



CLIMATE NEGOTIATION HANDBOOK

CONFERENCE OF PARTIES ON CLIMATE CHANGE

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List of Abbreviations

TDT	Technology and Development Transfer
GHG	Green House Gases
REDD	Reducing emissions from deforestation and forest degradation
CDM	Clean Development Mechanism
UAE	United Arab Emirates
COP	Conference of Parties
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
NDC	Nationally Determined Contribution
NAMA	Nationally Appropriate Mitigation Action
NAP	National Adaptation Plan
WMO	World Meteorological Organization
GWP	Global Warming Potential
IPCC	Intergovernmental Panel for Climate Change
TFI	Task Force on National Greenhouse Gas Inventories
ZOD	Zero Order Draft
FOD	First Order Draft
SOD	Second Order Draft
FGD	Flue Gas Desulfurization
SPM	Summary for Policymakers
SBSTA	Subsidiary Body for Scientific and Technological Advice
SBI	Subsidiary Body for Implementation
LCIPP	Local Communities and Indigenous Peoples Platform
RSO	Research and Systematic Observation
NWP	Nairobi Work Programme
GCOS	Global Climate Observing System
CEOS	Civil space-based Earth observation programmes
CBDR	Common But Differentiated Responsibilities
CBDR RC	Common but Differentiated Responsibilities and Respective Capabilities

OECD	Organization for Economic Co-operation and Development
UN	United Nations
SIDS	Small Island Developing States
WIM	Warsaw International Mechanism
GEF	Global Environment Fund
GCF	Green Climate Fund
JISC	The Joint Implementation Supervisory Committee
KCI	The Katowice Committee of Experts on the Impacts of the implementation of response measures
LDC	Least Developed Countries
CGE	Climate Change Effects
MRV	Measurement, Reporting, and Verification
TEC	Technology Executive Committee
CTCN	Climate Technology Centre and Network
LEG	Least Developed Countries Expert Group
SCF	Subnational Climate Fund
PCCB	Paris Committee on Capacity-building
UNEP	United Nation Environment Programme
US	United States of America
UNDP	United Nation Development Programme
ACE	Action for Climate Empowerment
CBIT	Capacity-building Initiative for Transparency
UNOSSC	UN Office for South-South Cooperation
IET	Institution of Engineering and Technology
CER	Certified Emissions Reduction
VCM	Voluntary Carbon Market
USD	United States Dollar
AIJ	The UN framework convention on climate change activities implemented jointly
PA	Paris Agreement
ITMO	Internationally Transferred Mitigation Outcomes
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
NIR	National Inventory Report

ECBI	European Capacity Building Initiative
COVID	Corona Virus
BTR	Biennial Transparency Report
ETF	Exchange Traded Fund
NMA	National Mining Association
SCCF	Special Climate Change Fund
LDCF	Least Developed Countries Fund
ADP	Ad Hoc Working Group on the Durban Platform for Enhanced Action
APA	American Psychological Association
TEP	Technology, Economics and Policy
UNISDR	United Nations International Strategy for Disaster Reduction
NELD	Non-economic Loss and Damage
GDP	Gross domestic product
AOSIS	Alliance of Small Island States
AWG	Ad Hoc Working Group
LCA	Life Cycle Assessment
RWE	Real-World Evidence
NGO	Non-Governmental Organization
PCRAFI	Pacific Risk Information System
ARC	African Risk Capacity
CCRIF	Caribbean Catastrophe Risk Insurance Facility
SFDRR	Sendai Framework for Disaster Risk Reduction
EU	European Union
ILO	International Labour Organization
KP	khyber pakhtunkhwa climate change policy
TEG	Technical expert group on sustainable finance
SB	Subsidiary Bodies
BECCS	Bioenergy with carbon capture and storage
CDR	Carbon Dioxide Removal
UNCED	United Nations Conference on Environment and Development
ODA	Overseas Development Agency
INC	Intended National Contribution

MOU	Memorandum of Understanding
LTF	Long-Term Climate Finance
CAM	Climate Change Action Model
AILAC	Independent Association of Latin America and the Caribbean
UNCTAD	United Nations Conference on Trade and Development
TT	Technology Transfer
EGTT	Expert Group on Technology Transfer
PSP	Public Sector Pension Investment Board
TNA	Technical Need Assessment
IPR	Intellectual Property Rights
STI	Science Technology and Innovation
IDEA	International Institute for Democracy and Electoral Assistance
FDI	Foreign direct investment
UK	United Kingdom
FCCC	Framework Convention on Climate Change
ASAP	As Soon As Possible
GST	Global Stocktake
LULUCF	Land Use, Land Use Change and Forestry.
AFOLU	Agriculture, Forestry, and Other Land Use
MWP	Mitigation Work Programme
AC	Adaptation Committee
FWG	Facilitative Working Group
NAPA	National Adaptation Programme of Action
CBD	Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
GGA	Global Goal on Adaptation
FM	Financial Mechanism
AGF	Advisory Group on Climate Finance
GFANZ	Glasgow Financial Alliance for Net Zero
WTO	World Trade Organization
GAP	Güneydoğu Anadolu Projesi = Southeastern Anatolia Project
ESD	Education for Sustainable Development

CCE	Climate change education
UNESCO	United Nations Educational, Scientific and Cultural Organization
MPG	Modalities, Procedures and Guidelines
IAR	International Assessment and Review
ICA	Integrated Context Analysis
NCQG	Collective Quantified Goal on Climate Finance
MCP	Massachusetts Contingency Plan
CBDRRC	Common but Differentiated Responsibilities and Respective Capabilities
PAICC	Paris Agreement Implementation and Compliance Committee
MIST	Management Information System
PV	Photovoltaic
HF	Hydrogen Fluoride
CCS	Carbon capture and storage
IOM	International Organization for Migration
CAF	Development Bank of Latin America and Caribbean
IDP	Internal Displaced People
AEWA	African-Eurasian Migratory Waterbirds
EBA	Important Bird Area
IBA	Endemic Bird Areas
IPA	Important Plant Area
KBA	Key Biodiversity Areas
CRIM	Climate Resilience Initiative in Malawi
MENA	Middle East Northern Africa
WHO	World Health Organization
TWP	Tropical Water Project
UNICEF	United Nations International Children's Emergency Fund
LED	Light Emitting Diode
JTC	Just Transition Commission
ICE	Internal Combustion Engine
IPC	International Programme Committee
SDG	Sustainable Development Goals
ISIL	Islamic States in Iraq and Levant

PDS	Protected Distribution System
USAID	United States Agency for International Development
MW	Mega Watt
GW	Global warming
IEA	International Energy Agency.
OPEC	Organization of the Petroleum Exporting Countries
CBI	Central Bank of Iraq
LDAR	Leak Detection and Repair
GMA	Global Methane Assessment
LPG	Liquefied Petroleum Gas
GGFR	Global Gas Flaring Reduction Partnership
CC	Carbon Credits
WBG	World Bank Group
ICRC	International Committee of Red Cross
NBSAP	National Biodiversity Strategies and Action Plans
NESAP	National Environment Strategy and Action Plan
GIS	Geographic Information System
UNFCCC	United Nations Framework Convention on Climate Change
GEO	Global Environment Outlook
RICCAR	Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region
AMWC	Arab Ministerial Water Council
AFED	Arab Forum for Environment and Development
RCREEE	The Regional Center for Renewable Energy and Energy Efficiency
IRENA	International Renewable Energy Agency.
GCCA	Global Climate Change Alliance
WFP	World Food Programme
PFM	Public Finance Management/ often calls Green Public Finance Management
ESG	Environmental, Social and Governance
HDI	Human Development Index
ISO	International Standardization Organization
RD	Research and Development



UNIDO	United Nations Industrial Development Organization
WIPO	World Intellectual Property Organization
TTI	Technology Transfer Initiative
GIN	Global Innovation Network

SECTION A: PROCESS AND MEETINGS

1. CLIMATE SCIENCE

The international negotiations aimed at limiting the negative consequences of human-caused climate change are strongly influenced on all sides, by appeals to 'be guided by science'.

1.1 What are the components?

Weather is the short-term (Hourly to Weekly) fluctuations in the various manifestations we associate with the Climate System, such as Air Temperature, Wind, Humidity, Precipitation and others.

Weather events: The occurrence of a value of a weather or climate variable above (or below) a threshold value between the mean and the upper (or lower) ends of the range of observed values of the variable or the drift over time in either the mean or the variance ('trends'). Weather events (also called an 'anomaly') with a considerable deviation from the norm are called 'climate extremes'.

