25: Tracking progress on the path to implementing the Paris Agreement*. Environmental Defense Fund. (2019 November 27). <https://www.edf.org/climate/implementing-paris-climate-agreement>.
167. *COP23 roundup: the outcomes and implications for climate adaptation*. (2017 November 17). MARCO.<http://marco-h2020.eu/2017/12/12/cop23-roundup-the-outcomes-and-implications-for-climate-adaptation/>.
168. *COP22 Marrakech*. (2016). 22Nd Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change. Center for climate and energy solution. <https://www.c2es.org/content/cop-22-marrakech/>.
169. Corsi, G. (2018). *COP23: A Critical Assessment of the Conference's Outcomes*. The Climate Institute|COP23. <http://climate.org/wp-content/uploads/2018/01/Corsi-COP23.pdf>.

## Bibliography

170. Chen, H. (2016). *Getting The Unthred States to Net-Zero Emissions*. NRDC. <https://www.nrdc.org/experts/han-chen/getting-united-states-net-zero-emissions>.
171. *Causes of climate change*. (2019 October 19). <http://edugreen.teri.res.in/explore/climate/causes.htm>.
172. *COP25: A happy Koronivia family*. (2019 July 1). <https://www.nfuonline.com/cross-sector/environment/climate-change/climate-change-news/cop25-a-happy-koronivia-family/>.
173. *COP25: Key outcomes agreed at the UN climate talks in Madrid*. (2019 December 15). Carbon Brief. <https://www.carbonbrief.org/cop25-key-outcomes-agreed-at-the-un-climate-talks-in-madrid>.
174. Carmichael, L., Pigman, A. (2017 May 31). *EU, China summit to back climate deal even without the US: EU official*. Phys. <https://phys.org/news/2017-05-eu-china-summit-climate.html>.
175. Costello, A., Abbas, M., Allen, A., Ball, S., Bell, S., Bellamy, R; Friel, S. (2009). *Managing the Health Effects of Climate Change*. Lancet and University College London Institute for Global Health Commission.
176. Chien Te, F. (2018). *Will the Paris Agreement Provide Positive or Negative Outcomes for Developing Countries?*, Institute of Law for Science & Technology.
177. Cooke, L. (2020). Resources: Climate crisis. *Gender & Development*, 28(3), 637–654. <https://doi.org/10.1080/13552074.2020.1832388>.
178. Chan, Ch., Mogelgaard, K. (2017). *At COP23, Prioritizing Adaptation and Addressing Loss and Damage*. World Resources Institute. <https://cop23.com.fj/mitigation-adaptation-resilience/>.
179. Corfee-Morlot, J., Colenbrander, S., Garrido, L., Haddaoui, C. (2018). *Unlocking the Inclusive Growth Story of the 21st Century: Accelerating Climate Action in Urgent Times*. New Climate Economy c/o World Resources Institute.
180. De Lassus Saint-Geniès, G. (2018). *Article 6.2 of the Paris Agreement*. Centre for International Governance Innovation.
181. *Draft conclusions proposed by the chair, FCCC/SBSTA/ 2017/L.27*. (2017).
182. *Designing and Preparing Intended Nationally Determined Contributions*. (2016). USA: World Resources Institute.
183. Division for Sustainable Development United Nations Department of Economic and Social Affairs. (2015). *17 sustainable development goals*. <http://sustainabledevelopment.un.org/contact>.
184. *Durban8th Forum on Capacity-building*. (2021 April 5). UNFCCC. <https://unfccc.int/8th-durban-forum>.

185. Doukas, H., Nikas, A., González-Eguino, M., Arto, I., Anger-Kraavi, A. (2018). From Integrated to Integrative: Delivering on the Paris Agreement. *Sustainability*, 10(7), 2299. doi: 10.3390/su10072299.
186. DellaSala, A., Goldstein M. (2018). *Encyclopedia of the Anthropocene*. Elsevier.
187. Dagnet, Y., Waskow, D. (2020). *Executive Summary of the New Climate Economy*. Better Growth, Better Climate the New Climate Economy Report. ://www.newclimateeconomy.report.
188. Dupin, L. (2017). *Financial Hurdles Strain COP23 Climate Negotiations in Bonn*.<https://www.novethic.com/sustainable-finance/isr-rse/financial-hurdles-strain-cop23-climate-negotiations-in-bonn-145102.html>.
189. Dagnet, Y., Anderson, J. (2019). How Will the Paris Agreement's Global Stocktake Work?, *World Resource Institute*. <https://www.wri.org/insights/how-will-paris-agreements-global-stocktake-work>.
190. Duyck, S., Lador, Y. (2016). Human Rights and International Climate Politics- Human Rights into Climate Actions After Paris: Opportunities for the UNFCCC, the Human Rights Institutions, and the G-20, SSRN.
191. Denis, B., Herrera Rodriguez, M. (2017). *Involving Trade Unions in Climate Action to Build a Just Transition*. Syndicat European Trade European. Final FUPA Guide\_EN.pdf (etuc.org).
192. De Coninck, H., Ambuj, S. (2015). *Technology in the 2015 Paris Climate Agreement and Beyond*. International Centre for Trade and Sustainable Development (ICTSD) International Environment.
193. Dröge, S., Rattani, V. (2018). *International Climate Policy Leadership after COP23*. German Institute for International and Security Affairs.
194. De Sola Pueyo, J. (2020). *La cobertura de la Cumbre del Clima Chile Madrid COP25 en los informativos de la radio española*. *Adcomunica. Revista Científica De Estrategias, Tendencias E Innovación En Comunicación*, (20), 205–230. <https://doi.org/10.6035/2174-0992.2020.20.9>.
195. Duyck, S. (2018). *Promoting Public Participation in Climate Action: Not Just Good Practice, but a Legal Duty of European Governments*, Center for International Environmental Law. <https://www.ciel.org/promoting-public-participation-climate-action-legal-duty/>.
196. D. Tiernan, S., Morley, M. (2013). *Modern Management Theory and Practice for Students in Ireland* (4th ed). Gill Education.
197. Darrach, J. (2011). *The Role of Youth in Climate Negotiations: An Exploratory Study into the Effects of Constituency Status on Youth Participation in the UNFCCC*. Master of Science dissertation, Lund University Center for Sustainability Studies.

## Bibliography

198. Davidson, K., Gleeson, B. (2015). Interrogating Urban Climate Leadership: Toward a Political Ecology of the C40 Network. *Global Environmental Politics*, 15(4), 21–38. [https://doi.org/10.1162/glep\\_a\\_00321](https://doi.org/10.1162/glep_a_00321).
199. Davies, T. (2014). *NGOs: A New History of Transnational Civil Society*. Oxford Univ. Press.
200. De Águeda Corneloup, I., Arthur, P. J. Mol. (2013). Small Island Developing States and International Climate Change Negotiations: The Power of Moral “Leadership”. *International Environmental Agreements: Politics, Law, and Economics* 14 (3): 281–297. doi:10.1007/s10784-013-9227-0.
201. De Leo, G., Levin, S. (1997). The Multifaceted Aspects of Ecosystem Integrity. *Conservation Ecology*, 1(1). doi: 10.5751/es-00022-010103.
202. De Voogt, D. (2017). Adaptation In Gloinl Climate Governance: Linkages Between Intergovernmental Dialogue Forums and The UNFCCC Regarding Adaptation. *Science for Sustainability Journal*.
203. Dehm, J. (2020). Climate change, ‘slow violence’ and the indefinite deferral of responsibility for ‘loss and damage’. *Griffith Law Review*, 29(2), 220–252. <https://doi.org/10.1080/10383441.2020.1790101>.
204. Del Castillo, T. (2010). Revisiting the External Dimension of the Environmental Policy of the European Union: Some Challenges Ahead. *Journal for European Environmental & Planning Law*, 7(4), 365–390. <https://doi.org/10.1163/161372710x543217>.
205. Delreux, T. (2006). The European Union in international environmental negotiations: a legal perspective on the internal decision-making process. *International Environmental Agreements: Politics, Law, and Economics*, 6(3), pp. 231–248.
206. Depledge, J. (2008). Crafting the Copenhagen Consensus: Some Reflections. *Review of European Community & International Environmental Law*, 17(2), 154–165. <https://doi.org/10.1111/j.1467-9388.2008.00595.x>.
207. Depledge, J. (2016). *The Organization of Global Negotiations* (1ed.). Routledge.
208. Dernbach.(2003). Achieving Sustainable Development: Centrality and Multiple Facets of Integrated Decision-making. *Indiana Journal of Global Legal Studies*, 10(1).
209. Diaz-Sarachaga, J., Jato-Espino, D., Castro-Fresno, D. (2018). Is the Sustainable Development Goals (SDG) index an adequate framework to measure the progress of the 2030 Agenda. *Sustainable Development*, 26(6), 663–671. <https://doi.org/10.1002/sd.1735>.
210. Dilip R, L., Zhu, X. (2012). *Accessing International Financing for Climate Change Mitigation – A Guidebook for Developing Countries*. UNEP Risø Centre on Energy, Climate and Sustainable Development. <http://www.uneprisoe.org/>.

211. Dimitrov, R. (2010). Inside UN Climate Change Negotiations: The Copenhagen Conference. *Review of Policy Research*, 27(6), 795–821. <https://doi.org/10.1111/j.1541-1338.2010.00472.x>.
212. Dimitrov, R. (2016). The Paris Agreement on Climate Change: Behind Closed Doors. *Global Environmental Politics*, 16(3), 1–11. [https://doi.org/10.1162/glep\\_a\\_00361](https://doi.org/10.1162/glep_a_00361).
213. Ding, D., Maibach, E., Zhao, X., Roser-Renouf, C., Leiserowitz, A. (2011). Support for climate policy and societal action are linked to perceptions about scientific Agreement. *Nature Climate Change*, 1(9), 462–466. <https://doi.org/10.1038/nclimate1295>.
214. Dalkmann, H., Brannigan, C. (2010). *Transport and climate change, Bonn: Division 44, water, energy, transport TSO (The Stationery Office)*. Beyond Copenhagen: The UK Government's International Climate Change Action Plan. London: Department of Energy and Climate Change.
215. Diniz Oliveira, T., Costa Gurgel, A., Tonry, S. (2019). International market mechanisms under the Paris Agreement: A cooperation between Brazil and Europe. *Energy Policy*, 129, 397–409. <https://doi.org/10.1016/j.enpol.2019.01.056>.
216. Doha Climate Change Conference Adopts Doha Climate Gateway. (2012 December 10). IISD. <http://sdg.iisd.org/news/doha-climate-change-conference-adopts-doha-climate-gateway/>.
217. Dornburg, V., Faaij, A., Patel, M., Turkenburg, W. (2006). Economics and GHG emission reduction of a PLA bio-refinery system—combining bottom-up analysis with price elasticity effects. *Resources, Conservation and Recycling*, 46(4), 377–409. <https://doi.org/10.1016/j.resconrec.2005.08.006>.
218. Dotto, V., Oakes, A. (2019). The Environment, a Bipartisan Issue? Partisanship Polarization and Climate Change Policies in the United States. *British Journal of American Legal Studies*, 8(3), 483–506. <https://doi.org/10.2478/bjals-2019-0017>.
219. Dutt, G. (2009). A Climate Agreement Beyond 2012. *Economic and Political Weekly*, 44 (45).
220. Erbach, G. (2019). *COP24 climate change conference: Outcomes*. European Parliamentary Research Service . Retrieved from [https://www.europarl.europa.eu/RegData/etudes/ATAG/2019/633139/EPRS\\_ATA\\_\(2\)](https://www.europarl.europa.eu/RegData/etudes/ATAG/2019/633139/EPRS_ATA_(2)).
221. Evans, S., Gabbatiss, J. (2019). COP25: Key outcomes agreed at the UN climate talks in Madrid. *Climate diplomacy*.
222. Elliott, C., Levin, K., Thwaites, J., Mogelgaard, K., Dagnet, Y. (2017). *Designing the Enhanced Transparency Framework Part 1: Reporting under the Paris Agreement*. World Resources Institute.

## Bibliography

223. Environmental issues of chapter of an authored book (Baylis, S. Smith and P. Owens, 2019, chapter 24 by John Vogler ).
224. Egenhofer, C., Georgiev, A. (2009). *The Copenhagen Accord is a first stab at deciphering the implications for the EU*. CEPS.CE and AG on Copenhagen formatted.pdf (ceps.eu).
225. Ernst Young organization. (2020). *Durban dynamics: navigating for progress on climate change*. Durban dynamics - navigating for progress on climate change.pdf (compromisorse.com).
226. *European Bank for Reconstruction and Development (EBRD)*. (2015 July 9). Green Climate Fund. <https://www.greenclimate.fund/ae/ebrd>.
227. Earth Negotiations Bulletin a Reporting Service for Environment and Development Negotiations. (2019). *Summary of the Chile/Madrid Climate Change Conference: 2-15 December 2019*. <https://s3.us-west.amazonaws.com/enb.iisd.org/archive/download/>.
228. Earth Negotiations Bulletin. (2012). *Summary of the Doha Climate Change Conference*. International Institute for Sustainable Development. <http://www.iisd.ca/climate/cop18/enb/>.
229. Earth Negotiations Bulletin. (2014). *Summary of the Lima Climate Change Conference: 1-14 December 2014*. International Institute for Sustainable Development. Retrieved from <http://www.iisd.ca/climate/cop20/enb/>.
230. Earth negotiations Bulletin. (2021). *Highlights and images of main proceedings for 14 November 2017*. <https://enb.iisd.org/events/excellence-climate-adaptation/highlights-and-images-main-proceedings>.
231. Executive Office of the President. (2013). *The Presidents Climate Action Plan*. Washington: The White House.
232. Erbach, G. (2016). *The Paris Agreement a New Framework for Global Climate Action*. European Parliamentary Research Service.
233. Elbehri, A., Alexandre, G., Burfisher, M. (2011). *Global Action on Climate Change in Agriculture: Linkages to Food Security, Markets and Trade Policies in Developing Countries*. FAO.
234. Eckstein, D., Grimm, J., Grüning, C., Harmeling, S., Henriette, I., Köhler, M., Pandit, Raju. (2016). *CFAS Climate Finance Guide: COP22 Marrakech*. Climate finance and advisory service. 2016 CFAS Climate Finance Guide\_final.pdf.
235. Elliott, C., Yamide, D., Thwaites, J., Northrop, E. (2016). *Spirit of Paris Motivates Climate Negotiations in Marrakech*. World Resources Institute. <https://www.wri.org/insights/spirit-paris-motivates-climate-negotiations-marrakech>.

236. Erbach, G. (2016). *Outcomes of COP22 Climate Change Conference*. European Parliamentary Research Service. <https://epthinktank.eu/2016/11/24/outcomes-of-cop-22-climate-change-conference/>.
237. *European Commission - European Commission*. (2011 November 24). Press corner. [https://ec.europa.eu/commission/presscorner/detail/en/MEMO\\_11\\_825](https://ec.europa.eu/commission/presscorner/detail/en/MEMO_11_825).
238. Echeverría, D., Gass, P. (2014). *The United States and China's New Climate Change Commitments: Elements, implications, and reactions*. Canada: The International Institute for Sustainable Development. <http://www.iisd.org>.
239. Ersin, M. (2018). *The Role of Non-State Actors in Climate Negotiations*. <https://www.aa.com.tr/en/energy/analysis/the-role-of-non-state-actors-in-climate-negotiations/18711>.
240. Elliott, K. (2020). A taxonomy of Transparency in Science. *Canadian Journal of Philosophy*, 1–14. <https://doi.org/10.1017/can.2020.21>.
241. Etchart, L. (2017). The Role of Indigenous Peoples in Committing Climate Change. *Palgrave Communications* 3 (1). doi:10.1057/palcomms.2017.85.
242. Forests and Land Use in the Paris Agreement. (2015). Climate Focus Client Brief on the Paris Agreement. <https://www.climatefocus.com/sites/default/files/20151223%20Land%20Use%20an>.
243. *Fiji Clearing House for Risk Transfer*. (2021 March 27). <http://unfccc-clearinghouse.org/about-us>.
244. Fuhr, L., Schalatek, L., Santos, M. (2014 November 14). *COP20: Lima | Heinrich Böll Stiftung*. Heinrich-Böll-Stiftung. <https://www.boell.de/en/2014/12/16/lima-languishing>.
245. FCCC/SBSTA/2017/L.26 (2017). *Guidance on cooperative approaches referred to in Article 6(2) of the Paris Agreement*. Draft conclusions proposed by the chair, Rules, modalities, and procedures for the mechanism established by art 6(4) of the Paris Agreement. file:///C:/Users/admin/Downloads/l26.pdf.
246. *First ever Social Pre COP on Climate Change delivers strong messages from civil society in the run-up to Lima*. (2014 November 13). Climate Summit - IBON International. <https://iboninternational.org/2014/11/13/first-ever-social-precop-on-climate-change-delivers-strong-messages-from-civil-society-in-the-run-up-to-lima-climate-summit/>.
247. Forde, J., Sidney Sayers, R., Harold Clapham, J. (1992). *The Bank of England and Public Policy, 1941–1958*.
248. Fuel for Thought: Mid-August from Mid-November 2012 to January 2013. (2013). *Energy & Environment*, 24(1–2), 219–313. <https://doi.org/10.1260/0958-305x.24.1-2.219>.