Climate is the average weather, in other words, Climate is the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The World Meteorological Organization (WMO) specifies a period of 30 years to calculate Climate from Weather.

The Climate System is the system which controls the climate of the Earth. In its pre-human state, it consisted of five major components: the atmosphere, the oceans, the cryosphere, the land surface, and the biosphere. Its behavior is strongly influenced by its interactions (which makes it a 'system' and leads to complex outcomes). In modern times, it also includes human actions. There are minor contributions from variations in the input of solar radiation and Deep Earth processes such as volcanism.

Climate Science studies the climate system, specifically on planet Earth. Climate science seeks to understand how global, regional, and local climates are maintained and how they change over time.

Climate Change is a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/ or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing or to persistent anthropogenic changes in the composition of the atmosphere or land use.

Greenhouse gases (also called radiatively active gases) are those gaseous constituents of the atmosphere, both natural and anthropogenic, which absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, by the atmosphere itself and by clouds. This property causes the greenhouse effect. Water vapor (H₂O), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), and ozone (O₃) are the primary greenhouse gases in the Earth's atmosphere.

Climate Science Basics for Policy Makers

The climate system is a ‘machine’ that runs on radiant energy from the sun. The remarkably stable and livable average temperature near the Earth’s surface (approximately 15°C, averaged over the land and oceans of Earth and the entire year) represents an equilibrium (a balance-point) between energy coming in from the Sun and energy reflected, or re-radiated, back out into space by the Earth. That balance is controlled by the presence in the atmosphere of small quantities (‘traces’) of gases and particles that alter the amount of incoming or outgoing energy. These radiatively-active atmospheric constituents are generally called “**greenhouse gases**”.

Radiant Forcing

The concentration of greenhouse gases has increased over the past two centuries as a result of human activities, especially the burning of fossil fuels, but also the conversion of large land areas from native vegetation to other land covers, particularly agriculture. As a result, more incoming solar energy is trapped by the Earth’s climate system than leaves the system, causing a warming called ‘radiant forcing’. If the concentration of greenhouse gases is kept constant, the rate of warming will slow down and stop at a new, warmer balance point within a few decades. If the concentration of greenhouse gases continues to rise, so will the temperature near the Earth’s surface, almost proportionately to the cumulative concentrations? If the greenhouse gas concentration declines, the Earth’s surface will cool rather slowly because of the large amount of extra energy already stored in the oceans and cryosphere. Some changes in the climate system, such as sea level rise, will continue for hundreds or thousands of years after the global air temperature has stabilized.

Role of Oceans and the Cryosphere

Some of the most critical mechanisms in our climate engine are located in the oceans and cryosphere. This is because dry air has a relatively small capacity to store energy, whereas water, in either its liquid or frozen form, has a large capacity. Similarly, the carbon stores and uptake potential in the oceans are larger than either on the land or in the atmosphere because most of the energy is transported in the form of deep-water currents, some of which take centuries to reach their destination, which is why change is relatively slow.

The rising water temperature throughout the ocean depths causes the water to expand by a small amount. Because the oceans are very deep, this translates into a measurable and unavoidable rise in the mean sea surface level. Warming also causes ice bodies to melt. Where the ice was on land, in the form of ice sheets, glaciers, and permafrost, the melt water added to the sea level rise. The land and ocean surfaces, once covered by highly reflective ice or snow, become darker and absorb more solar energy, accelerating the warming. This is a significant climate change amplifying effect currently operating in the Arctic.

Global Warming Potential (GWP) is an index representing the climate-altering effect of a greenhouse gas relative to carbon dioxide. The calculation includes consideration of the comparative effectiveness of the gas in absorbing outgoing infrared radiation, but also its lifetime in the atmosphere. GWP, despite its approximate nature, has become the default

metric for converting emissions of different gases to a standard scale. The GWP, over a time horizon of 100 years, was adopted as a metric to implement the multi-gas approach in the UNFCCC. The GWP cannot be calculated with sufficient accuracy and universal applicability for very short-lived gases, such as tropospheric ozone.

Table 1. Atmospheric concentration of greenhouse gases changed substantially by humans

GAS	PRE-1750	2011	RADIATIVE FORCING IN 2011 (Wm ⁻²)†; CONTRIBUTION TO TOTAL RADIANT FORCING (%)	GLOBAL WARMING POTENTIAL (100 YEAR)
Carbon dioxide (CO ₂)	279 ppm	391 ppm*	1.68 (59.3%)	1
Methane (CH ₄)	722 ppb	1803 ppb**	0.97 (34.3%)	21
Nitrous oxide (N ₂ O)	270 ppb	324 ppb	0.17 (6.0%)	290
'Montreal Protocol gases' † †	0 ppt	1319 ppt***	0.33	(Variable, but high)

Note: Water (H₂O) is also a strongly radiatively active gas whose concentration in the atmosphere has increased as a result of human actions, but mostly indirectly, as a result of warming. †Radiatively forcing at the top of the atmosphere in watts per square meter. † †

Chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and others. *Parts per million. **Parts per billion. ***Parts per trillion.

Source: IPCC (2013). Anthropogenic and Natural Radiative Forcing. In: Climate Change 2013: The Physical Science Basis.

1.2 Impact of Climate Change

Often policymakers are not directly concerned about changes in the climate variables themselves, but with the things that the climate affects. The impacts of climate on the food system, the water supply system, the built environment, human health, and the ecosystems that support all the other species on Earth. Understanding these impacts is part of 'climate science', in the broad sense. An essential scientific development has been the consistent comparison of projected impacts across a range of scenarios of future emissions – for instance, scenarios where the global mean temperature increase stays below 1.5°C, with those that reach (or temporarily exceed) 2°C or scenarios with 3°C or more of warming. The key findings are that severe impacts are found even at 1.5°C of warming, and impacts grow disproportionately severe for further levels of warming.

HUMAN AGENCY IN CLIMATE SCIENCE

Since humans are the main drivers of modern-day changes in the climate system, the only way to avoid or reduce the unacceptable impacts of those changes is to alter human actions. The things that humans can do to reduce climate change, or adapt to its consequences, include collective actions taken by governments, such as international, national or local laws, policies or regulations. It also includes actions partly taken by the private sector, such as pricing regimes for greenhouse gas emissions or targets for renewable energy. It further includes individual actions taken by ordinary people, perhaps motivated by civil society.

HOW CAN YOU TELL CREDIBLE SCIENCE FROM FAKE SCIENCE?

The climate science process needs to be unbiased, balanced and fair. Two key principles are applied to ensure this.

- **Openness (also called transparency).** Most climate science is published in the open, peer-reviewed literature. Here, 'open' means that there is no restricted, secret or confidential information involved.
- **Participation.** This means that science, and its assessment, must be done by as many of the stakeholders and experts as possible.
- Link to robust, reliable peer reviewed science output from IPCC.

The Intergovernmental Panel on Climate Change (IPCC) embodies these two principles (and the more detailed guidelines in Box 1), which is what makes them the gold standard of carefully evaluated, reliable climate science. For people without deep experience in a topic, it is extremely difficult to distinguish between legitimate and fake science. Box 1 provides some guidance.

Box 1: How to identify credible science

Many contributions on the topic of climate change present themselves as 'science'. Which should you trust? Here are some guidelines, none of which are infallible, but together they can alert you to advocacy-based pieces.

- Are the authors qualified to comment on the topic at hand? Even if an author is highly qualified in another area, this does not necessarily equip them to comment on an issue beyond their training and experience. Look at the credentials and experience of the authors.
- Is there evidence of a thorough and independent review process? The process may be stated, or it may be implicit by reference to the procedures of the publisher. There are lists of 'predatory journals' that do not follow these processes. The journal website should provide details of the review process.
- Is the place where the contribution is published reputable? Formal, peer-reviewed professional journals, particularly those with a long history, high standing and high citation index, are more likely to be reliable sources than the Internet, social media, traditional media or in-house publications of entities that have vested interests in the finding. Check the citation index of the journal.

- Are assertions in the contribution supported by evidence? This can take the form of data or traceable, reproducible evidence or by citation of sources which have such evidence. Check each important statement for proof.
- Are the methods sufficiently described so that the findings can be checked? The methods should be given in sufficient detail so that another scientist could repeat the study.

Scientific uncertainty has several causes:

- The first we could call ‘ignorance’, which is an absent or inadequate theory. This cause can be reduced by targeted research.
- The second uncertainty results from ‘measurement error’. Even our most precise scientific instruments contain some inaccuracy, which can be reduced by greater sampling effort and improved technology.
- The third source of uncertainty is unpredictability. Some processes simply cannot be accurately predicted beyond a limited time in the future or further than some distance from an observation point.
- The fourth source of uncertainty levels resulting from ‘modelled’ activity. Different levels of confidence resulting from a trail of evidence.

For various reasons, much climate science, as broadly defined above, does not lend itself to this kind of statistical presentation, which is also hard for non-experts to understand. Therefore, assessment bodies like the IPCC have adopted a system of calibrated ‘reserved language’ for expressing certainty. The uncertainty category is based on two factors: how much evidence there is in support of the finding and how much agreement is there between the observations and among experts. Confidence language may be used anywhere in scientific assessment reports but is obligatory for ‘high-level’ summary statements that may drive important decisions.

1.3 intergovernmental panel on climate change science

The proposed intergovernmental mechanism emerged as the Intergovernmental Panel on Climate Change (IPCC) in 1988, established to carry out comprehensive assessments of the science, impacts, and responses under three Working Groups:

- Working Group I: Scientific Assessment of Climate change (changed to Physical Science Basis from the 2007 Fourth Assessment Report onwards).
- Working Group II: Potential Impacts of Climate Change (changed to Impacts, Adaptation and Vulnerability 2001 Third Assessment Report onwards).
- Working Group III: Formulation of Response Strategies (changed to Mitigation of Climate Change from the 2001 Third Assessment Report onwards).

A Task Force on National Greenhouse Gas Inventories (TFI) was established in 1998 to develop and refine a methodology and software to calculate and report national greenhouse gas emissions and removals.

IPCC Reports Involving Climate Science and Scientists:

IPCC produces reports of several kinds to cover the

- Full assessment Report (These are published materials composed of the full scientific and technical assessment of climate change, generally in three volumes, one for each of the Working Groups of the IPCC, together with their Summaries for Policymakers, plus a Synthesis Report) is produced every 5 to 7 years since 1991, considered to be the heart of evolution, Global, Regional, National policy report to climate change.
- Special Reports on particular topics, on the request of IPCC Plenary.
- Methodology Reports: This is produced to provide particular guidelines for preparing GHG inventories.

The IPCC reports undergo multiple rounds of drafting and review to ensure they are comprehensive, objective and produced in an open and transparent way. In addition to the hundreds of authors, thousands of governmental and nongovernmental experts contribute to the reports by acting as reviewers. This helps ensure that the reports reflect the full range of views in the scientific community.

- Zero Order Draft (ZOD) listing the topics to be covered in the report. It is evaluated by the IPCC Bureau in relation to the scoping document approved by the Plenary and adjusted if necessary.
- First Order Draft (FOD) contains rough text, draft figures, and tables. It may have many gaps and placeholder text. The FOD goes out to teams of expert reviewers, many of whom are nominated by countries.
- Second Order Draft (SOD) is the stage where the authors write and answer and address the expert reviewers' comments, and the action taken is documented by the authors.
- Final Government Draft (FGD) is produced, where SOD goes back to the expert reviewers and the national member countries of the IPCC, who can send it to anyone to review. Thus effectively, anyone worldwide can comment on the SOD, and again the authors must respond to each comment. The Bureau appoints two or three review editors to each chapter, based on domain expertise, experience, and geographical balance, to certify that they have done so fairly.

Along with a Summary for Policymakers (SPM). Every SPM statement must be traceable to a passage in the FGD.

The SPM is then approved line-by-line by a Plenary Session of the IPCC, with Party delegates (generally not scientists but may be advised by scientists) in dialogue with the authors. Only the SPM is reworked this way, not the underlying report (see below on how it is accepted). The authors are present in the discussion to explain the science that underlies the statements.

There are three levels of endorsement:

- ‘Approval’ means that the material has been subjected to detailed line-by-line discussion and agreement. This is the procedure used for the SPMs.
- ‘Adoption’ describes a section-by-section endorsement. This is used for the Synthesis Report and overview chapters of Methodology Reports.
- ‘Acceptance’ signifies that the material has not been subject to line-by-line or section-by-section agreement but nevertheless presents a comprehensive, objective, and balanced view of the subject matter.

The result of this negotiation process is usually quite complicated text, as it struggles to incorporate the various viewpoints, but it is not knowingly wrong. Since the plenary proceedings are in the public domain and are followed with interest by the media, there is a strong disincentive for individual countries to take an isolated position on an issue. Instead, they use their influence outside of the IPCC to convince other countries to support their position. Even so, it is hard to introduce something that has no evidentiary support. The most that can be achieved is to water down the confidence in a finding or introduce contradictory evidence – but that has to be in the underlying Assessment Report in the first place. In rare cases where no consensus text can be reached, a sentence or section must be dropped from the SPM altogether, which may also lead to text being dropped from the underlying Assessment Report.

SCIENCE UNDER THE UNFCCC AND ITS PARIS AGREEMENT

The UNFCCC calls on Parties to promote and cooperate in research, systematic observation and the development of data archives. Parties report on research and systematic observations in their National Communications.

- Article 9 of the UNFCCC establishes a SBSTA to provide the Conference of the Parties (COP) to the Convention with “timely information and advice” on scientific and technological matters. While the body is open for participation by all Parties and non-states actors, Article 9 calls for multidisciplinary participation, comprising government representatives competent in the relevant field of expertise.

The UNFCCC calls on SBSTA to, among other things:

- Provide assessments of the state of scientific knowledge relating to climate change and its effects.
- Prepare scientific assessments on the effects of measures taken in implementing the Convention.

- Identify innovative, efficient, and state-of-the-art technologies and know-how and advice on how to promote the development and/or transfer of such technologies.
- Provide advice on scientific programmes, international cooperation in research and development related to climate change, as well as on ways and means of supporting endogenous capacity-building in developing countries.
- Respond to scientific, technological, and methodological questions that the COP and its subsidiary bodies may put to the body.
- Article 10 establishes a Subsidiary Body for Implementation (SBI) to assist COP in assessing and reviewing the effective implementation of the Convention.

SBSTA and SBI also serve as Subsidiary Bodies to the Kyoto Protocol and the Paris Agreement. Article 18 of the Paris Agreement states that SBSTA and SBI sessions of the Agreement will be held in conjunction with the meetings of, respectively, the SBSTA and SBI of the Convention.

The Paris Agreement recognizes the need for an effective and progressive response to the urgent threat of climate change based on the best available scientific knowledge. Perhaps the best-known parts of the Paris Agreement are the limits to global mean temperature rise.

- Article 4.1 of the Agreement calls on Parties to limit global greenhouse gas emissions as soon as possible and at the lowest possible resultant concentrations and “to undertake rapid reductions thereafter in accordance with best available science”.
- Article 7.5 of the Paris Agreement, Parties acknowledge that adaptation action “should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems...”.
- Article 14 calls for the five-yearly global stocktakes to take stock of the Agreement's implementation “in the light of equity and the best available science”.
- Article 7 The Agreement identifies the need to enhance and strengthen systematic observation, climate services and knowledge sharing.
- Article 8 recognizes that systematic observation and early warning systems are areas of cooperation and facilitation to enhance understanding, action, and support.
- Article 7.5 In addition to the reference to indigenous peoples and local knowledge systems, the preamble of the Paris Agreement calls on Parties to respect, promote, and consider the rights of indigenous peoples and local communities, among others.

Paris Decision 1/CP.21 recognizes the need to strengthen knowledge, technologies, practices, and efforts of local communities and indigenous peoples related to addressing and

responding to climate change and establishes a platform for the exchange of experiences and sharing of best practices on mitigation and adaptation in a holistic and integrated manner (§135). The Local Communities and Indigenous Peoples Platform (LCIPP) was launched in 2017 Decision 2/CP.23 to:

1. Strengthen the knowledge, technologies, practices, and efforts of local communities and indigenous peoples in addressing and responding to climate change.
2. Facilitate the exchange of experience and the sharing of best practices and lessons learned on mitigation and adaptation in a holistic and integrated manner.
3. Enhance the engagement of local communities and indigenous people in the UNFCCC process.