## Bibliography

249. Fuessler, J., Kohli, A., Spalding-Fecher, R., Broekhoff, D. (2019). *Article 6 in the Paris Agreement as an ambition mechanism Options and recommendations*. Swedish Energy Agency.
250. *Foreign Affairs Council configuration (FAC)*. (2020). Consilium.europa.eu. <https://www.consilium.europa.eu/en/council-eu/configurations/fac/>.
251. *Foreign Affairs Council. EEAS - European External Action Service - European Commission*. (2016). EU Website. [https://eeas.europa.eu/diplomatic-network/foreign-affairs-council/2083/foreign-affairs-council\\_en](https://eeas.europa.eu/diplomatic-network/foreign-affairs-council/2083/foreign-affairs-council_en).
252. Florides, G., Christodoulides, P., Messaritis, V. (2013). *Global Warming and Natural Forcing Factors*. Conference Cyprus University of Technology.
253. Finiguerra, A. (2017). *Paris 2015 COP21: The Role of Non-Governmental Actors in Shaping the International Politics of Climate Change*. Master dissertation, Libera Department of Political Sciences Chair in Political Sociology.
254. Fabius, L., Ki-Moon, B., Figueres, C., Pulgar-vidal, M., Royal, S. (2014). *LPAA Key Issues. Major Economies Forum on Energy and Climate*, Open Energy Information. Openei.Org. [https://openei.org/wiki/Major\\_Economies\\_Forum\\_on\\_Energy\\_and\\_Climate](https://openei.org/wiki/Major_Economies_Forum_on_Energy_and_Climate).
255. FAO. (2015). *Climate change and food security: risks and responses*. <https://www.fao.org/3/i5188e/I5188E.pdf.m>.
256. Farber, D., Peeters, M. (2016). *Climate change law* (1st ed.). Edward Elgar. <https://www.e-elgar.com/shop/gbp/climate-change-law-9781783477609.html>.
257. Fekete, A., Sakdapolrak, P. (2014). Loss and Damage as an Alternative to Resilience and Vulnerability? Preliminary Reflections on an Emerging Climate Change Adaptation Discourse. *International Journal of Disaster Risk Science*, 5(1), 88–93. doi: 10.1007/s13753-014-0012-7.
258. Feldman, D. (1991). International decision making for global climate change. *Society & Natural Resources*, 4(4), pp. 379–396.
259. Ferris, E. (2020). Research on climate change and migration where are we and where are we going?. *Migration Studies*, 8(4), 612–625. <https://doi.org/10.1093/migration/mnaa028>.
260. *From Paris to Marrakech – global climate change action at COP22*. (2016 November 14). <https://research.senedd.wales/research-articles/from-paris-to-marrakech-global-climate-change-action-at-cop-22/>.
261. Field, C., Barros, V., Dokken, D., Mach, K., Mastrandrea, M. (2015). New York, NY, USA: Cambridge University Press.
262. Frey, H., Huggel, Ch., Steinemann, M. (2016). The El Niño phenomenon and related impacts. Nexus Brief. <https://www.shareweb.ch/site/Climate-Change-and-environment/Pages/%C2%B0.aspx>.

263. Florini, A., Sovacool, B. (2009). Who governs energy? The challenges facing global energy governance. *Energy Policy*, 37(12), 5239–5248. <https://doi.org/10.1016/j.enpol.2009.07.039>.
264. French, D. (1998). Kyoto Protocol to the United Nations Framework Convention on Climate Change. *Journal of Environmental Law*, 10(1), 215–224. <https://doi.org/10.1093/jel/10.1.215>.
265. Fridahl, M., Linnér, B. (2015). Perspectives on the Green Climate Fund: possible compromises on capitalization and balanced allocation. *Climate and Development*, 8(2), 105–109. <https://doi.org/10.1080/17565529.2015.1040368>.
266. Füssel, H. (2009). An updated assessment of the risks from climate change based on research published since the IPCC Fourth Assessment Report. *Climatic Change*, 97(3–4), 469–482. <https://doi.org/10.1007/s10584-009-9648-5>.
267. Fernández, L., Pergolini, G. (2021). *Outcomes of the Climate Change Conference (COP25) – Overview*. UNFCCC. <https://docs.wfp.org/api/documents/22331605ee2e4906946cf4eaedf1e8c6/down>.
268. Freedom, K., DE Lassus Saint-Genies, G. (2017 November 6). *Bonn Climate Conference: What Issues Are Key for COP23?*. Centre for International Governance Innovation. <https://www.cigionline.org/articles/bonn-climate-conference-what-issues-are-key-cop23-1/>.
269. Gupta, J., Yanne G. (2008). *Engaging Developing Countries in Climate Change Negotiations*. European Parliament's Temporary Committee on Climate Change.
270. *Global Meeting on Long-Term Low Emissions and Development Strategies (LT-LEDS)*. (2021). UNFCCC. Int. <https://unfccc.int/topics/mitigation/events-meetings/global-meeting-on-long-term-low-emissions-and-development-strategies/global-meeting-on-long-term-low-emissions-and-development-strategies-lt-leds>.
271. Global Commission on the Economy and Climate (2020 November 8). *SEI*. <https://www.sei.org/projects-and-tools/projects/global-commission-on-the-economy-and-climate/>.
272. Galarraga, I., González-Eguino, M., Markandya, A. (2011). *The Cancun Climate Summit: A Moderate Success*. BC3 Public policy Briefings. [https://addi.ehu.es/bitstream/handle/10810/14198/BC3\\_PB\\_2011\\_02.pdf?sequence=1](https://addi.ehu.es/bitstream/handle/10810/14198/BC3_PB_2011_02.pdf?sequence=1)
273. Gopalakrishnan, T. (2019 December 14). *Cop25: Marginal Improvements in New Text on Article 6 Sustainable Development Mechanism*. Down to earth /climate change. <https://www.downtoearth.org.in/news/climate-change/cop-25-marginal-improvements-in-new-text-on-article-6-sustainable-development-mechanism-68435>.
274. Grafakos, S. (2020). *GGGI'S Services on Supporting the Development of LT-LEDS*. Global Green Growth Institute. [https://gggi.org/site/assets/uploads/2020/10/LEDS-Brochure\\_27OCT2020.pdf](https://gggi.org/site/assets/uploads/2020/10/LEDS-Brochure_27OCT2020.pdf).

## Bibliography

275. *Global Forum on Sustainable Energy*. (2017). UNFCCC COP23 in Bonn. [https://www.gfse.at/index.php?id=40&tx\\_ttnews%5Btt\\_news%5D=178&cHash=5d6c6fe75b38415466be150ec2eed](https://www.gfse.at/index.php?id=40&tx_ttnews%5Btt_news%5D=178&cHash=5d6c6fe75b38415466be150ec2eed).
276. Godshalk, A., Fallon, S. (2017). *Global Stocktake and Talanoa Dialogue at COP23*. Climate Negotiations. [https://cpb-us-w2.wpmucdn.com/sites.wustl.edu/dist/b/1445/files/2018/06/Global-Stocktake-FD-write-up\\_20180117-1q72vq5.pdf](https://cpb-us-w2.wpmucdn.com/sites.wustl.edu/dist/b/1445/files/2018/06/Global-Stocktake-FD-write-up_20180117-1q72vq5.pdf).
277. Greenbiz. M; Dagnet, J., Ballesteros, A., Anderson, J. (2014 December 15). *7 ways Lima climate talks set the stage for Paris 2015 action*. Greenbiz.com.<https://www.greenbiz.com/article/7-ways-lima-climate-talks-set-stage-paris-2015-action>.
278. Global Carbon Project. (2014). *Global Carbon Budget: Highlights*. <http://www.globalcarbonproject.org/carbonbudget/14/hl-full.htm>.
279. Granat, M., Reyes, E., Burns, B. (2020). *International gender commitments to national action*. European Capacity Building Initiative.
280. Gray, M., Ljungwaldh, S., Watson, L., Kok, I. (2018). *Powering down coal navigating the economic and financial risks in the last years of coal power*. Carbon Tracker. <http://www.carbontracker.org>.
281. Gu, G., Wang, Z. (2018). Research on global carbon abatement driven by R&D investment in the context of INDCs. *Energy*, 148, 662–675. <https://doi.org/10.1016/j.energy.2018.01.142>.
282. Galán-Martín, A., Pozo, C., Azapagic, A., Grossmann, I., Mac Dowell, N., Guillén-Gosálbez, G. (2018). Time for global action: an optimized cooperative approach towards effective climate change mitigation. *Energy & Environmental Science*, 11(3), 572–581. <https://doi.org/10.1039/c7ee02278f>.
283. Gao, S., Smits, M., Mol, A., Wang, C. (2016). New market mechanism and its implication for carbon reduction in China. *Energy Policy*, 98, 221–231. <https://doi.org/10.1016/j.enpol.2016.08.036>.
284. García-Oliva, F., Masera, O. (2004). Assessment and Measurement Issues Related to Soil Carbon Sequestration in Land-Use, Land-Use Change, and Forestry (LULUCF) Projects under the Kyoto Protocol. *Climatic Change*, 65(3), 347–364. <https://doi.org/10.1023/b:clim.0000038211.84327.d9>.
285. Gardiner, S., Thompson, A. (2015). *The Oxford handbook of environmental ethics*. Oxford University.
286. Gewirtzman, J., Natson, S., Richards, J., Hoffmeister, V., Durand, A., Weikmans, R. (2018). Financing loss and damage: reviewing options under the Warsaw International Mechanism. *Climate Policy*, 18(8), 1076–1086. <https://doi.org/10.1080/14693062.2018.1450724>.

287. Gillespie, A. (2003). Sinks and the climate change regime: the state of play. *Duke Environmental Law Policy Forum*. <https://link.springer.com/content/pdf/10.1007/s10784-008-9070-x.pdf>.
288. Gills, B., Morgan, J. (2019). Global Climate Emergency: after COP24, climate science, urgency, and the threat to humanity. *Globalizations*, 17(6), 885–902. <https://doi.org/10.1080/14747731.2019.1669915>.
289. Giuliani, M; Castelletti, A. (2016). Is robustness really robust? How different definitions of robustness impact decision-making under climate change. *Climatic Change*, 135(3–4), pp. 409–424.
290. Glucker, A., Driessen, P., Kolhoff, A., Runhaar, H. (2013). Public participation in environmental impact assessment: why, who and how? *Environmental Impact Assessment Review*, 43, 104–111. <https://doi.org/10.1016/j.eiar.2013.06.003>.
291. Gough, C; Shackley, S. (2001). The Respectable Politics of Climate Change: The Epistemic Communities and NGOs. *International Affairs*, 77 (2): 329–346. doi:10.1111/1468-2346.00195.
292. Gross, C. (2007). Community perspectives of wind energy in Australia: The application of a justice and community fairness framework to increase social acceptance. *Energy Policy*, 35(5), 2727–2736. doi: 10.1016/j.enpol.2006.12.013.
293. Greine, S., Michaelowa, A. (2018). Cooperative approaches under Art. 6.2 of the Paris Agreement. *Climate focus*. <https://www.climatefocus.com/sites/default/files/20180301%20Discussion%20Paper%20-20Cooperative%20Approaches%20consent%20and%20dissens%5B1%5D.pdf>.
294. Grossi, G., Goglio, P., Vitali, A., Williams, A. (2018). Livestock and climate change: impact of livestock on climate and mitigation strategies. *Animal Frontiers*, 9(1), 69–76. Doi: 10.1093/a/vfy034.
295. Guide to Meteorological Instruments and Methods of Observation. (2008). World Meteorological Organization. Geneva. <http://www.wmo.int/>.
296. Gupta, A., Mason, M. (2016). Disclosing or obscuring? The politics of transparency in global climate governance. *Current Opinion in Environmental Sustainability*, 18, 82–90. doi: 10.1016/j.cosust.2015.11.004.
297. Gupta, A., van Asselt, H. (2019). Transparency in Multilateral Climate Politics: Furthering (Or Distracting From) Accountability? *Regulation & Governance* 13. doi:10.1111/rego.12159.
298. Hampton, R. (2014). *Attendance Report from United Nations Climate Change Conference Warsaw 2013: Conference of the Kyoto Agreement Parties (COP19)*. Melbourne: Forest & Wood Products Australia. file:///C:/Users/admin/Downloads/Report\_UN\_Climate\_Change\_Conference\_19\_Warsaw\_2013.pdf.

## Bibliography

299. Hale, T. (2018). *Catalytic cooperation (BSG Working Paper No. 2018/026)*. Blavatnik School of Government, University of Oxford website: <https://www.bsg.ox.ac.uk/sites/default/files/2018-09/BSG-WP-2018-026.pdf>.
300. Hultman, N., Langley, C. (2013 November 27). *Climate Change Negotiations in Warsaw Result in a Timeline for Agreement in 2015*. The Brookings Institution. <https://www.brookings.edu/blog/up-front/2013/11/27/climate-change-negotiations-in-warsaw-result>.
301. Hossain Khan, Z., Pandya, M., Ali, S. (2017). *COP23 Side Event: Strengthening the Paris Agreement Transparency Framework through social accountability tools*. Carbon Market Watch. <https://carbonmarketwatch.org/wp-content/uploads/2017/10/COP23-Transparency-event-report.pdf>.
302. Hub, I. (2018 May 1). *Guest Article: Education, Training and Public Awareness: The Bread and Butter of Capacity Building*. SDG Knowledge Hub | IISD. <https://sdg.iisd.org/commentary/guest-articles/education-training-and-public-awareness-the-bread-and-butter-of-capacity-building/>.
303. *How The United Nations System Supports Ambitious Action on Climate Change*. United Nation Organization. [https://unfccc.int/sites/default/files/hlcp-wgcc-how-the-un-system-supports-ambitious-action-on-climate-change\\_22092014.pdf](https://unfccc.int/sites/default/files/hlcp-wgcc-how-the-un-system-supports-ambitious-action-on-climate-change_22092014.pdf).
304. Hay, W. (1996). Tectonics and climate. *Geologische Rundschau*, 85(3), 409–437. Doi: 10.1007/s005310050086.
305. Hagbrink, I. (2013). *Carbon finance for sustainable development*. Washington, DC: World Bank group.
306. History of Negotiations. (2012). *Work stream on enhancing the ambition pre-2020*. Briefing paper developed by SEAN-CC.
307. History of UN Climate Talks. (2020). *Center for Climate and Energy Solutions*. <https://www.c2es.org/content/history-of-un-climate-talks/>.
308. Hub. (2016). *Marrakech Conference Carries Momentum of Climate Action* | SDG Knowledge Hub | IISD. <http://sdg.iisd.org/news/marrakech-conference-carries-momentum-of-climate-action/>.
309. Haas, P. (2000). International Institutions and Social Learning in the Management of Global Environmental Risks. *Policy Studies Journal*, 28(3), 558–575. <https://doi.org/10.1111/j.1541-0072.2000.tb02048.x>.
310. Hambrey, J. (2020). *The 2030 Agenda and the Sustainable Development Goals: The Challenge for Aquaculture Development and Management*. FAO.
311. Haas, P. (2001). Policy Knowledge: Epistemic Communities. *International Encyclopedia of the Social & Behavioral Sciences*. Elsevier. <https://www.sciencedirect.com/science/article/pii/B0080430767045265?via%3Dihub>.

312. Haas, P. (1992). Introduction: Epistemic Communities and International Policy Coordination. *International Organization* 46 (1): 1–35. doi:10.1017/s0020818300001442.
313. Harrison, K. (1998). Talking with the Donkey: Cooperative Approaches to Environmental Protection. *Journal of Industrial Ecology*, 2(3), 51–72. <https://doi.org/10.1162/jiec.1998.2.3.51>.
314. Hayward, J. (1980). Trade union movements and their politico-economic environments: A preliminary framework. *West European Politics*, 3(1), 1–9. <https://doi.org/10.1080/01402388008424262>.
315. Hoffmeister, V., Averill, M., Huq, S. (2016). *The Role of Universities in Capacity Building under the Paris Agreement*. International Centre for Climate Change and Development (ICCCAD).
316. Headey, D., Ecker, O. (2013). Rethinking the measurement of food security: from first principles to best practice. *Food Security*, 5(3), 327–343. <https://doi.org/10.1007/s12571-013-0253-0>.
317. Heal, G. (2017). Reflections—What Would It Take to Reduce U.S. Greenhouse Gas Emissions 80 Percent by 2050? *Review of Environmental Economics and Policy*, 11(2), 319–335. <https://doi.org/10.1093/reep/rex014>.
318. Hub, I. (2015 September 22). *UN, Peru, and France Showcase Actions under Lima-Paris Action Agenda* |SDG Knowledge Hub | IISD. <http://sdg.iisd.org/news/un-peru-and-france-showcase-actions-under-lima-paris-action-agenda/>.
319. Heal, G., Millner, A. (2014). Reflections: Uncertainty and Decision Making in Climate Change Economics. *Review of Environmental Economics and Policy*, 8(1), pp. 120–137.
320. Heikkinen, M., Ylä-Anttila, T., Juhola, S. (2018). Incremental, reformistic, or transformational: what kind of change do C40 cities advocate to deal with climate change? *Journal of Environmental Policy & Planning*, 21(1), 90–103. <https://doi.org/10.1080/1523908x.2018.1473151>.
321. Held, D., Charles, R. (2018). Three Models of Global Climate Governance: From Kyoto to Paris and Beyond. *Global Policy* 9 (4): 527–537. doi:10.1111/1758-5899.12617.
322. Hermwille, L. (2016). Climate Change as a Transformation Challenge. A New Climate Policy Paradigm?, *GAIA*, 25(1), 19–22. <https://doi.org/10.14512/gaia.25.1.6>
323. Hermwille, L. (2018). Making initiatives resonate: how can non-state initiatives advance national contributions under the UNFCCC? *International Environmental Agreements: Politics, Law, and Economics*, 18(3), 447–466. <https://doi.org/10.1007/s10784-018-9398-9>.