RESEARCH AND SYSTEMATIC OBSERVATIONS

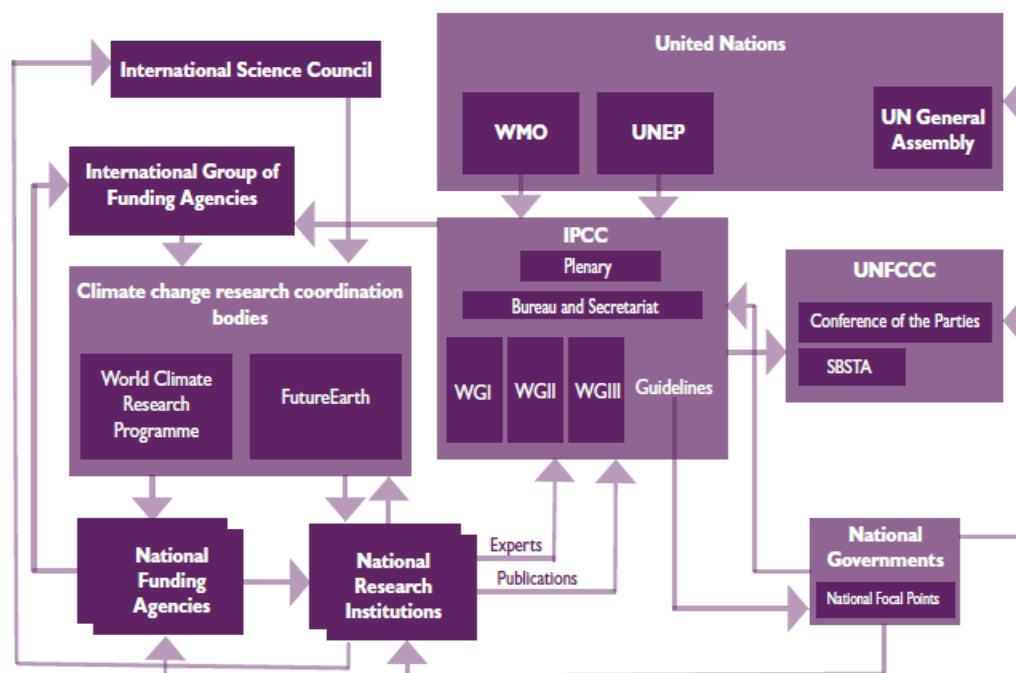
SBSTA considers the negotiations on Research and Systematic Observations (RSO) through several sessions as below:

1. First session of the year, which involves Research, Climate change research considers a wide range of topics, such as Earth sciences, climate processes and variability, climate modeling and prediction, climate change impacts, vulnerabilities, risks and extreme events, as well as research on adaptation and mitigation. It covers a broad spectrum of sectors, society, economies, and ecosystems, including crosscutting and interdisciplinary research.
2. A second sessional period is the systematic observation, which focuses on worldwide, long-term observations of the climate system to understand climate change and its associated impacts and helps scientists determine future trends.
3. Research Dialogues take place at the mid-year session of the SBSTA and focus on a topic identified by the Parties. They are a vital way of sharing up-to-date scientific information, and the Parties need to support the science-policy interface under the Convention.
4. The Earth Information Days take place during the COP, during which scientific agencies are invited to make presentations on their work.
5. Nairobi Work Programme on Adaptation (NWP) also convenes a dialogue at each COP. Organizations that are members of the NWP make presentations on specific topics, which are acknowledged in the SBSTA conclusion on RSO.

COOPERATION WITH OTHER BODIES

Provided by expert sources such as the IPCC and the policy-oriented needs of the COP. The Secretariats of the WMO, Global Climate Observing System (GCOS), and the Committee on Earth Observation Satellites (CEOS) are invited to deliver statements at the SBSTA plenaries. These statements inform the deliberations on various SBSTA agenda items.

Figure 2: Main institutions involved in the science-policy interaction that supports climate negotiations



HOW DOES CLIMATE SCIENCE INTERACT WITH CLIMATE POLICY?

Climate science and climate policy interaction is crucial for addressing global climate challenges. Traditionally, the view of science was that researchers worked to advance knowledge, communicating primarily with fellow scientists. However, modern climate science often operates differently. Scientists typically work on questions posed by society, guided by research funding grants designed to provide solutions. This process involves two-way communication between users (community and funders) and scientists, resulting in 'co-generated' or 'co-produced' knowledge.

In international climate negotiations, science significantly influences policy, although scientists are usually not directly involved. Each UNFCCC Party sends representatives, often supported by advisors, some of whom have scientific backgrounds. These advisors' brief diplomats on technical issues, helping to co-produce national positions that blend political and technical expertise. As negotiations progress, non-scientists become more dominant.

Several mechanisms facilitate climate science-policy interaction, including formal bodies like the IPCC and SBSTA, various government levels and sector advisory structures, and public and media outreach.

In the lead-up to the 2015 Paris Agreement, thousands of scientists, funded by governments and sometimes private sources, collaborated to understand the global climate system. Their work was periodically assessed by bodies like the IPCC. This scientific effort and evidence from reports contributed significantly to the Paris Agreement's success.

Parties vulnerable to climate change pushed for a 1.5°C target in the Paris Agreement, leading to the IPCC's Special Report in 2018. This report highlighted that limiting global warming to 1.5°C benefits reducing climate risks, calling for a 45% emissions reduction from 2010 levels by 2030. It has since been used to urge policymakers to take urgent action. Despite its importance, some Parties tried to downplay the report's significance, sparking debate within the COP.

1.4 Existing and future challenges related to climate science

As the focus on implementing the Paris Agreement intensifies globally, the scientific community faces both existing and future challenges related to climate science. These challenges include:

1. **Disparities in Data and Analytical Capacity:** There is a significant gap in data and analytical capabilities between developed and developing parts of the world. Bridging this gap is essential to ensure equitable participation in climate action and decision-making.
2. **Defining Future Emission Pathways:** Climate scientists will continue to play a critical role in defining emission pathways that align with the long-term goals of the Paris Agreement. This involves providing insights into how emissions can be reduced to limit global warming.
3. **Identifying Barriers and Solutions:** Scientists must identify the barriers to achieving transformational change in various sectors and propose practical solutions. This is crucial for accelerating the transition to a low-carbon economy.
4. **Informing Nationally Determined Contributions (NDCs) and Low Emission Development Strategies:** Climate scientists will contribute to the preparation of NDCs and Low Emission Development Strategies by providing the necessary scientific basis for these climate action plans. Which involves Gap to Target Assessments.
5. **Global Stocktakes:** The global stocktakes, carried out "in the light of equity and the best available science," require robust scientific input. Climate scientists will be responsible for providing the data and analysis needed for these assessments. Which is considered to be a coordination mechanism at a global level.
6. **Adaptation and Loss & Damage:** Scientists will continue to contribute to adaptation efforts, helping communities and nations adapt to the changing climate. Additionally, they will work on minimizing the loss and damage caused by climate change, including extreme weather events and sea-level rise.

Adjustments to existing processes may be necessary to address these challenges effectively. For example, there have been discussions about aligning the five to seven-year cycle of the IPCC Assessment Reports with the five-year cycles of the global stocktakes. While this proposal has faced opposition from some Parties, others, including Small Island Developing States, support the alignment as a means to prompt faster action and increased ambition on

a global scale. The Task Group on the Organization of the Future Work of the IPCC will continue discussions on this matter.

INTEGRATION IN THE WORK OF THE IPCC

The work of the Intergovernmental Panel on Climate Change (IPCC) has evolved over the years, with changes in the composition of authors and the scope of its assessments. Initially, the authorship of IPCC reports was predominantly from physical climatologists, physicists, and mathematical modelers. The focus was primarily on establishing the existence of climate change.

As the IPCC's work expanded to encompass the environmental and social impacts of climate change, a more diverse group of experts became involved. This expansion led to the inclusion of social scientists, economists, engineers, and political scientists, reflecting the increasing recognition of the human-related aspects of climate change. Consequently, the "science culture" of the IPCC has evolved and diversified over time.

To facilitate its work, the IPCC established three Working Groups to address specific aspects of climate change: Working Group 1 focuses on the physical science of climate change, Working Group 2 examines impacts, adaptation, and vulnerability, and Working Group 3 assesses mitigation strategies.

However, this division of labor into separate Working Groups has at times hindered a fully integrated view of climate change, as each group has its own culture and perspectives. The Synthesis Report is where efforts are made to incorporate the findings of all three Working Groups. Still, the sequential order in which these Working Groups operate can lead to later groups adopting positions already established by earlier ones.

While the UNFCCC initially defined a clear separation between "mitigation" (reducing greenhouse gas concentrations) and "adaptation" (coping with climate impacts) responsibilities, this distinction has become less clear-cut. Several factors have contributed to this blurring of lines:

Mitigation and adaptation actions can have both positive and negative consequences for each other.

Even industrialized countries must adapt to the inevitable impacts of climate change.

Developing countries, despite their adaptation needs, must also engage in mitigation actions to leverage low-carbon energy sources.

Developing countries have become significant emitters, and their emissions are on the rise.

Overall, the evolving nature of the IPCC's work reflects the complex interplay between climate science, societal impacts, and policy responses to climate change.

2. WHAT IS THE OVERALL ARCHITECTURE OF THE INTERNATIONAL CLIMATE CHANGE REGIME?

The international climate change regime currently consists of the UNFCCC, the Kyoto Protocol, and the Paris Agreement and the decisions and conclusions adopted by their respective governing bodies. The Kyoto Protocol and the Paris Agreement were negotiated and adopted under the UNFCCC and built on its framework. However, they are distinct and separate international treaties with their governing bodies and membership, although closely related.

2.1 UNFCCC: Overview

The Convention defines the ultimate objective of the international climate change regime as the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system...” (Article 2). However, it is not prescriptive and, to a large extent, establishes only procedural obligations.

In addition, the convention establishes the regime’s core principles: precaution, equity, the right to sustainable development, and common but differentiated responsibilities and respective capabilities (CBDR RC) in Article 3. Further, it creates a differentiated system of commitments by delineating the commitments of **all Parties** as follows:

1. **Annex I Parties:** The industrialized countries that were members of the Organization for Economic Cooperation and Development, or OECD, in 1992 and countries with economies in transition.
2. **Annex II Parties:** The industrialized countries as in Annex I, without the countries with economies in transition.

Nevertheless, all Parties are required, among other things, to: develop national inventories of GHG emissions by sources and removals by sinks; formulate and implement measures to mitigate and adapt to climate change; and communicate information relating to the implementation of their commitments to the COP.

2.2 What is the institutional structure of the UNFCCC process?

The institutional structure is hierarchical. The governing bodies - **COP** (*Conference of the Parties*), **CMP** (*Conference of Parties serving as the meeting of Parties to the Kyoto Protocol*), and **CMA** (*Conference of the Parties serving as the meeting of the Parties to the Paris Agreement*) – **are the supreme decision-making organs**.

The permanent subsidiary bodies, the constituted bodies, and other institutional arrangements function under the authority and guidance of the COP, CMP, and CMA as the case may be. They report to, and develop recommendations, including draft decisions, for consideration by the supreme decision-making organs.

Therefore, the institutional structure of the UNFCCC process can be projected in the following:

1. Governing - Supreme Decision-Making Bodies
2. The COP Bureau
3. Permanent Subsidiary Bodies
4. Financial Mechanism, Operating Entities, and Funds
5. Constituted Bodies and Ad Hoc Working Groups
6. Institutional Arrangements to Address Implementation in Specific Thematic Areas
7. Secretariat
8. Intergovernmental Panel on Climate Change

1. Governing - Supreme Decision-Making Bodies

The UNFCCC establishes a Conference of the Parties (COP) as the supreme decision-making body of the Convention. All States that are Party to the Convention are represented in the COP, and non-Party States participate in its sessions as observers.

Both the Kyoto Protocol and the Paris Agreement provide that the COP to the Convention shall serve as the meeting of the Parties to the Protocol and the meeting of the Parties to the Paris Agreement, respectively.

When the **COP** serves as the meeting of the Parties to the Protocol or the meeting of the Parties to the Paris Agreement it becomes a distinct meeting body, the **CMP** for the Protocol, and the **CMA** for the Paris Agreement.

It also followed that the subsidiary bodies – the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI) – and other institutional arrangements established under the Convention serve the Kyoto Protocol and the Paris Agreement. Their respective identities, names, or mandates are not changed – **the only marker is the relevant agenda item under the Subsidiary Body**

2. The COP Bureau

The COP has a Bureau composed of representatives of Parties nominated by each of the five UN regional groups and SIDS, and elected by the COP. A representative from the LDCs is allowed to attend as an observer. The Bureau has 11 members: a President, seven Vice-Presidents, the Chairs of SBSTA and SBI, and a Rapporteur.

During sessions, the Bureau deals with process management issues and supports the President in her/his task of facilitating the work of the Conferences and promoting agreement during negotiations. The Bureau is not, however, a forum for negotiations.

3. Permanent Subsidiary Bodies

The Convention establishes two open-ended permanent subsidiary bodies: the Subsidiary Body for Scientific and Technological Advice (SBSTA) is established in Article 9; and the Subsidiary Body for Implementation (SBI) is established in Article 10.

The SBSTA provides the COP, CMP, CMA and other subsidiary bodies with timely information and advice on scientific and technological matters. It addresses, inter alia, methodological issues; impacts, vulnerability, and adaptation to climate change; development and transfer of environmentally-sound technologies; and guidelines for preparing and reviewing GHG inventories.

The SBI is mandated to assist the COP, CMP, and CMA in the assessment and review of the effective implementation of the Convention, the Kyoto Protocol, and the Paris Agreement. It is at the centre of implementation issues and addresses, among other things, transparency, mitigation, adaptation, finance, technology, and capacity building. It also considers national reports submitted by Parties.

The SBSTA and SBI therefore collaborate in addressing crosscutting issues within the competence of both bodies. These include vulnerability and adaptation to climate change by developing countries; response measures; and issues concerning the Technology Mechanism, the Adaptation Committee, and the WIM.

4. Financial Mechanism, Operating Entities, and Funds

The UNFCCC defines a financial mechanism for the provision of financial resources to developing countries, including for the transfer of technology, in order to facilitate the implementation of their obligations under the Convention (Article 11.1). The financial resources are provided by developed countries Parties.

In 1998, the COP designated the Global Environment Facility (**GEF**) as an operating entity of the financial mechanism. Thereafter, in 2010, the COP also established the Green Climate Fund (**GCF**) as an operating entity of the financial mechanism.

The financial mechanism of the Convention, including its operating entities, serves as the financial mechanism of the Kyoto Protocol and the Paris Agreement in accordance with their provisions.

5. Constituted Bodies and Ad Hoc Working Groups

The COP, CMP, and CMA are mandated to create other subsidiary bodies, in practice known as “constituted bodies”. In recent times, the constituted bodies and institutional arrangements established by the COP include:

1. **The Special Climate Change Fund.**
2. **The Least Developed Countries Fund.**
3. **The Adaptation Committee.**
4. **The Technology Mechanism, consisting of the Technology.**

5. Executive Committee and the Climate Technology Centre and Network.
6. The Standing Committee on Finance.
7. The Facilitative Working Group of the Local Communities and Indigenous Peoples Platform.
8. The Executive Committee of the WIM.
9. The Paris Committee on Capacity-building.
10. The CMP has established, inter alia:
11. The CDM Executive Board.
12. The Compliance Committee.
13. The Adaptation Fund Board.
14. The Joint Implementation Supervisory Committee (JISC)

The Paris Agreement authorizes the CMA to take a decision in the future that specific subsidiary bodies or other institutional arrangements under the Convention shall serve the Agreement (Article 19)

6. Institutional Arrangements to Address Implementation in Specific Thematic Areas

A number of institutions have been established to support implementation and work programmes in specific thematic areas such as Mitigation, Adaptation, Loss and Damages, and Capacity Building:

6.1. Mitigation

#	The Established Body	Role	Members
1	CDM Executive Board	• Approving methodologies for new CDM projects • Registering projects • Issuing Certified Emissions Reductions (CERs) • Maintaining a public database of CDM project activities • It may also establish committees, panels, or working groups.	The Board comprises of 10 members and 10 alternate members nominated by Parties to the Kyoto Protocol and elected by the CMP

2	Joint Implementation Supervisory Committee	• Verify the emission reduction units generated by Article 6 Kyoto Protocol. • Accrediting independent entities that develop and accredit project designs. • Reviewing and revising reporting guidelines and criteria for baselines and monitoring of JI projects. • It may suspend or withdraw the accreditation of an independent entity.	The JISC comprises of 10 members and 10 alternate members nominated by Parties to the Kyoto Protocol and elected by the CMP
3	Compliance Committee has two branches: (1) The facilitative branch (2) The enforcement branch	• The facilitative branch aims to provide advice and assistance to Parties in order to promote compliance under the Kyoto Protocol, • The enforcement branch determines consequences for Parties not meeting their commitments under the Kyoto Protocol.	Both branches are composed of 10 members , including one representative from each of the five official UN regions and one from the small island developing States, and two each from Annex I and non-Annex I Parties.
4	Implementation and Compliance Committee	• Assisting countries in implementing their commitments by considering systemic issues impacting multiple countries. • It will also address countries' failures to fulfil obligations relating to communication of NDCs and submission of reports	The Committee comprises of 12 members and alternates nominated by Parties to the Paris Agreement and elected by the CMA.
5	Forum on the Impact of the Implementation of Response Measures (Forum)	• Providing a platform allowing Parties to share, among other things, information, case studies, best practices and views to facilitate an analysis of the impact of the	The Forum is open to all stakeholders who are interested in the impact of the implementation of response measures to address climate change.

		implementation of response measures It has eleven elements and includes exploring approaches to inform the development of climate change mitigation strategies that maximize the positive, and minimize the negative, impacts of response measures.	
6	Katowice Committee of Experts on the Impacts of Implementation of Response Measures;	- Supporting the work of the Forum on the Impact of the Implementation of Response Measures. - Building awareness, prepare technical papers and case studies, receive inputs from experts, and organize workshops	The KCI comprises 14 members including two members from each of the five UN regional groups, one from an LDC, one from SIDS, and two from relevant intergovernmental organizations.