## Bibliography

324. Hermwille, L., Kreibich, N. (2018). *Article 6 and the Global Stocktake*. Wuppertal Institute for Climate, Environment and Energy.
325. Hermwille, L., Siemons, A., Förster, H., Jeffery, L. (2019). Catalyzing mitigation ambition under the Paris Agreement: elements for an effective Global Stocktake. *Climate Policy*, 19(8), 988–1001. doi: 10.1080/14693062.2019.1624494.
326. Herold, A., Cames, M., Siemons, A., Emele, L., Cook, V. (2013). *The Development of Climate Negotiations in View of Warsaw (COP19)*. Policy Department A: Economic and Scientific Policy. IPOL-ENVI\_ET(2013)507493\_EN.pdf (europa.eu).
327. Heyward, M. (2007). Equity and international climate change negotiations: a matter of perspective. *Climate Policy*, 7(6), 518–534. <https://doi.org/10.3763/cpol.2007.0731>.
328. Hickmann, T., Elsässer, J. (2020). New alliances in global environmental governance: how intergovernmental treaty secretariats interact with non-state actors to address transboundary environmental problems. *International Environmental Agreements: Politics, Law, and Economics*, 20(3), 459–481. <https://doi.org/10.1007/s10784-020-09493-5>.
329. Hickmann, T., Widerberg, O., Lederer, M., Pattberg, P. (2019). The United Nations Framework Convention on Climate Change Secretariat as an orchestrator in global climate policymaking. *International Review of Administrative Sciences*, 87(1), 21–38. <https://doi.org/10.1177/0020852319840425>.
330. Hjerpe, M., Linner, B. (2010). Functions of COP side-events in climate-change governance. *Climate Policy*, 10(2), 167–180. <https://doi.org/10.3763/cpol.2008.0617>.
331. Hönle, S., Heidecke, C., Osterburg, B. (2018). Climate change mitigation strategies for agriculture: an analysis of nationally determined contributions, biennial reports, and biennial update reports. *Climate Policy*, 19(6), 688–702. <https://doi.org/10.1080/14693062.2018.1559793>.
332. Huang, J. (2018). What Can the Paris Agreement's Global Stocktake Learn from the Sustainable Development Goals? *Carbon & Climate Law Review*, 12(3), 218–228. doi: 10.21552/cclr/2018/3/8.
333. Huang, M., Pan-Mao, Z. (2021). Achieving Paris Agreement Temperature Goals Requires Carbon Neutrality by Middle Century with Far-Reaching Transitions in the in hole Society. *Advances in Climate Change Research*. doi:10.1016/j.accre.2021.03.004.
334. Henri, W., Spencer, T., Colombier, M. (2016). *Long-Term Low Emissions Development Strategies and the Paris Agreement – Why, What and How?*, Institut du développement durable ET des relations internationales.

335. Harris, N., Stolle, F. (2016 January 5). *Forests Are in the Paris Agreement! Now What?*, World Resources Institute, [https://www.wri.org/insights/forests-are-paris-agreementnowwhat?utm\\_campaign=socialmedia&utm\\_source=twitter.com&utm\\_medium=worldresourc](https://www.wri.org/insights/forests-are-paris-agreementnowwhat?utm_campaign=socialmedia&utm_source=twitter.com&utm_medium=worldresourc).
336. *Health and Climate Change: Road to COP21*. (2020). World Health Organization. <https://www.who.int/globalchange/global-campaign/en>.
337. *Historic Background GHG*. (2020). Imo. Org. <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pa>.
338. Hale, T. (2018). The Role of Sub-State and Nonstate Actors in International Climate Processes. *Energy, Environment and Resources Department*, Chatham House.
339. Handwiki. (2021 August 3). *Organization: Global Centre of Excellence on Climate-Adaptation*. [https://handwiki.org/wiki/Organization:Global\\_Centre\\_of\\_Excellence\\_on\\_Climate\\_Ad](https://handwiki.org/wiki/Organization:Global_Centre_of_Excellence_on_Climate_Ad).
340. Higgins, H., Parsons, S., Northrop, E., Thwaites, J. (2017 November 13). *23 Terms to Know at COP23*. World Resources Institute. <https://www.wri.org/insights/23-terms-know-cop23>.
341. Haigh, J. (2011). *Solar influences on Climate*. UK: Grantham Institute for Climate Change. <http://Imperial College London>.
342. Heffron, R. J., McCauley, D. (2018). What is Just Transition. *Geoforum* 88. What is the 'Just Transition'? - ScienceDirect.
343. *IEA Sets Out Pillars for Success at COP21*. (2015 June 15). UNFCCC. <https://unfccc.int/news/iea-sets-out-pillars-for-success-at-cop21>.
344. *International Labor Organization Knowledge for Policy European Commission*. (2020). Knowledge for Policy - European Commission. [https://ec.europa.eu/knowledge4policy/organisation/ilo-international-labour-organisation\\_en](https://ec.europa.eu/knowledge4policy/organisation/ilo-international-labour-organisation_en).
345. Ibrahim, T. (2015). *Press Release: Small Islands say recent extreme weather should motivate climate action*. AOSIS, <http://aosis.org/press-release-small-islands-say-extreme-weather-should-motivate-climate-action/>.
346. *Indices for Americas, Europe/Middle East/Africa, and Asia/Oceania, and then for sub-sectors such as solar and wind, will offer fresh insight for investors and ETF providers*. (2020). Nysa Euronext and Bloomberg new Energy Finance Partner on Launch of Family of Clean Energy Indices.
347. *IMO Strategy on Reduction of GHG Emissions from Ships*. (2023). IMO. 2023 IMO Strategy on Reduction of GHG Emissions from Ships.
348. *International Labour Organization-ILO*. (2020). Genève Internationale. Geneve-Int. Ch. <https://www.geneve-int.ch/international-labour-organization-ilo-1>.

## Bibliography

349. *Introduction to Climate Finance*. (2021). UNFCCC. Int. Int. <https://unfccc.int/topics/climate-finance/the-big-picture/introduction-to-climate-finance>.
350. International Institute for Sustainable Development. (2009). *A Brief Analysis of the Copenhagen Climate Change Conference*. enb\_copenhagen\_commentary.pdf (iisd.org).
351. International Institute for Sustainable Development. (2011). *Summary of the Durban Climate Change Conference: 28 November–11 December 2011*. <http://www.iisd.ca/climate/cop17/>.
352. International Institute for Sustainable Development. (2013). *Summary of the Warsaw Climate change conference: 11–23 November 2013*. <http://www.iisd.ca/climate/cop19/enb/>.
353. International Institute for Sustainable Development. (2017). *Action and Financing Commitments Announced at COP23*. <https://sdg.iisd.org/news/action-and-financing-commitments-announced-at-cop-23/>.
354. Institute of the French-speaking world for Sustainable Development. (2017). *United Nations Framework Convention on Climate Change Twenty-third Conference of the Parties (COP23)*. [https://www.zora.uzh.ch/id/eprint/143598/1/Guide\\_negotiators-COP23\\_ifdd17.pdf](https://www.zora.uzh.ch/id/eprint/143598/1/Guide_negotiators-COP23_ifdd17.pdf).
355. International Institute for Sustainable Development. (2012). *Summary of the Durban Climate Change Conference: 28 November–11 December 2011*. <http://www.iisd.ca/climate/cop17/>.
356. International Institute for sustainable development. (2017). *COP23 Adopts Decisions on Adaptation Fund, Gender, Indigenous Peoples and Local Communities*. <http://sdg.iisd.org/news/cop-23-adopts-decisions-on-adaptation-fund-gender-indigenous-peoples-and-local-communities/>.
357. International Institute for Sustainable Development. (2021). *Highlights and images of main proceedings for 14 June 2021*. <https://enb.iisd.org/climate/UNFCCC/SB2021/highlights-and-images/14June2021>.
358. *International Instruments on Public Participation in Environmental Governance and Relevance to the Paris Agreement Implementation and the COP-25*. (2020). Aarhus Convention & Escazú Agreement Lunch Briefing. [https://www.cepal.org/sites/default/files/news/files/cnaarhusescazu\\_briefing\\_cop25.pdf](https://www.cepal.org/sites/default/files/news/files/cnaarhusescazu_briefing_cop25.pdf).
359. International Maritime Organization. (2019). *Broadening the Scope of The Ship Energy Efficiency Regulations and Related Guidelines, Considering Progress Made in Ligin of The Glomeep Project*. University of Macedonia; International Maritime Organization. <http://www.thesismun.org>.

360. Intro to Cancun Agreements. (2019 September 18). UNFCCC. <https://unfccc.int/process/conferences/the-big-picture/milestones/the-cancun-agreements>.
361. IPCC. (2007). *IPCC fourth assessment report: Climate change 2007*. Cambridge.
362. IPCC. (2018). *Global warming of 1.5°C – An IPCC special report*. <https://www.ipcc.ch/sr15/>.
363. *Intergovernmental Panel on Climate Change (IPCC), Climate Science*. (2013). The Physical Science Basis (Cambridge University Press, 2013).
364. Islam, M., Kieu, E. (2020). Tackling Regional Climate Change Impacts and Food Security Issues: A Critical Analysis across ASEAN, PIF, and SAARC. *Sustainability*, 12(3), 883. doi: 10.3390/su12030883.
365. IISD Earth Negotiations Bulletin. (2016). *Summary report 7–18 November 2016*. <https://enb.iisd.org/events/marrakech-climate-change-conference-november-2016/summary-report-7-18-november-2016>.
366. Iyer, G., Ledna, C., Clarke, L., Edmonds, J., McJeon, H., Kyle, P., Williams, J. (2017). *Measuring progress from nationally determined contributions to mid-century strategies*, Nature climate change.
367. Jacob, T. (2003). Report on UNFCCC Subsidiary Body Meetings, Bonn, and June 2003. *Climate Policy*, 3(3), 309–313. <https://doi.org/10.1016/j.clipol.2003.08.001>.
368. Jenkins, K. (2018). Setting energy justice apart from the crowd: Lessons from environmental and climate justice. *Energy Research & Social Science*, 39, 117–121. <https://doi.org/10.1016/j.erss.2017.11.015>.
369. Jha, A., Stanton-Geddes, Z. (2013). *Strong, Safe, and Resilient A Strategic Policy Guide for Disaster Risk Management in East Asia and the Pacific*. World Bank Publications.
370. James, V. (1998). *Capacity building in developing countries : human and environmental dimensions*. Praeger.
371. Jacometti, V. (2019). Climate Change Litigation: Global Trends and Critical Issues in the Light of the Urgenda 2018 Decision and the IPCC Special Report global Warming of 1.5°C. *Global Jurist*, 20(1). <https://doi.org/10.1515/gj-2019-0005>.
372. Jodoin, S., Duyck, S., Lofts, K. (2015). Public Participation and Climate Governance: An Introduction. Review of European, *Comparative & International Environmental Law*, 24(2), 117–122. <https://doi.org/10.1111/reel.12126>.
373. Joshi, B., Sircar, N. (2016 August 11). *Deconstructing the Paris Agreement and Its significant for India*, The Centre for Policy Research, <https://www.cprindia.org/news/5432>.
374. Jouzel. (2007). Orbital and millennial Antarctic climate variability over the past 800,000 years, *Science* 317(5839), 793–797.

## Bibliography

375. Jamal Qaiyum, N. (1998 Spetember 15). *Sinks: A Carbon Reservoir. Down to earth.* Org. In. <https://www.downtoearth.org.in/coverage/sinks-a-carbon-reservoir-22321>.
376. Kreienkamp, J., Vanhala, D. (2017 March 29). *Climate change loss and damage.* Global governance institute. Climate Change Loss and Damage | Global Governance Institute - UCL – University College London.
377. Kowalzig, J. (2017 November 24). *Climate finance at COP23: results at a glance. The German contribution to International Climate Finance.* The German contribution to International Climate Finance. <https://www.germanclimatefinance.de/2017/11/24/climate-finance-cop23-results-glance/>.
378. Kim, Kyungmee, and Tiffany S Garcia. “Climate Change and Violent Conflict in the Middle East and North Africa.” *International Studies Review*, vol. 25, no. 4, 18 Sept. 2023, [academic.oup.com/isr/article/25/4/viad053/7420704](https://academic.oup.com/isr/article/25/4/viad053/7420704),<https://doi.org/10.1093/isr/viad053>.
379. Kasteel, C. (2021). *Climate Finance at COP24: Reviewing Progress & Goals.* BCCIC. <https://www.bccic.ca/climate-finance-cop24/>.
380. Kizzier, K., Kelly, L., Mandy, R. (2019 December 2). *What You Need to Know About Article 6 of The Paris Agreement.* World resource institute. <https://www.wri.org/blog/2019/12/article-6-paris-agreement-what-you-need-to-know>.
381. Kandziora, M., Burkhard, B., Müller, F. (2013). Interactions of ecosystem properties, ecosystem integrity and ecosystem service indicators—a theoretical matrix exercise. *Ecological Indicators*, 28, 54–78. <https://doi.org/10.1016/j.ecolind.2012.09.006>.
382. *Key outcomes of the Lima Climate Change Conference (COP20) Sustainability for all.* (2015). <https://www.activesustainability.com/opinion/5-key-outcomes-of-the-lima-climate-change-conference-cop20/>.
383. Kachi, A. (2017 November 3). *Carbon Market Watch recommendations for COP23 - Carbon Market Watch.* Carbon Market Watch. <https://carbonmarketwatch.org/publications/carbon-market-watch-ecomendations-cop23-email-negotiators/>.
384. *Koronivia Joint Work on Agriculture.* (2021). Food and Agriculture Organization of the United Nations. <http://www.fao.org/koronivia/en/>.
385. Künzel, V., Schäfer, L., Baldrich, R., Minninger, S. (2017). *Loss and Damage at COP23: Looking at Small Island Developing States.* German watch. Loss and Damage at COP23 ([germanwatch.org](http://www.germanwatch.org)).
386. Kati, K. (2012). Negotiations on the New Market Mechanism and the Framework for Various Approaches: What Future Role for the UNFCCC in Regulating the Carbon Market Emerging Carbon Markets in the Developing World: Trends and Perspectives, *Carbon & Climate Law Review*.

387. Keo, K., Gold, S. (2016). *Scaling Up Climate Action to Achieve the Sustainable Development Goals*. New York: United Nations Development Program (UNDP) Bureau for Policy and Program Support (BPPS). <http://www.undp.org>.
388. Kais, S., Islam, M. (2018). Impacts of and resilience to climate change at the bottom of the shrimp commodity chain in Bangladesh: A preliminary investigation. *Aquaculture*, 493, 406–415. doi: 10.1016/j.aquaculture.2017.05.024.
389. *Katowice Rulebook - the Historic Success of Climate Policy at COP24*. (2018). Cop-24govpl.<https://cop24.gov.pl/news/news-details/news/katowice-rulebook-the-historic-success-of-climate-policy-at-cop24/>.
390. Kalfagianni, Agni, and Sébastien Duyck. (n.d). *The Evolving Role of Agriculture in Climate Change Negotiations: Progress and Players*. Climate Change, Agriculture and Food Security (CCAFS) Program of the CGIAR.
391. Kamruzzaman, P. (2016). A Critical Note on Poverty Eradication Target of Sustainable Development Goals. *European Journal of Sustainable Development*, 5(2). <https://doi.org/10.14207/ejsd.2016.v5n2p87>.
392. Kasa, S., Gullberg, A., Heggelund, G. (2007). The Group of 77 in the international climate negotiations: recent developments and future directions. *International Environmental Agreements: Politics, Law, and Economics*, 8(2), 113–127. <https://doi.org/10.1007/s10784-007-9060-4>.
393. Khan, M., Roberts, J., Huq, S., Hoffmeister, V. (2018). *The Paris framework for climate change capacity building* (1st ed). Routledge.
394. Kiker, G., Bridges, T., Varghese, A., Seager, T. and Linkov, I. (2005). Application of Multicriteria Decision Analysis in Environmental Decision Making. *Integrated Environmental Assessment and Management*, 1(2), p. 95.
395. Klein, D., Carazo, M., Doelle, M., Bulmer, J., Higham, A. (2017). *The Paris Climate Agreement (1st ed.)*. Oxford University Press.
396. Kącka, K. (2014). *Stosunki międzynarodowe*. Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.
397. Koetz, T., Bridgewater, P., van den Hove, S., Siebenhüner, B. (2008). The role of the Subsidiary Body on Scientific, Technical and Technological Advice to the Convention on Biological Diversity as science–policy interface. *Environmental Science & Policy*, 11(6), 505–516. <https://doi.org/10.1016/j.envsci.2008.05.001>.
398. Krasner, S D. (2013). *International Regimes*. Ithaca: Cornell University Press.
399. Kuh, K. (2018). The Law of Climate Change Mitigation: An Overview. *Elsevier*, 2. <https://doi.org/10.1016/B978-0-12-809665-9.10027-8>.