6.2. Adaptation

1	Adaptation Committee	- Providing technical support and guidance to Parties. - Sharing information, knowledge, experience, and good practices. - Providing guidance on means to incentivize adaptation actions. - Considering information on monitoring and review of adaptation actions	The Committee comprises members of the Adaptation Committee and nominees from the LDC Expert Group, the Standing Committee on Finance, the Technology Executive Committee, the Adaptation Fund, the Global Environment Facility, and the Green Climate Fund.
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6.3. Bodies Linked to Mitigation and Adaptation

1	Consultative Group of Experts (CGE)	Assisting developing country Parties improve their capacities to implement the existing measuring, reporting, and verification (MRV) arrangements under the Convention and the enhanced transparency framework under Article 13 of the Paris Agreement.	The CGE comprises of 24 experts from developed and developing Parties and from international organizations.
2	Technology Mechanism It consists of two bodies: (1) Technology Executive Committee (TEC). (2) Climate Technology Centre and Network (CTCN).	The TEC undertakes a number of functions, including: - Providing an overview of countries' climate technology needs. - Recommending actions to promote climate technology development and transfer. - Recommending actions to address barriers to climate technology development and transfer and promotion. - Facilitating collaboration between climate technology stakeholders The CTCN undertakes a number of functions, including: - Stimulating technology cooperation and enhancing the development and transfer of technologies to developing country Parties at their request.	TEC consists of 20 technology experts representing both developed and developing countries. CTCN is hosted by the UN Environment in collaboration with the United Nations Industrial Development Organization, and is supported by 11 partner institutions

		• Providing technical assistance to developing countries; provides and shares information and knowledge on climate technologies. • Fostering collaboration and networking of stakeholders on climate technologies.	
3	Local Communities and Indigenous Peoples Platform (LCIPP) <u>Operated and implemented by:</u> A Facilitative Working Group of the Local Communities and Indigenous Peoples Platform	• Strengthen the knowledge, technologies, practices, and efforts of local communities and Indigenous Peoples relating to responses to climate change and its impacts. • Facilitating the sharing of experiences, best practices, and lessons learned on mitigation and adaptation, and to enhance the engagement of local communities and Indigenous Peoples in the UNFCCC process.	The Facilitative Working Group comprises seven representatives of Parties, nominated by their respective regional group or constituency, and seven representatives of Indigenous Peoples' organizations, nominated by the Indigenous Peoples through their focal points.
4	Least Developed Countries Expert Group (LEG).	• Provide advice to LDCs on the preparation and implementation of National Adaptation Programmes of Action (NAPAs). • Providing technical guidance and support to LDCs to formulate and implement NAPs. • Implementing the LDC work programme. • Providing technical guidance and advice to LDCs on accessing funding from the GCF.	The LEG is composed of 12 experts with five experts from African LDC Parties, two experts from Asian LDC Parties, two experts from SIDS which are LDCs, and three experts from Annex II Parties. At least one selected LDC expert and at least one selected expert from Annex II Parties shall also be a member of the CGE.

		- Facilitating the mobilization of support for adaptation in developing countries - Reviewing the adequacy and effectiveness of adaptation and support being provided under the Paris Agreement.	
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6.4. Loss and Damages

1	Warsaw International Mechanism on Loss and Damage associated with Climate Change Impacts (WIM)	- Enhancing knowledge and understanding of comprehensive risk management approaches. - Strengthening dialogue, coordination, coherence, and synergies among relevant stakeholders. - Enhancing action and support, including finance, technology, and capacity building.	The work of the WIM is facilitated by an Executive Committee composed of 20 members : 10 members from developed country Parties; and 10 members from developing country Parties.
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6.5. Finance

Standing Committee on Finance (SCF)

1	Standing Committee on Finance (SCF)	(1) Assisting and supporting the COP in a number of areas: - Improving coherence and coordination in the delivery of climate change financing. - The rationalization of the financial mechanism of the Convention. - The mobilization of financial resources. - The measurement, reporting, and verification of support provided to developing country Parties.	The SCF is composed of 20 members who include 10 members from developed country Parties and 10 members from developing country Parties, including two members each from the African, Asia-Pacific, and the Latin America and Caribbean States; and one member each from SIDS and LDCs.
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		(2) preparing draft guidance to the operating entities of the financial mechanism (3) preparing biennial assessments and overviews of climate finance flows; (4) providing expert inputs into the COP's periodic reviews of the financial mechanism.	
2	Green Climate Fund Board (GCF)	• Overseeing the operation of all relevant components of the Fund. • Approving operational modalities, access modalities and funding structures. • Developing environmental and social safeguards and fiduciary principles and standards that are internationally accepted. • Developing criteria and application processes for the accreditation of implementing entities of the Fund, accrediting implementing entities, and withdrawing such accreditation. • Establishing a framework for the monitoring and evaluation of performance and the financial accountability of activities supported by the Fund and any necessary external audits.	It comprises 24 members and 24 alternate members with an equal number of members from developing and developed country Parties.
3	Adaptation Fund Board	• Developing strategic priorities, policies, and guidelines. • Deciding on projects to be funded. • Monitoring and reviewing the implementation of operations.	The Adaptation Fund Board originally comprised of 16 members and 16 alternates .

		• Monetization of the Certified Emission Reductions issued by the CDM Executive Board.	
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6.6. Capacity Building

	Paris Committee on Capacity-building (PCCB)	• Addressing current and emerging gaps and needs in implementing and further enhancing capacity building in developing countries. • Fostering collaboration between actors at all levels and strengthening networks and partnerships to enhance synergies and promote knowledge- and experience-sharing.	The PCCB is composed of twelve members comprising two members from each of the five UN regional groups, and one member each from LDCs and SIDS.
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7. Secretariat

The UNFCCC establishes a secretariat to discharge specific functions. Both the Kyoto Protocol and the Paris Agreement provide that the Convention secretariat shall also serve as the secretariat of the Protocol and the Agreement. The Secretariat's functions can be projected into the followings:

1. Providing organizational support and technical expertise to the climate change intergovernmental process
2. Supporting Parties and climate change institutions on implementation matters.
3. Facilitating the flow of relevant information required by Parties and the process.
4. Making arrangements for sessions and meetings of the treaty bodies.
5. Supporting Parties in their implementation of the treaties.
6. Coordinating with other relevant intergovernmental organizations.
7. Compiling and transmitting reports submitted by Parties.
8. Performing such other functions as the COP, the CMP, or the CMA may determine.

8. Intergovernmental Panel on Climate Change (IPCC)

The IPCC was established in 1988 by UNEP and WMO to provide the international community, and in particular policymakers, with regular scientific assessment on climate change, its implications and potential future risks, as well as options regarding policy responses.

The IPCC reports are a key scientific input into the international climate change regime and its intergovernmental process. It provides comprehensive scientific, technical, and socioeconomic assessment reports on climate change and its impacts.

3. CAPACITY BUILDING

3.1 What is capacity building?

Capacity building can be said to have its roots in the evolution of international development cooperation since the 1950s, with precursors in the concepts of ‘institution building’, ‘institutional strengthening’, ‘human resource development’, ‘institutional economics’, etc.¹ It has had many different names and forms. As development engineering in varied environments across the world was often a process of ‘learning by doing’, themes and strategies for ensuring effectiveness constantly kept changing. A globally accepted definition of capacity building, in particular to improve ways of measuring its effectiveness, continues to be a challenge.

Based on the experience of the US-led Marshal Plan to rebuild war-ravaged Europe after the Second World War, the US and other European countries had the notion that development could be pursued in developing countries through building and strengthening national institutions. The argument was that differences in economic growth and development among developing countries can be explained by the differing quality of institutions responsible for economic management. The focus was therefore on institution building and institutional strengthening between the 1960s and 1980s.

Until the mid-1990s, the concept attracted almost no research support within the international development community.² Although universities have traditionally been the generator and repository of ideas and knowledge, in case of capacity building this was not the case. The development agencies of the Western world led the process of its evolution and remain the storehouse of reports.