## Bibliography

400. Kulovesi, K. (2012). A new chapter in the UN climate change negotiations? First steps under the Durban Platform for Enhanced Action. *Climate Law*, 3(2), 181–189. <https://doi.org/10.1163/cl-2012-062>.
401. Kulovesi, K., Gutiérrez, M., Doran, P., Muñoz, M. (2007). UN 2006 Climate Change Conference: a confidence-building step? *Climate Policy*, 7(3), 255–261. <https://doi.org/10.3763/cpol.2007.0710>.
402. Kuyper, J., Linnér, B., Schroeder, H. (2017). Non-state actors in hybrid global climate governance: justice, legitimacy, and effectiveness in a post-Paris era. *Wires Climate Change*, 9(1). <https://doi.org/10.1002/wcc.497>.
403. Kamphof, R. (2018). *The European Union: Patterns of Collaboration with International Environmental and Climate Institutions*. UNU Institute on Comparative Regional Integration Studies, <http://www.cris.unu.edu>.
404. Kuyper, Jonathan W., Karin Bäckstrand. (2016). Accountability and Representation: Nonstate Actors in UN Climate Diplomacy. *Global Environmental Politics* 16 (2): 61–81. doi:10.1162/glep\_a\_00350.
405. Kluck, D. (2017). *La Niña Impacts and Outlook*. Midwest Region La Niña Impacts. LaNina-Midwest-2017.pdf (drought.gov).
406. Key players' perspective on climate change in the Mediterranean.(2016). Union for the Mediterranean, <http://www.ufmsecretariat.org>.
407. Key demands COP25. (2020). Women gender constituency. [https://womensgender-climate.org/wp-content/uploads/2019/12/COP25-WGC-Demands\\_LiteDesign-1.pdf](https://womensgender-climate.org/wp-content/uploads/2019/12/COP25-WGC-Demands_LiteDesign-1.pdf).
408. Kumar, R. (2020). The United Nations and Global Environmental Governance. *Strategic Analysis*, 44(5), 479–489. <https://doi.org/10.1080/09700161.2020.1824462>.
409. Larionova, M., Rakhmangulov, M., Shelepov, A. (2015). Assessing G7/8 and G20 effectiveness in global governance. SSRN. Assessing G7/8 and G20 Effectiveness in Global Governance by Marina Larionova, Mark Rakhmangulov, Andrey Shelepov :: SSRN.
410. Lamb, R., Joanna, D. (2003). *Caring For Climate a Guide to the Climate Change Convention and the Kyoto Protocol*. Bonn: UNFCCC secretariat. [caring\\_en.pdf \(unfccc.int\)](http://www.unfccc.int).
411. Leonard, S. (2016). *COP22 Special: Progress in Marrakesh*. Forests News. <https://forestsnews.cifor.org/46691/a-taste-of-cop22?fnl>.
412. Litman, T. (2012). *Climate Change Emission Valuation for Transportation Economic Analysis*. Victoria Transport Policy Institute. <http://www.vtpi.org/>.
413. Lázaro-Touza, L. (2016). *COP21 and the Paris Agreement: a diplomacy masterclass in search of greater climate ambition*. Elcano Royal Institute Príncipe De Vergara.

- ari2-2016-lazarotouza-cop21-paris-agreement-diplomacy-masterclass-search-great-er-climate-ambition.pdf (realinstitutoelcano.org).
414. Lieberman, S. (2020). *FAQ: Ecosystem Integrity in the Post-2020 Global Biodiversity Framework*. Wildlife Conservation Society (WCS). 6iqlkmonow\_Integrity\_FAQ\_2.2\_21\_February\_2020\_.pdf (wcs.org).
  415. Leggett, A. (2018). *Evolving Assessments of Human and Natural Contributions to Climate Change*. Congressional Research Service. <http://www.crs.gov>.
  416. Liebreich, M. (2014). *Climate change talks – the rocky road to Paris*. Bloomberg Finance. <https://about.bnef.com/blog/liebreich-climate-change-talks-rocky-road-paris/>.
  417. Lovisa, S. (2017). *People’s Republic of China’s Performance in the UNFCCC: A Comparison of China’s Position at COP15 Copenhagen to COP22 Marrakech*. (Bachelor dissertation, Uppsala University).
  418. Locatelli, M. (2020). *The EU, China, and Climate Action: Time to Turn Up the Heat on Climate Cooperation*. European Institute for Asian Studies. <http://www.eias.org>.
  419. Lim, K. (2017 May). *The Role of The International Maritime Organization in Preventing the Pollution of The World’s Oceans from Ships and Shipping*. UN Chronicle. <https://unchronicle.un.org/article/role-international-maritime-organization-preventing-pollution-worlds-oceans-ships-and>.
  420. La Viña, A., de Leon, A. (2014). Two Global Challenges, One Solution: International Cooperation to Combat Climate Change and Tropical Deforestation. SSRN. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2622767](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2622767).
  421. *Loss and Damage under the UNFCCC process*. (2021). Climate analytics, <https://climateanalytics.org/briefings/loss-and-damage/>.
  422. Laine, M. (2014). A Climate for Change? Critical Reflections on the Durban United Nations Climate Change Conference. *Social and Environmental Accountability Journal*, 34(1), 53–53. <https://doi.org/10.1080/0969160x.2014.885189>.
  423. Lal Pandey, C. (2014). The limits of climate change agreements: from past to present. *International Journal of Climate Change Strategies and Management*, 6(4), 376–390. <https://doi.org/10.1108/ijccsm-03-2013-0026>.
  424. Lawlor, R., Morley, H. (2017). Climate Change and Professional Responsibility: A Declaration of Helsinki for Engineers. *Science and Engineering Ethics*, 23(5), 1431–1452. <https://doi.org/10.1007/s11948-017-9884-4>.
  425. Leal Filho, W., Azeiteiro, U., Alves, F., Pace, P., Mifsud, M., Brandli, L. (2017). Rein-vigorating the sustainable development research agenda: the role of the sustainable development goals (SDG). *International Journal of Sustainable Development & World Ecology*, 25(2), 131–142. <https://doi.org/10.1080/13504509.2017.1342103>.

## Bibliography

426. Lee, M., Abbot, C. (2003). The Usual Suspects? Public Participation under the Aarhus Convention. *Modern Law Review*, 66(1), 80–108. <https://doi.org/10.1111/1468-2230.6601004>.
427. Lee, T., Koski, C. (2014). Mitigating Global Warming in Global Cities: Comparing Participation and Climate Change Policies of C40 Cities. *Journal of Comparative Policy Analysis: Research and Practice*, 16(5), 475–492. <https://doi.org/10.1080/13876988.2014.910938>.
428. Lee, W., Mwebaza, R. (2020). The Role of the Climate Technology Centre and Network as a Climate Technology and Innovation Matchmaker for Developing Countries. *Sustainability*, 12(19), 7956. <https://doi.org/10.3390/su12197956>.
429. Leggett, J. (2018). *Winning the carbon war*(1 ed). Crux Publishing Ltd.
430. Lesniewska, F., Siegele, L. (2018). The Talanoa Dialogue: A Crucible to Spur Ambitious Global Climate Action to Stay within the 1.5OC Limit. *Carbon & Climate Law Review*, 12(1), 41–49. <https://doi.org/10.21552/cclr/2018/1/8>.
431. Lier, M., Köhl, M., Korhonen, K., Linser, S., Prins, K. (2021). Forest relevant targets in EU policy instruments - can progress be measured by the pan-European criteria and indicators for sustainable forest management?. *Forest Policy and Economics*, 128, 102481. <https://doi.org/10.1016/j.forpol.2021.102481>.
432. Lin, B., Lin, C. (2006). Compliance with international emission regulations: Reducing the air pollution from merchant vessels. *Marine Policy*, 30(3), 220–225. <https://doi.org/10.1016/j.marpol.2005.01.005>.
433. Liu, L., Wu, T., Wan, Z. (2019). The EU-China relationship in a new era of global climate governance. *Asia Europe Journal*. <https://link.springer.com/article/10.1007/s10308-018-00530-2>.
434. Livingston, J., Rummukainen, M. (2020). Taking science by surprise: The knowledge politics of the IPCC Special Report on 1.5 degrees. *Environmental Science & Policy*, 112, 10–16. <https://doi.org/10.1016/j.envsci.2020.05.020>.
435. Lockwood, M. (2015). Stern Review 2.0? The Report of the Global Commission on the Economy and Climate. *The Political Quarterly*, 86(1), 146–151. <https://doi.org/10.1111/1467-923x.12136>.
436. Muldowney, J., Mounsey, J., Kinsella, L. (2013). Agriculture in the Climate Change Negotiations; Ensuring that Food Production is Not Threatened. *Animal* 7(s2): 206–211. <https://www.sciencedirect.com/science/article/pii/S175173111300089X>.
437. Marsh, E. (2007). Climate Change: The Sun's Role. *Argonne National Laboratory*.
438. Milkoreit, M., Haapala, K. (2017). Designing the Global Stocktake: A global governance innovation. *Center for Climate and Energy Solutions*, <https://www.c2es>.

- org/site/assets/uploads/2017/11/designing-the-global-stocktake-a-global-governance-innovation.pdf.
439. Marcu, A. (2016). *Carbon Market Provisions in the Paris Agreement (Article 6)*. Centre for European Policy Studies, no128. CEPS. <https://cdn.ceps.eu/wp-content/uploads/2016/01/SR%20No%20128%20ACM%20Post%20COP21%20Analysis%20of%20Article%206.pdf>.
  440. Martius, C., Sunderlin, W., Brockhaus, M., Duchelle, A., Larson, A., Thu Thuy, G; Verchot, L. (2015). *Low-emission development strategies (LEDS): How can REDD+ contribute?*. Center for International Forestry Research (CIFOR). [https://www.cifor.org/publications/pdf\\_files/infobrief/5881-infobrief.pdf](https://www.cifor.org/publications/pdf_files/infobrief/5881-infobrief.pdf).
  441. Marcu, A. (2012). Doha/COP18: Gateway to a New Climate Change Agreement. *Brussels: Centre for European Policy Studies*. <http://www.ceps.eu>.
  442. Mgbemene, A. (12–15 September 2011). *The Effects of Industrialization on Climate Change*. Fulbright Alumni Association of Nigeria 10th Anniversary Conference Development.
  443. *MDB Climate Action: The EBRD Perspective*. (2019). Japan: European Bank for Reconstruction and Development (EBRD).
  444. *Moving Towards the Enhanced Transparency Framework*. (2021December 2). UNFCCC. Int. <https://unfccc.int/enhanced-transparency-framework#eq-9>.
  445. Mercer, C., Bell, S. (2021). *UNDP At COP22. United Nations development program*. [http://file:///C:/Users/User.User-PC/Downloads/UNDPatCOP22%20\(1\).pdf](http://file:///C:/Users/User.User-PC/Downloads/UNDPatCOP22%20(1).pdf).
  446. Macchi, M., Gonzalo, O., Gotheil, S., Cross, K., Boedhihartono, A., Wolfangel, C., Howell, M. (2008). *Indigenous and Traditional Peoples and Climate Change*. IUCN. [https://www.iucn.org/sites/default/files/import/downloads/indigenous\\_peoples\\_climate\\_change.pdf](https://www.iucn.org/sites/default/files/import/downloads/indigenous_peoples_climate_change.pdf).
  447. Morel, R., Leguet, B. (2012). *International climate negotiations at COP18: the art of the Doha-ble*. CDC climate research. <https://www.i4ce.org/wp-content/uploads/12-12-21-Climate-Brief-n%C2%B024-The-Doha-conference.pdf>.
  448. Mombauer, D. (2017 December 7). *Key Outcomes of COP23: UN Climate Conference in Bonn*. Slycan Trust. <https://www.slycantrust.org/post/key-outcomes-of-cop23-un-climate-conference-in-bonn>.
  449. Martinez Blanco, A. (2021). *Non-Party stakeholders' input for the Talanoa Dialogue*. Larutadelclima. <https://larutadelclima.org/en/>.
  450. MacGregor, S. (2014). Only Resist: Feminist Ecological Citizenship and the Post-politics of Climate Change. *Hypatia*, 29(3), 617–633. <https://doi.org/10.1111/hypa.12065>.

## Bibliography

451. Malpass, D. (2020). *Remarks at the Fourth Ministerial of the Coalition of Finance Ministers for Climate Action*. World Bank. <https://elibrary.worldbank.org/doi/pdf/10.1596/34628>.
452. Mace, M. (2016). Mitigation Commitments Under the Paris Agreement and the Way Forward. *Climate Law*, 6(1–2), 21–39. <https://doi.org/10.1163/18786561-00601002>.
453. Mace, M., Verheyen, R. (2016). Loss, Damage, and Responsibility after COP21: All Options Open for the Paris Agreement. *Review of European, Comparative & International Environmental Law*, 25(2), 197–214. <https://doi.org/10.1111/reel.12172>.
454. Maljean-Dubois, S., Wemaëre, M. (2012). After Durban, what Legal Form for the Future International Climate Regime?. *Carbon & Climate Law Review*, 6(3), 187–196. <https://doi.org/10.21552/cclr/2012/3/217>.
455. Mason, M. (2010). Information Disclosure and Environmental Rights: The Aarhus Convention. *Global Environmental Politics*, 10(3), 10–31. doi: 10.1162/glep\_a\_00012.
456. Mayer, B. (2016). Human Rights in the Paris Agreement. *Climate Law*, 6(1–2), 109–117. doi: 10.1163/18786561-00601007.
457. Mayer, B. (2019). Transparency Under the Paris Rulebook: Is the Transparency Framework Truly Enhanced?. *Climate Law*, 9(1–2), 40–64. <https://doi.org/10.1163/18786561-00901004>.
458. McGinn, A., Isenhour, C. (2021). Negotiating the future of the Adaptation Fund: on the politics of defining and defending justice in the post-Paris Agreement period. *Climate Policy*, 21(3), 383–395. <https://doi.org/10.1080/14693062.2021.1871875>.
459. McPhaden, M. (2001). El Nino and La Ni: Causes and Global Consequences. The Earth System: Physical and Chemical Dimensions of Global Environmental Change. *Environmental Science*.
460. McInerney, C., Johannsdottir, L. (2016). Lima Paris Action Agenda: Focus on Private Finance – note from COP21. *Journal of Cleaner Production*, 126, 707–710. <https://doi.org/10.1016/j.jclepro.2016.02.116>.
461. McLaughlin, A. (2016). Reason in a dark time: why the struggle against climate change failed-and what it means for our future. By Dale Jamieson. *International Affairs*, 92(6), 1536–1537. <https://doi.org/10.1111/1468-2346.12770>.
462. Mechler, R., Bouwer, L., Schinko, T., Surminski, S., Linnerooth-Bayer, J. (2019). *Loss and Damage from Climate Change (1st ed.)*. Springer Nature.
463. Medani, P. (2018). The Role of International Organization in Addressing the Climate Change Issues and Creation of Intergovernmental Panel on Climate Change (IPCC). *Advances in Agriculture and Environmental Science: Open Access (AAEOA)*, 1(1), 19–34. Doi: 10.30881/aaeo.00005.

464. Men, J. (2014). Climate change and EU–China partnership: realist disguise or institutionalist blessing?. *Asia Europe Journal*, 12(1–2), 49–62. <https://doi.org/10.1007/s10308-014-0373-y>.
465. Mgbemene, C., Nnaji, C., Nwozor, C. (2016). Industrialization and its Backlash: Focus on Climate Change and its Consequences. *Journal of Environmental Science and Technology*, 9(4), 301–316. Doi: 10.3923/jest.2016.301.316.
466. Michaelowa, A. (2012). Feeling the Heat: The Politics of Climate Policy in Rapidly Industrializing Countries. *Greenhouse Gas Measurement and Management*, 2(2–3), 164–166. <https://doi.org/10.1080/20430779.2012.722005>.
467. *Mitigation Update: Market Mechanisms Analyzed*. (2016 November 30). IISD. <https://sdg.iisd.org/news/mitigation-update-market-mechanisms-analyzed/>.
468. Milkoreit, M., Haapala, K. (2018). The global stocktake design lessons for a new review and ambition mechanism in the international climate regime. *International Environmental Agreements: Politics, Law, and Economics*, 19(1), 89–106. <https://doi.org/10.1007/s10784-018-9425-x>.
469. Mintz, A., DeRouen, K. (2010). *Understanding Foreign Policy Decision Making*(1ed). Dartmouth Cambridge University Press.
470. Monasterolo, I., Roventini, A., Foxon, T. (2019). Uncertainty of climate policies and implications for economics and finance: An evolutionary economics approach. *Ecological Economics*, 163, 177–182. <https://doi.org/10.1016/j.ecolecon.2019.05.012>.
471. Moncel, R. (2012). Unconstructive Ambiguity in the Durban Climate Deal of COP17 / CMP 7. *Sustainable Development Law & Policy*, 12(2). <https://digital-commons.wcl.american.edu/cgi/viewcontent.cgi?referer=https://scholar.google.pl/&httpsredir=1&article=1507&context=sdlp>.
472. Memorandum of Understanding between the European Commission and the United Nations Environment Programme. (2014). Retrieved 26 August 2014, from <https://europa.eu/capacity4dev/unep/minisite/about-united-nations-environment-programme>.
473. *Making Change Decisive*. (2016 November 29). Global Environment Facility. <https://www.thegef.org/news/making-change-decisive>.
474. Morgera, E. (2012). *The external environmental policy of the European Union*(1ed). Cambridge University Press.
475. Munasinghe, M. (2001). Sustainable development and climate change: applying the sustainomics trans disciplinary meta-framework. *International Journal of Global Environmental Issues*, 1(1), p. 13.

## Bibliography

476. Meyer, C. (2016 November 3). *What to Expect for Forests And REDD+ At COP22 In Marrakesh?*. Environmental Defense Fund. <https://blogs.edf.org/climate-talks/2016/11/03/what-to-expect-for-forests-and-redd-at-cop22-in-marrakesh/>.
477. Nicolás, E. (2019 December 16). *COP25 ends with no deal on carbon markets*. EU-observer. <https://euobserver.com/green-economy/146925>.
478. NASA Change. (2019 September 6). *What Is the Sun's Role in Climate Change? – Climate Change: Vital Signs of the Planet*. <https://climate.nasa.gov/blog/2910/what-is-the-suns-role-in-climate-change/>.
479. Neymark, J., Judkoff, R. (2002). *International Energy Agency Building Energy Simulation Test and Diagnostic Method for Heating, Ventilating, and Air-Conditioning Equipment Models (HVAC BESTEST)*. U.S.A: National Renewable. U.S. Department of Energy office of Scientific and Technical Information.
480. *Non-State Actors*. (2020). ESCR-Net. <https://www.escri-net.org/resources/non-state-actors>.
481. *November 2016 Climate Finance Update: COP22 Moves Climate Finance Agenda Forward*. (2016 December 5). International Institute for Sustainable Development. <https://sdg.iisd.org/news/november-2016-climate-finance-update-cop-22-moves-climate-finance-agenda-forward/>.
482. New climate economy. (2014 December 14). *Press Release from Lord Nicholas Stern welcoming Lima climate change Agreement*. <https://newclimateeconomy.net/content/press-release-lord-nicholas-stern-welcoming-lima-climate-change-agreement>.
483. Nelson, D. (2013). *The Challenge of Institutional Investment in Renewable Energy*. Climate Policy Initiative. <http://climatepolicyinitiative.org/publication/the-challenge-of-institutional-investment-in-renewable-energy/>.
484. Newell, P., Taylor, O. (2017). Contested landscapes: the global political economy of climate-smart agriculture. *The Journal of Peasant Studies*, 45(1), 108–129. <https://doi.org/10.1080/03066150.2017.1324426>.
485. Newell, P., Mulvaney, D. (2013). The political economy of the 'just transition'. *The Geographical Journal*, Vol. 179, No. 2, June 2013, pp. 132–140.
486. Nhamo, G., Nhamo, S. (2016). Paris (COP21) Agreement: Loss and damage, adaptation, and climate finance issues. *International Journal of African Renaissance Studies - Multi-, Inter-, and Transdisciplinary*, 11(2), 118–138. <https://doi.org/10.1080/018186874.2016.1212479>.
487. *Navigating the Paris Rulebook: Enhanced Transparency Framework*. (2021). World Resources Institute. <https://www.wri.org/paris-rulebook/enhanced-transparency-framework>.

488. Nicolai, K. (2020). A Green Gambit: The Development of Environmental Foreign Policy in Morocco. *The Journal of North African Studies*, 1–27. doi: 10.1080/13629387.2020.1865931.
489. Naser, M. (2015). *Assessing the Evidence: Migration, Environment and Climate Change in Papua New Guinea*. Geneva. International Organization for Migration. file:///C:/Users/admin/Downloads/meclep\_assessment\_png.pdf.
490. Niederberger, A., Kimble, M. (2011). MRV under the UN climate regime: paper tiger or catalyst for continual improvement?. *Greenhouse Gas Measurement and Management*, 1(1), 47–54. <https://doi.org/10.3763/ghgmm.2010.0009>.
491. Northrop, M., Bailey, J. (2010). *Sustainable Development Program Review, 2005–2010*, Rockefeller Brothers Fund Sustainable Development Program.
492. Nuttle, W., Portnoy, J. (1992). Effect of rising sea level on runoff and groundwater discharge to coastal ecosystems. *Estuarine, Coastal and Shelf Science*, 34(2), 203–212. [https://doi.org/10.1016/s0272-7714\(05\)80106-4](https://doi.org/10.1016/s0272-7714(05)80106-4).
493. Nyekwere, E. (2017). International Environment Financing: A Review of the Global Environment Facility. *Groningen Journal of International Law*, 5(2), 278–297. <https://doi.org/10.21827/5a6afa321fa06>.
494. Oberthür, S. (2003). Institutional interaction to address greenhouse gas emissions from international transport: ICAO, IMO, and the Kyoto Protocol. *Climate Policy*, 3(3), 191–205. [https://doi.org/10.1016/s1469-3062\(03\)00060-3](https://doi.org/10.1016/s1469-3062(03)00060-3).
495. Oberthür, S. (2011). The European Union's Performance in the International Climate Change Regime. *Journal of European Integration*, 33(6), 667–682. <https://doi.org/10.1080/07036337.2011.606690>.
496. Oberthür, S., Bodle, R. (2016). Legal Form and Nature of the Paris Outcome. *Climate Law*, 6(1–2), 40–57. doi: 10.1163/18786561-00601003.
497. Oberthür, S., Groen, L. (2016). The European Union and the Paris Agreement: leader, mediator, or bystander?. *Wires Climate Change*, 8(1). <https://doi.org/10.1002/wcc.445>.
498. Oberthür, S., Groen, L. (2017). Explaining goal achievement in international negotiations: the EU and the Paris Agreement on climate change. *Journal of European Public Policy*, 25(5), 708–727. Doi: 10.1080/13501763.2017.1291708.
499. Obergassel, W., Arens, C., Hermwille, L., Kreibich, N., Mersmann, F., E Ott, H., Wang-Helmreich, H. (2018). The calm before the storm: an assessment of the 23rd Climate Change Conference (COP23) in Bonn. *Environmental Law & Management*. [https://epub.wupperinst.org/frontdoor/deliver/index/docId/7361/file/7361\\_Obergas](https://epub.wupperinst.org/frontdoor/deliver/index/docId/7361/file/7361_Obergas).

## Bibliography

500. Odeyemi, C. (2021). UNFCCC's posture on displacement riskification: Conceptual suggestions. *Progress in Disaster Science*, 10, 100164. <https://doi.org/10.1016/j.pdisas.2021.100164>.
501. Ozsahin, D. U., Denker, A., Kibarar, A. G., Kaba, Ş. (2021). Evaluation of stage IV brain cancer treatment techniques. *Elsevier*, 59–69. <https://doi.org/10.1016/b978-0-12-824086-1.00004-9>.
502. Olsen, K., Arens, C., Mersmann, F. (2017). Learning from CDM SD tool experience for Article 6.4 of the Paris Agreement. *Climate Policy*, 18(4), 383–395. <https://doi.org/10.1080/14693062.2016.1277686>.
503. Ott, H. (1998). The Kyoto Protocol: Unfinished Business. *Environment: Science and Policy for Sustainable Development*, 40(6), 16–20. <https://doi.org/10.1080/00139159809604595>.
504. ORNL (annual reports), Transportation Energy Data Book, Oak Ridge National Laboratory, USDOE ([www.ott.doe.gov](http://www.ott.doe.gov)).
505. Ourbak, T., Magnan, A. (2017). The Paris Agreement and climate change negotiations: Small Islands, big players. *Regional Environmental Change*, 18(8), 2201–2207. <https://doi.org/10.1007/s10113-017-1247-9>.
506. Oguntuase, O. (2021 March 15). *Africa: Now Is the Time to Unite and Prepare for Climate Action*. The African Report. <https://www.theafricareport.com/72137/africa-now-is-the-time-to-unite-and-prepare-for-climate-action/>.
507. Obergassel, W., Arens, C., Hermwille, L., Kreibich, N., E. Ott, H., Wang-Helmreich, H. (2019). *An Assessment of COP24 in Katowice, Paris Agreement: Out of the Dry-dock Ship Moves*. Wuppertal Institut für Klima, Umwelt, Energie gGmbH. <https://wupperinst.org/fa/redaktion/downloads/publications/COP24-Report.pdf>.
508. Outcomes of the U.N. Climate Change Conference in Durban, South Africa. (2011). The Center for Climate and Energy Solutions. <https://www.c2es.org/content/cop-17-durban/>.
509. Otterbach, B. (2021). *Evolving EU climate policy discourses and self-representation: A study of press-releases from Kyoto to Copenhagen* (Master thesis of International and European Relations). Linköping University, <https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A423942&dswid=-9522>.
510. Obergassel, W., Arens, C., Beuermann, C., Hermwille, L., Kreibich, N., E. Ott, H., Spitzner, M. (2020). *COP25 in Search of Lost Time for Action*. Wuppertal Institut für Klima, Umwelt. <https://wupperinst.org/fa/redaktion/downloads/publications/COP25-Report.pdf>.
511. Obergassel, W., Kreibich, N., Füssler, J., Kohli, A., Oberpriller, Q., Webe, F. et al. (2020). *Design Options for the New International Market Mechanism under Article*

- 6.4 of the Paris Agreement. German Environment Agency. [https://epub.wupperinst.org/frontdoor/deliver/index/docId/7612/file/7612\\_Design](https://epub.wupperinst.org/frontdoor/deliver/index/docId/7612/file/7612_Design).
512. Osafo, S., Sharma, A., Chandani Abeysinghe, A. (2012). *Durban Platform for Enhanced Action, An African Perspective*. European Capacity Building Initiative. <http://www.eurocapacity.org>.
  513. Alessi, M. (2020). *Observer NGOs and the International Climate Negotiations*. Climate Policy Info Hub. (2020). <https://climatepolicyinfohub.eu/observer-ngos-and-international-climate->.
  514. Oberthur, S; Northrop, E. (2018). *The Mechanism to Facilitate Implementation and Promote Compliance with the Paris Agreement: Design options*. Project for Advancing Climate Transparency. World resource institute. PACTWPART15OberthrNorthrop2018.pdf.
  515. O'Doherty, L., Emma B., Ebony, P., Johnston, E., O'Sullivan, E., Gracey, K. (2015). *Youth Participation in the UNFCCC Negotiation Process*. A publication of the United Nations Joint Framework Initiative on Children, Youth, and Climate Change.
  516. Øjford Blaxekjær, L. (2016). *New Practices and Narratives of Environmental Diplomacy*. E-International Relations. <https://www.e-ir.info/pdf/63506>.
  517. Palerm, J. (1999). Public Participation in Environmental Decision Making: Examining the Aarhus Convention. *Journal of Environmental Assessment Policy and Management*, 01(02), 229–244. <https://doi.org/10.1142/s146433329900017x>.
  518. Parson, E. and Fisher-Vanden, A. (1997). Integrated Assessment Models of Global Climate Change. *Annual Review of Energy and the Environment*, 22(1), pp. 589–628.
  519. Partowazar, B., Jayum, A., Soltani, J and F. (2014). Decision-Making in Foreign Policy. *Pensee Journal*, 76(4).
  520. Pasztor, J. (2016). The Role of United Nations Secretary-General in the Climate Change Process. *Global Policy*, 7(3), 450–457. <https://doi.org/10.1111/1758-5899.12345>.
  521. Pologeorgis, A. (2019). *How Globalization Affects Developed Countries*. Nicolas. <https://www.investopedia.com/articles/economics/10/globalization-developed-countries.asp>.
  522. Policy Brief. (2006). *Food Security*, FAO's Agriculture and Development Economics Division. <http://www.fao.org/forestry/13128-0e6f36f27e0091055bec28ebe830f46b3.pdf>.
  523. Pauw, W., Klein, R. (2021). *Making climate action more effective: lessons learned from the first Nationally Determined Contributions (NDCs)*(1st ed.). Routledge.
  524. Pavese, C., Torney, D. (2012). The contribution of the European Union to global climate change governance: explaining the conditions for EU actorness. *Revista Brasileira De Política Internacional*, 55(spe), 125–143. <https://doi.org/10.1590/s0034-73292012000300008>.

## Bibliography

525. Pelling, M., Uitto, J. (2001). Small island developing states: natural disaster vulnerability and global change. *Global Environmental Change Part B: Environmental Hazards*, 3(2), pp. 49–62.
526. Pundari, J. (2014). *Papua New Guinea Second National Communication to the Under the United Nations Framework Convention on Climate Change*. Minister for Environment, Conservation & Climate Change. <https://unfccc.int/sites/default/files/resource/Pngnc2.pdf>.
527. Puig, D., Roberts, E. (2022). *Loss and Damage at COP26*. <https://unepccc.org/wp-content/uploads/2021/11/ld-cop26.pdf>.
528. *Paris Agreement*. (2020 October 13). France ONU. <https://onu.delegfrance.org/Paris-Agreement>.
529. *Periodic Review*. (2021 June 28). UNFCCC. <https://unfccc.int/topics/science/workstreams/periodic-review#eq-2>.
530. POP, C. (2009). The Financial Crisis of 2007 – 2008 a Review of the Timeline and of its Causes. *Studia Universitatis Babeş-Bolyai, Negotia*.
531. Puri, L. (2016 November 15). *Op-ed: Making Paris Climate Change Agreement deliver for women and girls – the Marrakech opportunity*. UN Women. <https://www.unwomen.org/en/news/stories/2016/11/op-ed-by-ded-puri-on-making-paris-climate-change-agreement-deliver-for-women-and-girls>.
532. Parthasarathy, D. (2016). *German G20 Must Mobilize Action on Climate Change for A Stronger and Safer World*. Climate Action Network: [https://climatenetwork.org/wp-content/uploads/2021/02/can\\_reactive\\_g20.pdf](https://climatenetwork.org/wp-content/uploads/2021/02/can_reactive_g20.pdf).
533. Philos, FJ., Rogelj, J., Millar, R J., Allen, M O., Cain M, F, Kriegler, E., Shindell, D. (2018). Implications of possible interpretations of ‘greenhouse gas balance’ in the Paris Agreement A Math. *Phys. Eng. Sci.* 376 Online: <http://rsta.royalsocietypublishing.org/content/376/2119/20160445.abstrac>.
534. Perkins, J. (1990). The Rockefeller Foundation and the green revolution, 1941? 1956. *Agriculture and Human Values*, 7(3–4), 6–18. <https://doi.org/10.1007/bf01557305>.
535. Peters, G., Marland, G., Le Quéré, C., Boden, T., Canadell, J. Raupach, M.(2011). Rapid growth in CO<sub>2</sub> emissions after the 2008–2009 global financial crisis. *Nature Climate Change*, 2(1), pp. 2–4.
536. Pietraś, M. (2012). *Scientific Uncertainty in the Political Process of the Problem of Climate Change*. International Relations Theory. [https://www.academia.edu/35061024/Marek\\_Pietra%C5%9B\\_Scientific\\_Uncertainty](https://www.academia.edu/35061024/Marek_Pietra%C5%9B_Scientific_Uncertainty)

537. Puig, D., Wewerinke-Singh, M., Huq, S. (2019). *COP25 – Loss and Damage outcomes*. Leiden University International Centre for Climate Change and Development. [https://backend.orbit.dtu.dk/ws/portalfiles/portal/202753943/ld\\_cop25.pdf](https://backend.orbit.dtu.dk/ws/portalfiles/portal/202753943/ld_cop25.pdf).
538. Počuča, M., Mladenov, M., Mirković, P. (2018). Analysis of the Aarhus convention in the context of good environmental governance. *Ekonomika Poljoprivrede*, 65(4), 1615–1625. doi: 10.5937/ekopolj1804615p.
539. Prasad, R., Sud, R. (2021). The pivotal role of UNFCCC in the international climate policy landscape: a developing country perspective. *Global Affairs*, 7(1), 67–78. <https://doi.org/10.1080/23340460.2021.1912628>.
540. Prasad, S., Ganesan, K., Gupta, V. (2017). *Shaping the Global Stocktake Process under the Paris Agreement*. Council on Energy, Environment and Water.
541. Prudential Regulation Authority. (2018). *Transition in thinking: The impact of climate change on the UK banking sector*. Bank of England September.
542. Prasad, S., Ganesan, K., Gupta, V. (2017). *Shaping the Global Stocktake Process under the Paris Agreement*. Council on Energy, Environment and Water. [https://unfccc.int/files/parties\\_observers/submissions\\_from\\_observers/application/pdf/973.pdf](https://unfccc.int/files/parties_observers/submissions_from_observers/application/pdf/973.pdf).
543. Paas, L., Espinosa Cantellano, P. (2016). *Action for Climate Empowerment: guidelines for accelerating solutions through education, training, and public awareness*, United Nations Educational, Scientific and Cultural Organization (UNESCO).
544. Prah Ruger, J., Derek, Y. (2009). The Global Role of the World Health Organization. *Global Health Governance*. <http://www.researchgate.net/publication/261610936>.
545. Marechal, P. (2018). *What Role for China in the International Climate Regime?*. Institut de Relations Internationales et Stratégiques. <https://www.iris-france.org/wp-content/uploads/2018/01/Asia-focus-59.pdf>.
546. Pattberg, Ph., Widerberg, O. (2018). The Climate Change Regime. Oxford Research Encyclopedia of Climate Science. <https://www.researchgate.net/publication/322203911>.
547. Princen, T., Conca, K., Maniates, M. (2002). *Confronting Consumption* (1ed). UK: Cambridge MIT Press.
548. Pierre-Nathoniel, D., Siegele, L., Roper, L., Menke, I. (2019). *Loss and Damage at COP25 – a hard fought step in the right direction*. Climate Analytics.
549. Quirico, O., Boumghar, M. (2015). *Climate change and human rights* (1 ed). Routledge.
550. Quadrio, A., Fortis, M. (2008). *The EU and the Economies of the Eastern European Enlargement*(1 ed). Heidelberg: Springer Company.