Aid agencies zeroed in on capacity building/development in the 1990s as the organizing theme for development cooperation, together with ‘good governance’ and ‘country ownership’ of development assistance. The early 1990s witnessed the advent of the new concept of ‘capacity building’ in the international development domain. The World Bank is regarded as the initiator of this concept, though later the development agencies started using the concept of ‘capacity development’. Some commentators find no basic difference between these two terms, while others argue that there is: capacity building is regarded as having its start from a scratch, while capacity development is viewed as having a base from where to start the process.

Whatever the case, most aid agencies have defined capacity building in their own ways. But there appears to be a consensus that capacity building must include individuals, institutions, and systems that collectively enable effective and sustainable development; and that it must foster self-reliance and focus on development of local resources. The need for ‘endogenous capacity building’ is increasingly recognized. Endogenous capacity building has been defined by some as a process of enhancing and retaining the capacity of developing countries in

solving problems based on their wisdom, resources, policies, institutions, and social system as well as their own initiatives and governance. This includes the identification of internal needs and priorities to determine the means for building capacity, taking into account a participatory approach; ensuring that external cooperation and processes understand and take into account domestic conditions; and ensuring that social capital has been empowered and community ownership has been boosted, to ensure local acceptance and long-term sustainability.

3.2 What have previous global capacity building efforts taught us?

Bilateral and multilateral agencies led by the UN Development Programme (UNDP) and the World Bank since the mid-1990s have initiated either stand-alone or mixed projects where capacity building figured somehow. The Global Environment Facility (GEF) has initiated many capacity building projects. In addition, there have been many flagship capacity building programmes, both of past and present, by regional and bilateral agencies.

Despite all these efforts, significant gaps remain. Some analysts hold both the donors and recipients of aid responsible for the limited progress, while others argue that donors and recipient countries are not fully coordinated, particularly regarding principles of aid effectiveness such as mutual accountability and transparency. Very little evidence is available on how recipient countries are managing capacity development strategies, although this is being addressed to a limited extent. Capacity building efforts targeted at public sector strengthening also did not meet expectations. Inefficiency and ineffectiveness in capacity building initiatives associated with short-lived project-based interventions, lack of investments, and under-involvement of recipients are lingering problems, although the need for a longer-term approach to capacity building is increasingly recognized.

According to some commentators, many governments both from the donor and recipient sides and funding agencies prefer to keep capacity building as an umbrella concept with wide open boundaries, under which many different projects and programmes can be packaged and legitimized. In technical assistance programmes of capacity building, private consulting firms usually from donor countries are often commissioned to do the job. Consultants are parachuted in to organize workshops and training, and the job is done with the submission of a project report. While there is some change, capacity building is still often a mainly input-based, supply-driven, short-term, and ad-hoc exercise, where no capacity building 'systems' are left behind to carry the task forward. Some argue that such donor-driven exercises by foreign experts could harm local capacity building, weakening local ownership and relieving local staff of taking responsibility for the project.

Experience shows that countries where development cooperation played a stimulating and facilitative, but not decisive, role managed an endogenous process of increasing capacities, because capacities cannot be implanted from beyond, but grow within, with a gestation time. The emphasis here again is on national ownership and local leadership of the process. The question of how to grow local ownership and leadership in aided projects on capacity building still remains.

While there is no research yet on how much money is spent on capacity building for many different areas of development and environment, loose estimates suggest that one-third to one-fourth of annual official development assistance goes to capacity building, and the overwhelming share is spent by bilateral agencies. Since capacity building, as a crosscutting issue, often remains a component of most projects, it is difficult to quantify total funding specifically dedicated to capacity building. In any case, funding for capacity building remains poor.

Some commentators argue that the complex, long-term challenges of capacity development are the most important constraints for most countries, and these do not allow for ‘quick fixes’ or bureaucratically engineered solutions. Moreover, short-term technical assistance-based budgeting for capacity building is not a good avenue to fund long-term sustainable capacity building ‘systems’. Partner countries can do more to identify priorities for strengthening capacities in targeted areas. Donors and agencies in turn can do more to support those priorities in coordinated ways, to strengthen country systems by using them, and to reduce donor practices that undermine the development of sustainable capacity.

Meanwhile, the landscape of development cooperation is changing, with new donors from both the North and the South, and new stakeholders – including civil society.

3.3 Why do developing countries need capacity building to deal with climate change?

We already live in a world challenged by climate change. Extreme events and current and future climate uncertainty throw up several new challenges for governments, communities, and individuals around the world. For instance, they must design and implement measures to mitigate climate change; adapt to climate change; deal with loss and damage due to climate change; set up credible measures to monitor climate-related parameters, and the impact of actions; adopt new technologies and methods; and raise awareness on climate change.

Developing countries often lack the human, technical, institutional, and financial capacity to deal with many of these new challenges. At the same time, they must redouble development efforts to build resilience to climate impacts and ensure that recent gains are not lost due to climate change, which threatens food, water and energy security, livelihoods, and health. Government and non-government actors in these countries therefore need additional capacity, not only to deal with the added, immense challenges of climate change, but also to continue and enhance their development efforts and safeguard development gains.

Given that climate change is a global problem that most affects those who have least contributed to it, strong and effective global cooperation in building this essential capacity is critical, particularly for poor and vulnerable countries and communities, and those with least capacity.

3.4 What kind of capacities are needed to address climate change?

The complex and wide-ranging nature of the climate problem – and the solutions to help address this challenge – make the issue of capacity equally challenging. Climate-related capacity building needs also tend to constantly evolve, as climate science and policy evolve; and, moreover, can be very context-specific. Developing countries have highlighted the

importance of capacity building in their Nationally Determined Contributions (NDCs) – of the 139 NDCs submitted, 169 make capacity building a condition for implementation. They have also articulated an almost overwhelming array of needs in their submissions to the global climate negotiations. These can be broadly classified into four major categories:

1. The capacity to understand the nature of the climate problem as it pertains to a country, such as the implications of climate change for various economic activities and livelihoods, and for human and societal well-being.
2. The capacity to formulate and implement national actions to limit the scale of the problem through mitigation of Greenhouse Gas (GHG) emissions; and to limit the human, ecological, economic, and other societal impacts through measures to mitigate risks and adapt to them.
3. The capacity to raise, access, or mobilize funds to implement national actions has also emerged as an important area where capacity building is needed for some countries in recent years.
4. The capacity to analyze, build consensus on, articulate the national interest, and report back on obligations under the UNFCCC.

While it goes without saying that building capacity within countries is critical, in some cases it may not be possible for all the relevant capacity to reside locally. For example, some Least Developed Countries (LDCs) may not be able to lead or manage climate modeling efforts aimed at understanding the manifestations of climate change within their countries. In this case, it will be essential to ensure that international climate modeling capacity responds adequately and generates the downscaled scientific information needed by these countries.

Understanding what specific issues to examine, however, will require an understanding of local issues and priorities. Since climate risks result from the interactions of climate change with local physical, biological/ecological and human/ societal systems, the need for local knowledge will be critical. Here local capacity will play a major role. Similarly, monitoring and observation of climate impacts may require both international and national capacity, but local capacity will play an increasingly central role in prioritizing and implementing mitigation and adaptation options in the context of national development objectives, where an understanding of the local conditions takes on primacy.

In other words, relatively ‘objective’ processes relating to understanding of climate phenomena (such as climate modeling) can rely on international capacity, although informed by local context and needs. But as we move towards issues where subjective judgments become important – such as which development objectives to prioritize while choosing among mitigation options, for example, or the most suitable way to implement an option – appropriate and adequate local capacity is critical, with external actors preferably playing only a supporting role (such as providing information about good practices of policies and business models elsewhere).

Notably, while capacity resides in humans and organizations, networks and institutions that enable and guide the flow of knowledge play an important role in harnessing knowledge and gathering multiple perspectives. This is particularly true in the climate context, given the breadth and complexity of almost any aspect of challenge. Moreover, the overall framework within which the institutions and individuals operate, including for instance regulatory policies, also play an important role. There are therefore three levels at which capacity building efforts for climate change are needed: individual, institutional, and systemic.

Individual capacity building efforts must respect existing local knowledge and know-how, while imparting specific skills, ranging, for instance, from energy auditing, installing solar photovoltaic installations, to project design and implementation, or strategic decision-making. Many of these skills can be developed through training programmes, although the more complex the skill, the more the importance of learning-by-doing, by working alongside experts over longer periods.