## Bibliography

551. Rajamani, L. (2009). India and Climate Change: What India Wants, Needs, and Needs to Do. *India Review*, 8(3), 340–374. <https://doi.org/10.1080/14736480903116842>.
552. Rajamani, L. (2017). *Elaborating the Paris Agreement: Implementation and Compliance*. The Center for Climate and Energy Solutions (C2ES). <https://www.c2es.org/site/assets/uploads/2017/11/elaborating-the-paris-agreement-implementation-and-compliance-11-17.pdf>.
553. Rogeli, J. (2016). *Mitigation in the Context of the Paris Agreement - A synthesis of the scientific literature related to 1.5°C*. Norwegian Environment Agency.
554. Rattani, V. (2017 November 8). *COP23: Are countries ready for new market mechanisms?*. Down to earth. <https://www.downtoearth.org.in/news/climate-change/cop-23-are-countries-ready-for-new-market-mechanism--59061>.
555. Raman, M. (2020 February 3). *COP25 Ends amidst Major North-South Differences*. Third World Network. <https://www.twn.my/title2/climate/info.service/2020/cc200201.htm>.
556. *Reducing Emissions from the Shipping Sector - Climate Action - European Commission*. (2020). Climate Action - European Commission. [https://ec.europa.eu/clima/policies/transport/shipping\\_en](https://ec.europa.eu/clima/policies/transport/shipping_en).
557. Riitta Korhola, E. (2014). *The Rise and fall of the Kyoto Protocol: Climate Change as a Political Process*. ( Master dissertation, University of Helsinki).
558. Roewe, B. (2019 November 15). *What Does the Paris Climate Agreement Require of Countries?*. National Catholic Reporter. <https://www.ncronline.org/news/earthbeat/what-does-paris-climate-agreement-require-countries>.
559. Restuccia, A. (2016 July 6). *India's Prime Minister Modi joins Obama in climate deal push*. POLITICO. <https://www.politico.com/story/2016/06/obama-narendra-modi-climate-deal-223998>.
560. Radka, M., Christensen, J., Puig, D. (2010). *UNEP Climate Change Strategy*. United Nations Environment Program. <http://www.unep.org/>.
561. *Report on the structured expert dialogue on the 2013–2015 review*. (2015). Subsidiary Body for Scientific and Technological Advice, UNFCCC. <https://unfccc.int/resource/docs/2015/sb/Eng/inf01.pdf>.
562. Robock, A. (2000). Volcanic Eruptions and Climate. *Reviews of Geophysics*, 38.
563. *Role of NGOs in Agriculture Development*. (2022 November 24). Essay Writing Service. <https://www.thentf.org/article/the-role-of-ngo-in-agricultural-development/>.
564. Rätzel, N., Uzzell, D. (2011). Trade Unions and Climate Change: The Jobs Versus Environment Dilemma. *Global Environmental Change* 21(4): 1215–1223. doi:10.1016/j.gloenvcha.2011.07.010.

565. Reddy, P., Reddy, V. (2016). Impact Due to Sunspot Activity on Climate Change: Some Salient Results. *International Journal of Earth Sciences and Engineering*, 09(01).
566. Reena, Dr. (2017). Tragedy of Climate Agreements in Post-Kyoto Phase: Copenhagen and Beyond. *Geography, Environment, Sustainability* 10(3): 54–65. doi:10.24057/2071-9388-2017-10-3-54-65.
567. Ren-Jian, Z., Kin-Fai, H., Zhen-Xing, S. (2012). The Role of Aerosol in Climate Change, the Environment, and Human Health. *Atmospheric and Oceanic Science Letters*, 5(2), 156–161. Doi: 10.1080/16742834.2012.11446983.
568. *Report on Task Force on Displacement*. (2018). UNFCCC, Task force. [https://unfccc.int/sites/default/files/resource/2018\\_TFD\\_report\\_16\\_Sep\\_FINAL-unedited.pdf](https://unfccc.int/sites/default/files/resource/2018_TFD_report_16_Sep_FINAL-unedited.pdf).
569. Roberts, J., Parks, B. (2009). Ecologically Unequal Exchange, Ecological Debt, and Climate Justice. *International Journal of Comparative Sociology*, 50(3–4), 385–409. <https://doi.org/10.1177/0020715209105147>.
570. Roberts, J., Natson, S., Hoffmeister, V., Durand, A., Weikmans, R., Gewirtzman, J., Huq, S. (2017). How Will We Pay for Loss and Damage?. *Ethics, Policy & Environment*, 20(2), 208–226. <https://doi.org/10.1080/21550085.2017.1342963>.
571. Robinson, M., Shine, T. (2018). Achieving a climate justice pathway to 1.5 °C. *Nature Climate Change*, 8(7), 564–569. <https://doi.org/10.1038/s41558-018-0189-7>.
572. *Report climate and health bulletin, A Summary Report of the World Health Organization (WHO) Conference on Health and Climate 27–29 AUGUST 2014*. (2014). Climate and Health Bulletin, International Institute for Sustainable Development (IISD). <http://WWW.IISD.CA/WHO/HCC/>.
573. Robiou du Pont, Y., Jeffery, M. L., Gütschow, J., Rogelj, J., Christoff, P., Meinshausen, M. (2016). Equitable Mitigation to Achieve the Paris Agreement Goals. *Nature Climate Change* 7(1): 38–43. Doi:10.1038/nclimate3186.
574. Rimmer, M., Wood, C. (2014 November 14). *Norway's Sovereign Wealth Fund, Ethical Investment, and Climate Change*. Medium. <https://drrimmer.medium.com/norways-sovereign-wealth-fund-ethical-investment-and-climate-change-f5a97c89d604>.
575. Roche, P., Campagne, C. (2017). From ecosystem integrity to ecosystem condition: a continuity of concepts supporting different aspects of ecosystem sustainability. *Current Opinion in Environmental Sustainability*, 29, 63–68. <https://doi.org/10.1016/j.cosust.2017.12.009>.
576. Rodoljub, E. (2013). *Specific features of human rights guaranteed by the Aarhus Convention*. Zbornik radova Pravnog fakulteta Novi Sad, 47(2), 79–92. doi: 10.5937/zrpfns47-4437.

## Bibliography

577. Richard Christopher, S., W Bruck, H., Burton, S. (2002). *Foreign Policy Decision-Making* (1 ed). New York, N.Y.: Palgrave Macmillan.
578. Roessig, J., Woodley, C., Cech, J., Hansen, L. (2004). Effects of global climate change on marine and estuarine fishes and fisheries. *Reviews in Fish Biology and Fisheries*, 14(2), 251–275. <https://doi.org/10.1007/s11160-004-6749-0>.
579. Rogelj, J., den Elzen, M., Höhne, N., Fransen, T., Fekete, H., Winkler, H. (2016). Paris Agreement climate proposals need a boost to keep warming well below 2 °C. *Nature*, 534(7609), 631–639. doi: 10.1038/nature18307.
580. Rojas-Downing, M., Nejadhashemi, A., Harrigan, T., Woznicki, S. (2017). Climate change and livestock: Impacts, adaptation, and mitigation. *Climate Risk Management*, 16, 145–163. Doi: 10.1016/j.crm.2017.02.001.
581. Rimmer, M. (2014). *We are here to make history: The United Nations climate summit 2014*. QUT Eprints. <https://eprints.qut.edu.au/85298/>.
582. Rocha, M., Chiara, F. (2019). *Key Questions Guiding the Process of Setting up Long-Term Low-Emission Development Strategies*. Climate Change Expert Group. Organization for Economic Co-operation and Development.
583. Rong, F. (2010). Understanding developing country stances on post-2012 climate change negotiations: Comparative analysis of Brazil, China, India, Mexico, and South Africa. *Energy Policy*, 38(8), 4582–4591. <https://doi.org/10.1016/j.enpol.2010.04.014>.
584. Siegel, K., Bastos Lima, M. (2020). When international sustainability frameworks encounter domestic politics: The sustainable development goals and agri-food governance in South America. *World Development*, 135, 105053. <https://doi.org/10.1016/j.worlddev.2020.105053>.
585. Schwartz, J. (2016 November 3). *A global climate deal was reached. Next up is pollution monitoring*. <https://www.nytimes.com/2016/11/03/business/energyenvironment/united-nations-cop22-summit-pollutionmonitoring.html>.
586. Schneider, L., Cludius, J., La Hoz Theuer, S. (2018). *Accounting for the Linking of Emissions Trading System Under Article 6.2 of the Paris Agreement*. International Carbon Action Partnership.
587. Sarac, A. (2012). *AD HOC Working Group on the Durban Platform for Enhanced Action (ADP)*. DLA Piper.
588. Schneider, L., Siemons, A. (2021). *Averaging or multi-year accounting? Implications for environmental integrity of carbon markets under Article 6 of the Paris Agreement*. Öko-Institut e.V.
589. Schlessner, C F., Schaeffer, M., Hare, B. (2015). *Short Paper on the UNFCCC SED on the 2013–2015 review, with a particular focus on the 1.5 °C target*, Climate Analytics. Air Pollution & Climate Secretariat (AirClim).

590. Surbhi, S. (2019). *Difference between Developed Countries and Developing Countries*. <https://keydifferences.com/difference-between-developed-countries-and-developing-countries.html>.
591. Sohn, R. (2016). *EU environmental policy and diplomacy from Copenhagen to Paris and beyond*. Center for European Integration Studies.
592. Sharma, A., Michaelowa, A., Espelage, A., Allan, J., Müller, B. (2020). *25th Conference of Parties to the UNFCCC*. European Capacity Building Initiative. [https://ecbi.org/sites/default/files/COP25%20Key%20Outcomes\\_0.pdf](https://ecbi.org/sites/default/files/COP25%20Key%20Outcomes_0.pdf).
593. <https://server.www.robert-schuman.eu/storage/en/doc/questions-d-europe/qe-450-en.pdf>.
594. Schlein, L. (2019 July 1). *ILO: Climate Change Will Lead to Huge Job, Economic Losses*. <https://www.voanews.com/economy-business/ilo-climate-change-will-lead-huge-job-economic-losses>.
595. Sundholm, M. (2020). *ILO: International Labour Organization*. Office of the Secretary-General's Envoy on Youth. <https://www.un.org/youthenvoy/2013/08/ilo-international-labour-organization/>.
596. *Submission of Views on The Content of Article 6.2 Guidance and Article 6.4 Rules, Modalities and Procedures, Presented by The Republic of The Maldives on Behalf of The Alliance of Small Island States*. (2017). Alliance of Small Island States. [https://www4.unfccc.int/sites/SubmissionsStaging/Documents/167\\_344\\_131542508049675849%20Submission%20on%20Art%206.2%20and%20%206.4.Nov.2017.cleandocx](https://www4.unfccc.int/sites/SubmissionsStaging/Documents/167_344_131542508049675849%20Submission%20on%20Art%206.2%20and%20%206.4.Nov.2017.cleandocx).
597. *Subsidiary Body for Scientific and Technological Advice (SBSTA)*. (2020). UNFCCC. Int. <https://unfccc.int/process/bodies/subsidiary-bodies/sbsta>.
598. Sharma, A., Schwarte, C., Bird, P., Michaelowa, A., Müller, B. (2018). *24TH Conference of Parties to the UNFCCC*. European Capacity Building Initiative. [https://ecbi.org/sites/default/files/COP24Outcomes%20Final\\_0.pdf](https://ecbi.org/sites/default/files/COP24Outcomes%20Final_0.pdf).
599. Schwarz, R., Bals, C., Baldrich, R., Eckstein, D., Lena Hutfils, M., Pouge, M. (2019). *Implementation guidelines for the Paris Agreement adopted Evaluation of the results of COP24 in Katowice*. GERMANWATCH.
600. Sosa-Nunez, G., Atkins, ED. (2016 1 ed). *Environment, Climate Change, and International Relations*. Bristol, England: E-International Relations.
601. Spooner, D. (2004). Trade unions and NGOs: the need for cooperation. *Development in Practice*, 14(1–2), 19–33. <https://doi.org/10.1080/0961452032000170604>.
602. *Small Island Developing States Small Islands Big (Ger) Stakes*. (2011). New York: United Nations. <http://www.un.org/ohrlls>.

## Bibliography

603. Schreurs, A. (1996). *International Environmental Negotiations, the State, and Environmental NGOs in Japan*. Japan: Harrison Program on the Future Global Agenda. <http://www.gdrc.org/ngo/jp-envi-ngo.html>.
604. Shawoo, Z. (2019 December 20). *Loss and damage at COP25: a look outside the negotiating rooms*. Stockholm Environment Institute.
605. SDGs and the Paris agreement: One year on – Why a joined-up approach to achieve environment and development goals is crucial. (2016 November 17). <https://ecdpm.org/talking-points/sustainable-development-goals-paris-agreement/>.
606. *Social Pre-COP Preparatory Event Issues Margarita Declaration*. Social Pre-COP. (2014 July 25). IISD. <https://sdg.iisd.org/news/social-pre-cop-preparatory-event-issues-margarita-declaration/>.
607. Sun, R., Gao, X., Deng, L., Wang, C. (2022). Is the Paris rulebook sufficient for effective implementation of the Paris Agreement?. *Advances In Climate Change Research*, 13(4), 600–611. doi: 10.1016/j.accre.2022.05.003.
608. *Sovereign Wealth Fund (SWF) - Overview, Types, Investing Conditions*. Corporate Finance Institute. (2020). <https://corporatefinanceinstitute.com/resources/knowledge/trading-investing/sovereign-wealth-fund-swf/>.
609. *Strengthened 5-year Action Plan on Gender Adopted at COP25*. Unfccc.int. (2020 January 28). <https://unfccc.int/news/strengthened-5-year-action-plan-on-gender-adopted-at-cop25>.
610. *Subnational Governments and COP21*. (2020). Tap-Potential.Org. <https://tap-potential.org/subnational-governments-and-cop21/>.
611. *Subsidiary Body for Implementation (SBI)*. (2020). UNFCCC. Int. <https://unfccc.int/process/bodies/subsidiary-bodies/sbi>.
612. *Success of COP24 – we have the Katowice Rulebook*. COP24 Katowice 2018. (2018). <https://cop24.gov.pl/news/news-details/news/success-of-cop24-in-katowice-we-have-a-global-climate-agreement/>.
613. *Summary of the Durban Climate Change Conference, 28 November–11 December 2011*. (2011). International Institute for Sustainable Development. <http://enb.iisd.org/vol12/enb12534e.html>.
614. *Summary for Policymakers*. (2013). United Nations Framework Convention on Climate Change COP19 and CMP9. Institut de la Francophonie pour le développement durable (IFDD).
615. *Summary for policymakers*. (2015). United Nations Framework Convention on Climate Change COP21 and CMP 11. Institut de la Francophonie pour le développement durable (IFDD).

616. Singh, H., Indrajit, B. (2018). *History and Politics of Climate Change Adaptation at the United Nations Framework Convention on Climate Change*. Geneva: South Centre.
617. Schlaepfer, H. (2019). *Sun and Climate*. Bern: Association Pro ISSI. [https://www.issibern.ch/PDF-Files/Spatium\\_8.pdf](https://www.issibern.ch/PDF-Files/Spatium_8.pdf).
618. Stabinsky, D., Hoffmaister, J. (2015). Establishing institutional arrangements on loss and damage under the UNFCCC: the Warsaw International Mechanism for Loss and Damage. *International Journal of Global Warming*, 8(2), 295. <https://doi.org/10.1504/ijgw.2015.071967>.
619. Stephenson, S., Oculi, N., Bauer, A., Carhuayano, S. (2019). Convergence and Divergence of UNFCCC Nationally Determined Contributions. *Annals of the American Association of Geographers*, 109(4), 1240–1261. <https://doi.org/10.1080/24694452.2018.1536533>.
620. Sterk, W., Bolscher, H., van der Laan, J., Hoogzaad, J., Sijm, J. (2014). Developing a sectoral new market mechanism: insights from theoretical analysis and country showcases. *Climate Policy*, 15(4), 417–437. <https://doi.org/10.1080/14693062.2014.937384>.
621. Stern, N., Bowen, A., Whalley, J. (2014). *The global development of policy regimes to combat climate change* (1 ed.). World Scientific.
622. Stokes, L., Giang, A., Selin, N. (2016). Splitting the South: China and India's Divergence in International Environmental Negotiations. *Global Environmental Politics*, 16(4), 12–31. [https://doi.org/10.1162/glep\\_a\\_00378](https://doi.org/10.1162/glep_a_00378).
623. Solveig Seidenkrantz, M. (2017 September 19). *What makes the climate change? Part two*. Scienordenordic. <http://scienordenordic.com>.
624. Streck, C. (2016). Mobilizing Finance for Redd+ After Paris. *Journal for European Environmental & Planning Law*, 13(2), 146–166. <https://doi.org/10.1163/18760104-01302003>.
625. Sagar, A., Huq, S., Kante Thiam, P. (2017). *Pocket Guide to Capacity Building*. International Climate Initiative (IKI).
626. Samadi, S., Terrapon-Pfaff, J., Lechtenböhrer, S., Knoop K. (2018). Long-Term Low Greenhouse Gas Emission Development Strategies for Achieving The 1.5 °C Target – Insights from A Comparison of German Bottom-Up Energy Scenarios. *Carbon Management* 9 (5): 549–562. doi:10.1080/17583004.2018.1475174.
627. Sand, E P., Christiansen, S. (2013 1ed). *Ethics of Animal Use*. Wiley.
628. Sandler, T. (1992). *Collective action: Theory and applications*, Ann Arbor; university of Michigan press. Cambridge University Press.

## Bibliography

629. Santilli, M., Moutinho, P., Schwartzman, S., Nepstad, D., Curran, L., Nobre, C. (2005). Tropical Deforestation and the Kyoto Protocol. *Climatic Change*, 71(3), 267–276. <https://doi.org/10.1007/s10584-005-8074-6>.
630. Sattich, T., Freeman, D., Scholten, D., Yan, S. (2021). Renewable energy in EU-China relations: Policy interdependence and its geopolitical implications. *Energy Policy*, 156, 112456. <https://doi.org/10.1016/j.enpol.2021.112456>.
631. Sauer, A., Stieß, I. (2021). Accounting for gender in climate policy advice: adapting a gender impact assessment tool to issues of climate change. *Impact Assessment and Project Appraisal*, 39(3), 262–273. <https://doi.org/10.1080/14615517.2021.1904710>.
632. Savaresi, A. (2013). REDD+ and Human Rights: Addressing Synergies between International Regimes. *Ecology and Society*, 18(3). doi: 10.5751/es-05549-180305.
633. Savaresi, A., Perugini, L. (2020). Sinks, Reservoirs of GHGS And Forests. *SSRN Electronic Journal*. doi:10.2139/ssrn.3550066.
634. Schakenbach, J., Vollaro, R., Forte, R. (2006). Fundamentals of Successful Monitoring, Reporting, and Verification under a Cap-and-Trade Program. *Journal of the Air & Waste Management Association*, 56(11), 1576–1583. doi: 10.1080/10473289.2006.10464565.
635. Schipper, E. (2006). Conceptual History of Adaptation in the UNFCCC Process. *Review of European Community and International Environmental Law*, 15(1), 82–92. <https://doi.org/10.1111/j.1467-9388.2006.00501.x>.
636. Schlamadinger, B., Bird, N., Johns, T., Brown, S., Canadell, J., Ciccacese, L. et al. (2007). A synopsis of land use, land-use change and forestry (LULUCF) under the Kyoto Protocol and Marrakech Accords. *Environmental Science & Policy*, 10(4), 271–282. <https://doi.org/10.1016/j.envsci.2006.11.002>.
637. Schleussner, C., Fyson, C. (2020). Scenarios science needed in UNFCCC periodic review. *Nature Climate Change*, 10(4), 272–272. <https://doi.org/10.1038/s41558-020-0729-9>.
638. Schleussner, C., Nauels, A., Schaeffer, M., Hare, W., Rogelj, J. (2019). Inconsistencies when applying novel metrics for emissions accounting to the Paris Agreement. *Environmental Research Letters*, 14(12), 124055. <https://doi.org/10.1088/1748-9326/ab56e7>.
639. Schnoor, J. (2007). The IPCC Fourth Assessment. *Environmental Science & Technology*, 41(5), 1503–1503. <https://doi.org/10.1021/es072475x>.
640. Schurer, A., Cowtan, K., Hawkins, E., Mann, M., Scott, V., Tett, S. (2018). Interpretations of the Paris climate target. *Nature Geoscience*, 11(4), 220–221. <https://doi.org/10.1038/s41561-018-0086-8>.

641. Scott, D., Becken, S. (2010). Adapting to climate change and climate policy: progress, problems, and potential. *Journal of Sustainable Tourism*, 18(3), 283–295. <https://doi.org/10.1080/09669581003668540>.
642. Scott, D., Hall, C., Gössling, S. (2016). A report on the Paris Climate Change Agreement and its implications for tourism: why we will always have Paris. *Journal of Sustainable Tourism*, 24(7), 933–948. <https://doi.org/10.1080/09669582.2016.1187623>.
643. Scott, S. (2014). Does the UNFCCC Fulfil the Functions Required of a Framework Convention? Why Abandoning the United Nations Framework Convention on Climate Change Might Constitute a Long Overdue Step Forward. *Journal of Environmental Law*, 27(1), 69–89. <https://doi.org/10.1093/jel/equ032>.
644. Seki, M., Christ, R. (1995). Selected international efforts to address climate change. *Environmental Monitoring and Assessment*, 38–38(2–3), 141–153. <https://doi.org/10.1007/bf00546759>.
645. Seo, S. (2018). Beyond the Paris Agreement: Climate Change Policy Negotiations and Future Directions. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3111175>.
646. Serdeczny, O. (2018). *Non-economic Loss and Damage and the Warsaw International Mechanism* (1 ed.). Springer Nature.
647. *Shared action the movement for responsible investment*. (2015). Factory Farming Understanding the risks and opportunities. London. [https://cdn2.assets-servd.host/shareaction-api/production/resources/reports/FactoryFarming\\_2015.pdf](https://cdn2.assets-servd.host/shareaction-api/production/resources/reports/FactoryFarming_2015.pdf).
648. Sharma, S., Soederberg, S. (2019). Redesigning the business of development: the case of the World Economic Forum and global risk management. *Review of International Political Economy*, 27(4), 828–854. <https://doi.org/10.1080/09692290.2019.1640125>.
649. Shi, Y. (2016). Reducing greenhouse gas emissions from international shipping: Is it time to consider market-based measures?. *Marine Policy*, 64, 123–134. <https://doi.org/10.1016/j.marpol.2015.11.013>.
650. Shim, S., Serido, J., Tang, C. (2013). After the global financial crash: Individual factors differentiating young adult consumers' trust in banks and financial institutions. *Journal of Retailing and Consumer Services*, 20(1), 26–33. <https://doi.org/10.1016/j.jretconser.2012>.
651. Shishlov, I., Morel, R., Bellassen, V. (2016). Compliance of the Parties to the Kyoto Protocol in the first commitment period. *Climate Policy*, 16(6), 768–782. <https://doi.org/10.1080/14693062.2016.1164658>.

## Bibliography

652. Soifua, T. (2016). From Paris to Marrakech to the Pacific, an Overview of the UN Climate COP22 Outcomes. <https://reliefweb.int/report/world/paris-marrakech-pacific-overview-un-climate-cop22-outcomes>.
653. Shockley, K., Boran, I. (2015). COP20 Lima: The ethical dimension of climate negotiations on the way to Paris—Issues, challenges, prospects. *Ethics, Policy & Environment*, 18(2), 117–122. <https://doi.org/10.1080/21550085.2015.1076564>.
654. Short, D., Elliot, J., Norder, K., Lloyd-Davies, E., Morley, J. (2015). Extreme energy, ‘fracking’ and human rights: a new field for human rights impact assessments?. *The International Journal of Human Rights*, 19(6), 697–736. <https://doi.org/10.1080/13642987.2015.1019219>.
655. Shreve, C., Kelman, I. (2014). Does mitigation save? Reviewing cost-benefit analyses of disaster risk reduction. *International Journal of Disaster Risk Reduction*, 10, 213–235. <https://doi.org/10.1016/j.ijdr.2014.08.004>.
656. Sidorenkov, N. (2009 1ed). *The interaction between Earth’s rotation and geophysical processes*. Wiley-VCH.
657. Šimunović, N., Hesser, F., Stern, T. (2018). Frame Analysis of ENGO Conceptualization of Sustainable Forest Management: Environmental Justice and Neoliberalism at the Core of Sustainability. *Sustainability*, 10(9), 3165. <https://doi.org/10.3390/su10093165>.
658. Squintani, L., Darpö, J., Lavrysen, L., Stoll, P T. (2019). Towards equal opportunities in public participation in environmental matters in the European Union (Eds.), *Managing Facts and Feelings in Environmental Governance*, Edward Elgar Publishing.
659. Sitek, M. (2020). Human rights (need) to protect human health in the context of COP24. *Journal of Modern Science*, 44(1), 15–28. <https://doi.org/10.13166/jms/123285>.
660. Serdeczny, O., Dhakal, M. (2016 March 14). *The Warsaw International Mechanism – What has happened until now, and what are the next big steps?*. Climate analytics.
661. Streck, C., von Unger, M., Krämer, N. (2019). From Paris to Katowice: cop-24 tackles the Paris Rulebook. *Journal for European Environmental & Planning Law*, 16(2), pp. 165–190.
662. Streck, C., von Unger, M., Keenlyside, P. (2016). The Paris Agreement: A New Beginning. *Journal for European Environmental & Planning Law*, 13(1), 3–29. Doi: 10.1163/18760104-01301002.
663. Schneider, L., Derik, B., Cames, M., Healy, S., Füssler, J., Stephanie La. (2016). *Market Mechanisms in the Paris Agreement – Differences and Commonalities with Kyoto Mechanisms*. German Emissions Trading Authority (DEHSt).

664. Stuenkel, O. (2021). BRICS and the Future of Global Order. *Indian Foreign Affairs Journal*, Vol. 10, No. 2. 45341034.pdf (jstor.org).
665. Swiney, C. (2020). The Urbanization of International Law and International Relations: The Rising Soft Power of Cities in Global Governance. *Michigan Journal of International Law*, (41.2), 227. <https://doi.org/10.36642/mjil.41.2.urbanization>.
666. Tänzler, D., Warnecke, C., Cames, M. (2019). *Analysing the interactions between new market mechanisms and emissions trading schemes: Opportunities and prospects for countries to use Article 6 of the Paris Agreement*. Umweltbundesamt. [https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2019-03-04\\_climate-change\\_02-2019\\_interactions-new-market.pdf](https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2019-03-04_climate-change_02-2019_interactions-new-market.pdf).
667. The World Meteorological Organization at a glance. (2009). World Meteorological Organization. Geneva. <http://www.wmo.int/>.
668. Tapscott, D., Bigham, J., Williams, A. (2014). *C40 Cities Climate leadership group Cities Confronting Climate Change light house Case study*. Global Solution Networks. <https://www.gsnetworks.org/wp-content/uploads/C40-Cities.pdf>.
669. Tamma, P. (2017 November 20). *Climate finance, the sticking point in COP23*. EU-RACTIV Network. <https://www.euractiv.com/section/climate-environment/news/climate-finance-the-sticking-point-in-cop23/>.
670. Taebi, B., Safari, A. (2017). On Effectiveness and Legitimacy of ‘Shaming’ as a Strategy for Combatting Climate Change. *Science and Engineering Ethics*, 23(5), 1289–1306. <https://doi.org/10.1007/s11948-017-9909-z>.
671. *The Global Commission on the Economy and Climate and its flagship project the New Climate Economy*. Newclimateeconomy.net. (2020). <https://newclimateeconomy.net/sites/default/files/gcec-statement-cop21.pdf>.
672. The IISD’s SDG Knowledge Hub. (2015 December 11). *Paris Climate Change Conference - November 2015*. <http://sdg.iisd.org/2015/12/17/iisd-rs-summary-analysis-from-unfccc-cop21/>.
673. The International Emissions Trading Association. (2019). *COP25 Summary Report*. [https://www.ieta.org/resources/Documents/IETA-COP25-Report\\_2019.pdf](https://www.ieta.org/resources/Documents/IETA-COP25-Report_2019.pdf).
674. *The just transition, fundamental for achieving climate goals and generating prosperity*. (2021). Iberdrola. <https://www.iberdrola.com/social-commitment/just-transition>.
675. *The Paris Climate Agreement: what it means for food and farming*. (2015). Research program on climate change, Agriculture, and Food security. CGIAR. <http://www.ccafs.cgiar.com>.
676. *The Katowice Rulebook – main principles of the document*. COP24 Katowice 2018. (2019). <https://cop24.gov.pl/news/news-details/news/the-katowice-rulebook-main-principles-of-the-document/>.

## Bibliography

677. Tsonis, A. (2017). *The Little boy El Niño and natural climate change*. The Global Warming Policy Foundation.
678. The National Academies presents: What You Need to Know about Energy. (2016). Retrieved from <http://needtoknow.nas.edu/energy/energy-sources/fossil-fuels/>.
679. *The Outcomes of COP24 for Adaptation and Loss and Damage – Plan Adapt*. Plan Adapt. (2018 December 20). <https://www.plan-adapt.org/2018/12/20/adaptation-outcomes-cop24/>.
680. Tanaka, K., Boucher, O., Ciaia, P., Johansson, D., Morfeldt, J. (2021). Cost-effective implementation of the Paris Agreement using flexible greenhouse gas metrics. *Science Advances*, 7(22), eabf9020. <https://doi.org/10.1126/sciadv.abf9020>.
681. The White House. (2015 June 30). *U.S.-Brazil Joint Statement on Climate Change* (p. USA.gov). Office of the Press Secretary.
682. Thew, H. (2018). Youth Participation and Agency in the United Nations Framework Convention on Climate Change. *International Environmental Agreements: Politics, Law, and Economics* 18(3): 369–389. doi:10.1007/s10784-018-9392-2.
683. Thompson, H. (2015). Germany and the Euro-Zone Crisis: The European Reformation of the German Banking Crisis and the Future of the Euro. *New Political Economy*, 20(6), 851–870. <https://doi.org/10.1080/13563467.2015.1041476>.
684. Tienhaara, K. (2016). Governing the Global Green Economy. *Global Policy*, 7(4), 481–490. <https://doi.org/10.1111/1758-5899.12344>.
685. *The Least Developed Countries Things to Know, Things to DO*. (2017). New York: United Nations. <http://www.un.org/ohrlls>.
686. *Trade Unions at the UN Framework Convention on Climate Change UNFCCC - COP15*. (2009). Copenhagen, Denmark: International Trade Union Confederation. file:///C:/Users/ADS/Downloads/COP15\_ITUC\_report\_final-2.pdf.
687. Tenzing, J. (2014). *Understanding Key Positions of the Least Developed Countries in Climate Change Negotiations*. The International Institute for Environment and Development (IIED). <http://pubs.iied.org/17252IIED>.
688. The White House Office of the Press Secretary. (2016 June 7). *FACT SHEET: The United States and India – Moving Forward Together on Climate Change, Clean Energy, Energy Security, and the Environment*. The White House. <https://obamawhitehouse.archives.gov/the-press-office/2016/06/07/fact-sheet-united-states-and-india-%E2%80%93-moving-forward-together-climate>.
689. The White House. (2014 November 11). *FACT SHEET: U.S.-China Joint Announcement on Climate Change and Clean Energy Cooperation*. The White House Office of the Press Secretary. <https://obamawhitehouse.archives.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c>.

690. Third world network. (2016). *Difficult Negotiations on Long-Term Climate Finance in Climate Talks*. [https://www.twn.my/title2/climate/news/marrakech01/TWN\\_update27.pdf](https://www.twn.my/title2/climate/news/marrakech01/TWN_update27.pdf).
691. The Center for Climate and Energy Solutions. (2019). *Outcomes of the U.N. Climate Change Conference in Madrid*. <https://www.c2es.org/site/assets/uploads/2019/12/cop-25-madrid-summary-1.pdf>.
692. Thwaites, J., Niranjali Manel, A. (2018). *INSIDER: Finance Deal at COP24 Includes Important Breakthroughs, But Delivery Will Be Crucial*. World Resources Institute. <https://www.wri.org/insights/insider-finance-deal-cop-24-includes-important-breakthroughs-delivery-will-be-crucial>.
693. *The SDGs Explained for Business | UN Global Compact*. (2020). Unglobalcompact.org. <https://www.unglobalcompact.org/sdgs/about>.
694. Teater, A. (2019). Putting Their Money Where Their Mouth Is. *The Cornell International Affairs Review*, XIII.
695. *The U.S.-Brazil Joint Statement on Climate Change: Unacceptable, unambitious, and highly dangerous | REDD-Monitor*. (2015). Redd-monitor.org. <https://redd-monitor.org/2015/08/04/the-u-s-brazil-joint-statement-on-climate-change-unacceptable-unambitious-and-highly-dangerous/>.
696. Tsayem Demaze, M. (2014). The obscure future of the Kyoto protocol. <https://core.ac.uk/download/pdf/53003505.pdf>.
697. *The Global Climate Change Regime*. (2013). Council on Foreign Relations. <https://www.cfr.org/report/global-climate-change-regime>.
698. Tschakert, P. (2015). 1.5°C or 2°C: a conduit's view from the science-policy interface at COP20 in Lima, Peru. *Climate Change Responses*, 2(1). <https://doi.org/10.1186/s40665-015-0010-z>.
699. The Green Growth Action Alliance: Progress Report from the First Year of Catalyzing Private Investment. (2013). World Economic Forum. <http://www.weforum.org/issues/climate-change-and-green-growth>.
700. *Trade Unions at The UN Framework Convention on Climate Change (UNFCCC) The 21St Conference of The Parties (COP21), Paris, France 30Th November – 11Th December 2015*. (2015). ITUC International Trade Union Confederation. [en-glish-cop21\\_parisreport\\_ituc\\_final.pdf](http://ituc-csi.org/english-cop21_parisreport_ituc_final.pdf) (ituc-csi.org).
701. Tucker, T. (2014). Grounded Theory Generation: A Tool for Transparent Concept Development. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2685879>.
702. Turilli, M., Floridi, L. (2009). The ethics of information transparency. *Ethics and Information Technology*, 11(2), 105–112. doi: 10.1007/s10676-009-9187-9.

## Bibliography

703. *The Basis for New International Carbon Markets*. (2020). Bundesministerium Für Umwelt, Naturschutz Und Nukleare Sicherheit. <https://www.bmu.de/en/topics/climate-energy/climate/carbon-market-platform/the-basis-for-new-international-carbon-markets/>.
704. Turvey, R. (2007). Vulnerability Assessment of Developing Countries: The Case of Small Island Developing States. *Development Policy Review*, 25(2), pp. 243–264.
705. UNFCCC. (2011). *Report of the Conference of the Parties on its seventeenth session, held in Durban from 28 November to 11 December 2011*, Decision 1/CP.17, paragraph 5 <http://unfccc.int/bodies/body/6383/php/view/reports.php>.
706. UNFCCC. (2014). *Submissions from Parties*. <https://unfccc.int/process-and-meetings/bodies/bodies-that-have-concluded-work/ad-hoc-working-group-on-the-durban-platform-for-enhanced-action-adp/submissions-from-parties-to-the-adp-in-2014>.
707. UN Doc. FCCC/CP/2010/7/Add.1.(2011). *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*. <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=2>.
708. UNFCCC. (2014). *Report of the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts*, FCCC/SB/2014/4, Annex II.
709. United Nations Framework Convention on Climate Change. (2006). *Intergovernmental and Legal Affairs, Climate Change Secretariat*. file:///C:/Users/admin/Downloads/handbook.pdf.
710. United nations human rights office of the high commissioner. (2014). *A New Climate Change Agreement Must Include Human Rights Protection for All*. [https://www.ohchr.org/sites/default/files/Documents/HRBodies/SP/SP\\_To\\_UNFCCC.pdf](https://www.ohchr.org/sites/default/files/Documents/HRBodies/SP/SP_To_UNFCCC.pdf).
711. UNFCCC. (2018 February 8). *Decision5/CP.23 Warsaw International Mechanism for Loss and Damage Associated with Climate Change Impacts UN Doc FCCC/CP/2017/11/Add.1*. <https://unfccc.int/topics/adaptation-and-resilience/workstreams/loss-and-damage/warsaw-international-mechanism>.
712. UNFCCC Bonn Climate Conference. (2014). *Business and Industry Observer Organizations(Bingos)*.UNFCCC.[https://unfccc.int/sites/default/files/bingo\\_sbsta\\_closing\\_plenary.pdf](https://unfccc.int/sites/default/files/bingo_sbsta_closing_plenary.pdf).
713. UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA). (2020). *World Agroforestry | Transforming Lives and Landscapes with Trees*. <http://www.worldagroforestry.org/event/unfccc-subsidiary-body-scientific-and-technological-advice-sbsta-0>.

714. UNFCCC. (2017 November 14). *Insu Resilience to Provide the Poor with More Financial Protection against Climate Risks*. <<https://unfccc.int/news/insuresilience-to-provide-the-poor-with-more-financial-protection-against-climate-risk>.
715. UNFCCC Reports on Education, Training, Public Awareness.(2016 March 28). IISD.<http://sdg.iisd.org/news/unfccc-reports-on-education-training-public-awareness/>.
716. UNFCCC. (2016). *Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015*. <https://unfccc.int/resource/docs/2015/cop21/eng/10.pdf>.
717. UNFCCC. (2018). *UNFCCC Submission: Koronivia Joint Work on Agriculture*. <https://www4.unfccc.int/sites/SubmissionsStaging/Documents/201804191130---ARE%20UNFCCC%20KJWA%20Submission%20FINAL.pdf>.
718. United Nations Development Program Bureau for Development Policy. (2016). *Pursuing the 1.5°C limit Benefits & Opportunities*. <http://www.undp.org>.
719. United Nations Framework Convention on Climate Change (UNFCCC). (2002). *Report of the Conference of the Parties on its Seventh Session, Marrakech, 29 October – 10 November 2001, Addendum, FCCC/CP/2001/13/Add.1*. Available at: <http://unfccc.int/resource/docs/cop7/13a01.pdf>.
720. United Nations Framework Convention on Climate Change (UNFCCC). (2021). *COP22 Technical Inputs: Climate & Disaster Displacement*. <https://www.unhcr.org/fr-fr/en/media/cop-22-technical-inputs-climate-disaster-displacement>.
721. U.S.-China Joint Announcement on Climate Change. (2014 November 11). White House Office of the Press Secretary, <https://obamawhitehouse.archives.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change>.
722. United Nations Framework Convention on Climate Change: Essential background. (2008). *United Nations Framework Convention on Climate Change*. [http://unfccc.int/kyoto\\_protocol/status\\_of\\_ratification/items/2613.php](http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php).
723. *United Nations, Convention on Access to Information Public Participation in Decision-Making, and Access to Justice in Environmental Matters*. (1998). done at Aarhus, Denmark. <https://unece.org/DAM/env/pp/documents/cep43e.pdf>.
724. *United nations*. (2020). Transforming +our+ world: +the+2030+Agenda+for+Sustainable Development. <http://sustainabledevelopment.un.org>.
725. United States Department of Agriculture. (2015). *U.S.-Brazil Joint Statement on Climate Change, Food Security and New Technologies*. Western Hemisphere, Brazil: FAS. <https://fas.usda.gov/newsroom/us-brazil-joint-statement-climate-change-food-security-and-new-technologies>.

## Bibliography

726. UK Department of Energy & Climate Change. (2015). *BioCarbon Fund Initiative for Sustainable Forested Landscapes*. [https://assets.publishing.service.gov.uk/media/5a7f3b81ed915d74e33f5271/BioCarbon\\_Fund\\_ISFL\\_Annual\\_Review.pdf](https://assets.publishing.service.gov.uk/media/5a7f3b81ed915d74e33f5271/BioCarbon_Fund_ISFL_Annual_Review.pdf).
727. *UN Climate Change Conference - December 2019*. (2019 June 25). UNFCCC, <https://unfccc.int/cop25>.
728. *UN Climate Change Conference - November 2017*. Unfccc.int. (2021 May 25). <https://unfccc.int/process-and-meetings/conferences/past-conferences/un-climate-change-conference-november-2017/about/un-climate-change-conference-november-2017>.
729. *UN Climate Summit: Ban Ki-moon Final Summary*. (2014 September 25). UNFCCC. <https://unfccc.int/news/un-climate-summit-ban-ki-moon-final-summary>.
730. Ungerer, H., Evans, O., Nyberg, P. (1983). *The European monetary system: The Experience, 1979–82*, Occasional Paper No. 1983/005.
731. Ujvari, B. (2016). *Green Diplomacy Network – What is in a name?*, EPC. <http://www.epc.eu>.
732. Vallado, D. (2001 1ed). *Fundamentals of astrodynamics and applications*. pringer Science & Business Media.
733. Van Asselt, H., Kulovesi, K. (2020). Article 13: Enhanced Transparency Framework for Action and Support. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3595987>.
734. Van Asselt, H., Weikmans, R., Roberts, J., Abeyasinghe, A. (2016). Transparency of Action and Support under the Paris Agreement. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2859151>.
735. Van den Hove, S. (2000). Participatory approaches to environmental policymaking: the European Commission Climate Policy Process as a case study. *Ecological Economics*, 33(3), pp. 457–472.
736. Verschuuren, J. (2016). The Paris Agreement on Climate Change: Agriculture and Food Security. *European Journal of Risk Regulation*, 7(1), 54–57. doi: 10.1017/s1867299x00005389.
737. Vezirgiannidou, S. (2013). Climate and energy policy in the United States: the battle of ideas. *Environmental Politics*, 22(4), 593–609. <https://doi.org/10.1080/09644016.2013.806632>.
738. Vihma, A. (2014). The climate of Consensus: Managing Decision Making in the UN Climate Change Negotiations. *Review of European, Comparative & International Environmental Law*, 24(1), 58–68. <https://doi.org/10.1111/reel.12093>.
739. Vihma, A., Mulugetta, Y., Karlsson-Vinkhuyzen, S. (2011). Negotiating solidarity? The G77 through the prism of climate change negotiations. *Global Change, Peace & Security*, 23(3), 315–334. <https://doi.org/10.1080/14781158.2011.601853>.

740. Vihma, A. (2014). Climate of Consensus: Managing Decision Making in The Climate Change Negotiations. *Review of European, Comparative & International Environmental Law* 24 (1): 58–68. doi:10.1111/reel.12093.
741. Van Asselt, H. (2014). *Alongside the UNFCCC: Complementary Venues for Climate Action*. The Center for Climate and Energy Solutions. Stockholm Environment Institute.
742. Villavicencio Calzadilla, P., Mauger, R. (2017). The UN's new sustainable development agenda and renewable energy: the challenge to reach SDG7 while achieving energy justice. *Journal of Energy & Natural Resources Law*, 36(2), 233–254. <https://doi.org/10.1080/02646811.2017.1377951>.
743. Viñuales, J. (2015 1ed). *The Rio Declaration on environment and development*. Oxford University Press.
744. Voigt, C., Ferreira, F. (2016). Dynamic Differentiation: The Principles of CBDR-RC, Progression and Highest Possible Ambition in the Paris Agreement. *Transnational Environmental Law*, 5(2), 285–303. doi: 10.1017/s2047102516000212.
745. Voigt, C. (2019). *The Article 15 Committee to Facilitate Implementation and Promote Compliance*. Roundtable on Climate Change and Sustainable Transition. Department of Public and International Law, University of Oslo, Norway. <https://ercst.org/wp-content/uploads/2019/05/20190415-Art-15-Brief-VF.pdf>.
746. Vormedal, I. (2008). The Influence of Business and Industry NGOs In the Negotiation of The Kyoto Mechanisms: The Case of Carbon Capture and Storage in the CDM. *Global Environmental Politics* 8 (4): 36–65. doi:10.1162/glep.2008.
747. Van Schaik, L. (2012). *The EU and the progressive alliance negotiating in Durban: saving the climate?*, Overseas Development Institute and Climate and Development Knowledge Network.
748. Van Asselt, H., Weikmans, R., Roberts, Timmons., Abeyasinghe, A. ( 2016). *Putting the Enhanced Transparency Framework into Action: Priorities for a Key Pillar of the Paris Agreement*. Stockholm Environment Institute.
749. Vatanserver, A., Korppoo, A. (2012). *A Climate Vision for Russian federation: From Rhetoric to Action*. carnegie endowment for international peace. <https://carnegieendowment.org/files/RussiaClimate.pdf>.
750. Vandeweerd, V. (2011). *Climate Change Adaptation and Development*. *Fast Fact UNDP*. United Nations Development Program. <http://www.undp.org/climatechange>.
751. Van Vuuren, V., Kojo Agyemang-Bonsu, W. (2017). *Global forum on just transition*. International Labor Organization.
752. Van de Graaf, T. (2013). *The International Energy Agency* (1ed). Ghent University: Handbook on Governance and Security.

## Bibliography

753. Winkler, H. (2019). Putting equity into practice in the global stocktake under the Paris Agreement. *Climate Policy*, 20(1), 124–132. doi: 10.1080/14693062.2019.1680337.
754. Winkler, H., Depledge, J. (2018). Fiji-in-Bonn: will the ‘Talanoa spirit’ prevail?, *Climate Policy*, 18(2), 141–145. <https://doi.org/10.1080/14693062.2018.1417001>.
755. Winkler, H., Rajamani, L. (2013). CBDR&RC in a regime applicable to all. *Climate Policy*, 14(1), 102–121. doi: 10.1080/14693062.2013.791184.
756. World Energy Council. (2013). *World Energy Resources 2013 Survey*. London, UK.
757. *What is transparency and reporting*. (2021 April 4). UNFCCC. <https://unfccc.int/process-and-meetings/transparency-and-reporting/about-transparency/what-is-transparency>.
758. Widerberg, O. (2017). The Black Box problem of orchestration: how to evaluate the performance of the Lima-Paris Action Agenda. *Environmental Politics*, 26(4), 715–737. <https://doi.org/10.1080/09644016.2017.1319660>.
759. Widerberg, O., Pattberg, P. (2016). Accountability Challenges in the Transnational Regime Complex for Climate Change. *Review of Policy Research*, 34(1), 68–87. <https://doi.org/10.1111/ropr.12217>.
760. Wijaya, A S. (2014). Climate Change, Global Warming and Global Inequity in Developed and Developing Countries (Analytical Perspective, Issue, Problem and Solution). *IOP Conference Series: Earth and Environmental Science* 19: 012008. doi:10.1088/1755-1315/19/1/012008.
761. Wallimann-Helmer, I. (2015). Justice for climate loss and damage. *Climatic Change*, 133(3), 469–480. doi: 10.1007/s10584-015-1483-2.
762. Winkler, JK. (2007). *John D. Rockefeller: A Portrait in Oils* (1 ed). Cosimo, Incorporated.
763. Williams, A. (2015). *EBRD Steps Up Green Financing in Build-Up to Paris Climate Conference*. European Bank. <https://www.ebrd.com/news/2015/ebrd-steps-up-green-financing-in-build-up-to-paris-climate-conference.html>.
764. Wamsler, C., Schöpke, N., Fraude, C., Stasiak, D., Bruhn, T., Lawrence, M. (2020). Enabling new mindsets and transformative skills for negotiating and activating climate action: Lessons from UNFCCC conferences of the parties. *Environmental Science & Policy*, 112, 227–235. <https://doi.org/10.1016/j.envsci.2020.06.005>.
765. Wang, X., Wiser, G. (2002). The Implementation and Compliance Regimes under the Climate Change Convention and its Kyoto Protocol. *Review of European Community & International Environmental Law*, 11(2), 181–198. doi: 10.1111/1467-9388.00316.
766. Weart, S R. (2008). *The Discovery of Global Warming: Revised and Expanded Edition* (1 ed). Harvard University Press.

767. Webb, R. (2016 November 15). *Report from COP22: high level talks begin*. Sabin Center for Climate Change Law.
768. Weikmans, R., Asselt, H., Roberts, J. (2019). Transparency requirements under the Paris Agreement and their (UN) likely impact on strengthening the ambition of nationally determined contributions (NDCs). *Climate Policy*, 20(4), 511–526. <https://doi.org/10.1080/14693062.2019.1695571>.
769. Wewerinke-Singh, M., Doebbler, C. (2020). The Paris Agreement: Some Critical Reflections on Process and Substance. *UNSW Law Journal*, 39(4).
770. *What are El Niño and La Niña?*. (2019 October). The American Geosciences Institute. <https://www.americangeosciences.org/critical-issues/faq/what-are-el-nino-and-la-nina>.
771. COP22 Marrakech, 2016. (2017 August). Norton Rose Fulbright. <https://www.nortonrosefulbright.com/en/knowledge/publications/52ba4f5f/what-happened-at-cop22>.
772. *What Is a Developing Country? Definition and Examples*. (2020). Market Business News. <https://marketbusinessnews.com/financial-glossary/developing-country/>.
773. *What does COP26 mean for adaptation*. (2021 November 17). United Nations Environment Program. <https://www.unep.org/gef/news-and-stories/story/what-does-cop26-mean-adaptation>.
774. *World Health Organization Conference on Health and Climate Change*. (2014). WHO. <https://www.who.int/docs/default-source/climate-change/conference-report-first-conf-on-healthandclimatechange-2014.pdf>.
775. *WHO Indigenous Populations*. (2020). WHO. Int. [https://www.who.int/topics/health\\_services\\_indigenous/en](https://www.who.int/topics/health_services_indigenous/en).
776. Watson, C., Roberts, L. (2019). *Understanding finance in the Global Stocktake*. ODI. <https://odi.org/en/publications/understanding-finance-in-the-global-stocktake/>.
777. *What Is Technology Development and Transfer?* (2021). UNFCCC. Int. <https://unfccc.int/topics/climate-technology/the-big-picture/what-is-technology-development-and-transfer>.
778. *What is the history of the Paris Agreement (2015)? - Ask DAG*. (2018). Ask.Un.Org. <http://ask.un.org/faq/120272>.
779. Yamamoto, L., Serraglio, D., Cavedon-Capdeville, F. (2018). Human mobility in the context of climate change and disasters: a South American approach. *International Journal of Climate Change Strategies and Management*, 10(1), 65–85. <https://doi.org/10.1108/ijccsm-03-2017-0069>.
780. *Youth Organisation and Youth Program*. (2020). COE. <https://pjp-eu.coe.int/en/web/youth-partnership/youth-organisations-and-youth-programmes>.

## Bibliography

781. Yeo, S. (2016 November 3). *Preview: The UN'S COP22 Climate Talks in Marrakech*. Carbon Brief. <https://www.carbonbrief.org/preview-un-cop22-climate-talks-marrakech>.
782. Yoshino, H. (2013). *Total Energy Use in Buildings Analysis and Evaluation Methods*. Tohoku University Sendai, Japan: International Energy Agency Program on Energy in Buildings and Communities.
783. Zaelke, D., Borgford-Parnell, N. (2015). The importance of phasing down hydrofluorocarbons and other short-lived climate pollutants. *Journal of Environmental Studies and Sciences*, 5(2), 169–175. <https://doi.org/10.1007/s13412-014-0215-7>.
784. Zharkova, V., Shepherd, S., Zharkov, S., Popova, E. (2019). Retracted article: Oscillations of the baseline of solar magnetic field and solar irradiance on a millennial timescale. *Scientific Reports*, 9(1). <https://doi.org/10.1038/s41598-019-45584-3>.
785. Zihua, G., Voigt, C., Werksman, J. (2019). Facilitating Implementation and Promoting Compliance with the Paris Agreement under Article 15: Conceptual Challenges and Pragmatic Choices. *Climate Law*, 9(1–2), 65–100. <https://doi.org/10.1163/18786561-00901005>.
786. Zillman, J. (2007). Some Observations on the IPCC Assessment Process 1988–2007. *Energy & Environment*, 18(7), 869–891. <https://doi.org/10.1260/095830507782616896>.
787. Zwick, S. (2021). *Katowice Climate Deal Leaves Carbon Markets Intact but Incomplete*. Ecosystem Marketplace. <https://www.ecosystemmarketplace.com/articles/carbon-markets-look-set-to-emerge-from-katowice-intact-but-incomplete/>.
788. Zambrano-Barragán, C. (2010). *Decision Making and Climate Change Uncertainty: Setting the Foundations for Informed and Consistent Strategic Decisions*. World Resources Institute. <https://files.wri.org/d8/s3fs-public/2023-02/wrr-2010-11-question-2-response-3.pdf>.



The negotiations on climate change is a complex and difficult issue that has been ongoing for more than two decades. This book explores the implementation process of the negotiations' results – an important step of the Paris Agreement and the post-Paris Agreement – through the lens of key concept of the so-called intergovernmental integrated decision-making (IID). Major themes of this study include the politics of the global climate negotiations from Paris to COP26, the key rules and regulations of the Paris and post-Paris decisions, and the politics of the implementation process/decisions. It is a good resource for climate negotiators as well as scholars and students of international relations, climate change and environmental studies.

Logos Verlag Berlin

---

ISBN 978-3-8325-5764-5