Institutional capacity building must take place at all levels (regional, national, and local), and include technical, scientific, and educational organizations as well as governance institutions (including ministries and other policy making and regulatory bodies). Universities, for instance, which exist even in the poorest countries, can be enabled to play an important role as generators, retainers, and disseminators of climate-related knowledge and technical capacity.

Broader systemic level capacity building can, among other things, enhance the effectiveness of capacity building efforts, ensure that they are targeted at the right levels, ensure their sustainability, and put in place measure to measure and track the effectiveness of capacity building efforts.

Capacity building to address climate change should be a cumulative effort involving all three categories. The categories are not mutually exclusive, and ignoring one can impact the others. For instance, building individual capacity in the absence of institutional capacity could result in the eventual loss of the newly built capacity, as trainees seek more permanent job opportunities elsewhere, within more stable institutional arrangements.

Over time, a set of informal principles for delivering capacity building have emerged: efforts must be country driven; build on, and respect, existing capacities; be integrated into existing processes and institutions to the extent possible; include learning by doing; and be continuous, progressive, iterative, and sustainable in the long run. Capacity building should also be seen as a comprehensive stand-alone goal as opposed to a tool to achieve some other goal. It is an end to be pursued for its own sake.

Finally, tools and metrics to measure progress and effectiveness of efforts play an important role not only in measuring progress, but also in allowing for mid-course correction.

3.5 What has been done under the UNFCCC?

Capacity building has been part of the climate change negotiations since the adoption of the UN Framework Convention on Climate Change (UNFCCC) in 1992. UNFCCC Article 6 is dedicated to promoting education, public awareness, public access to climate change

information, public participation in addressing climate change, and training of scientific, technical and managerial personnel. This Article was the main basis for subsequent decisions and activities on capacity building.

Article 9.2(d), which describes the mandate of the Subsidiary Body for Scientific and Technological Advice (SBSTA), requested SBSTA to provide advice “on scientific programmes, international cooperation in research and development related to climate change, as well as on ways and means of supporting endogenous capacity-building in developing countries”.

Capacity building is also dealt with under the Subsidiary Body for Implementation (SBI) – a majority of capacity building efforts have taken place under the SBI since 2001.

3.6 Capacity-building framework for developing countries

In 2001, the seventh Conference of the Parties (COP7) to the UNFCCC adopted the Marrakech Accords, which include two Frameworks providing a set of guiding principles and approaches to capacity building – one in developing countries, and the other in countries with economies in transition (EITs). This Guide focuses only on the Capacity-building Framework for developing countries.

The guiding principles of the Framework for developing countries called for capacity building that is country-driven; involves learning by doing; and builds on existing activities. It called for an approach that is continuous, progressive, iterative, effective, efficient, integrated, and programmatic. It stressed that capacity building efforts should address the priorities of developing countries; take into account the special circumstances of LDCs and Small Island Developing States (SIDS); and rely on, and mobilise, existing national, subregional and regional institutions and the private sector, to build on existing processes and endogenous capacities.

The initial scope of the Framework included 15 priority areas:

1. Institutional capacity building, including strengthening or establishing national climate change secretariats or national focal points.
2. Enhancement and/or creation of an enabling environment.
3. National Communications.
4. National climate change programmes.
5. GHG inventories, emission database management, and systems for collecting, managing and utilizing activity data and emission factors.
6. Vulnerability and adaptation assessments.
7. Capacity building for implementation of adaptation measures.
8. Assessment for implementation of mitigation options.
9. Research and systematic observation, including meteorological, hydrological, and climatological services.
10. Development and transfer of technology.
11. Improved decision-making, including assistance for participation in international negotiations.
12. Clean Development Mechanism.

- 13.** Needs arising out of the implementation of Articles 4.8 and 4.9, of the Convention.
- 14.** Education, training and public awareness.
- 15.** Information and networking, including the establishment of databases.

The Framework aimed to provide guidance to bilateral and multilateral agencies, and other organizations and institutions. In 2005, the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) agreed that the Capacity-building Framework is also applicable to the implementation of the Kyoto Protocol.

The secretariat produces an annual synthesis report on the information reported by Parties on the implementation of the Capacity-building Framework and collects, compiles, and synthesizes capacity-building information annually against the 15 priority areas of the Framework, and on new and emerging areas. The SBI regularly monitors and periodically reviews the implementation of the Framework. It has conducted four reviews since the Framework was initiated (in 2004, 2007, 2013, and 2019). A further review will be carried out in 2025.

The first review of the Framework for Developing Countries in 2004 found significant gaps, including insufficient financial and human resources, the lack of active stakeholder participation, the need for increasing support from key decision-makers, and the inability to integrate climate change into national policies.

The second review, initiated in 2007 and completed in 2011, noted some progress in implementation, but gaps were still found, particularly related to the implementation of the Kyoto Protocol. At COP17 in Durban in 2011, Parties called for capacity building to be integrated into national development strategies, plans and budgets, and networking and information sharing to be strengthened.

The third review of the Framework, initiated in 2015 and completed in 2016, reported progress mainly in institutional and systemic capacity building based on information provided by the GEF and its implementing agencies. For the rest, however, it found that the cross cutting nature of capacity building made it difficult to aggregate information, and perform a quantitative and qualitative review. It noted the lack of global or standard approaches and indicators to measure, monitor and review the impact of capacity-building support and action and their effectiveness. It also identified areas not covered by the Capacity-building Framework, such as loss and damage associated with climate change impacts and readiness for and access to climate finance.

During the fourth review, completed in 2019 in Madrid, developing countries stressed the challenges of retaining capacity; collecting and reporting data; coordinating domestic agencies and international partners in the provision of support for capacity-building; and formulating bankable climate change projects. They also emphasized the lack of institutional capacity for climate change-related research, development, and demonstration; and the lack of capacity to address cross-cutting issues, such as gender-responsiveness and human rights. A number of emerging priority areas for capacity building were highlighted.

Emerging priority areas

During the 2019 review of the implementation of the Capacity-building Framework, developing countries flagged a number of new, emerging priority areas for capacity building in their submissions, including:

- Formulating, updating, and implementing NDCs.
- Formulating long-term low-emission and climate resilient development
- Strategies.
- Improving knowledge for addressing loss and damage.
- Establishing, improving, and consolidating transparency systems.
- Implementing the voluntary approaches in Article 6 of the Paris Agreement.

DURBAN FORUM ON CAPACITY-BUILDING

Responding to the needs and gaps identified both in the second review of the Capacity-building Framework and annual discussions under the SBI, the Durban Forum on Capacity-building was established in 2011 at COP17 in Durban.

The Forum is an annual event which takes place during the inter-sessional meetings of the UNFCCC Subsidiary Bodies and is open to government and non-government stakeholders. It is attended by negotiators and representatives from other UN bodies, the operating entities of the UNFCCC Financial Mechanism, multilateral development banks, and civil society representatives, among others, providing an opportunity for coordination. It aims to provide an overview of capacity-building efforts that have been undertaken and collect feedback to input into the comprehensive review of capacity building under the Convention.

Nine annual Forums have taken place between 2012 and 2020. Each Forum focuses on a different area of capacity building – the focus areas are decided based on input from countries. Following Decision 16/CP.23 in 2017, the focus areas of the Forum will be aligned with the annual focus areas of the Paris Committee on Capacity-building (PCCB) to avoid duplication and ensure cross-fertilization.

The eighth Durban Forum in June 2019, for instance, focused on strengthening institutions at the national level to support capacity-building activities for the implementation of NDCs in developing countries. The key messages from the 2019 Forum include the important role played by academia in retaining capacities within developing countries, the need to enhance coherence and coordination among the different capacity-building providers and users, and the importance of developing a clear baseline to assess capacity-building efforts and activities.

The ninth Forum took place virtually in June 2020 and focused on ensuring coherence and coordination of actions and support for capacity building to support the implementation of the enhanced transparency framework under the Paris Agreement. Developing countries highlighted the challenges they face in keeping up with current reporting requirements under the Convention and the need for institutional capacity building. The Forum discussed, among other things, how to measure the effectiveness of action.

The synthesis reports prepared before and after each Forum an important input into the UNFCCC negotiations on capacity building, the comprehensive reviews of the Capacity-building Framework described earlier in this section, and the work of the PCCB (described later).

DOHA WORK PROGRAMME ON ARTICLE 6

UNFCCC Article 6 calls for education, training, and public awareness of climate change and its effects. It calls on all countries to promote educational and public awareness programmes, access to climate change information, public participation, and training of scientific, technical and managerial personnel. It also calls for international cooperation in the development and exchange of educational and public awareness material and the development and implementation of education and training programmes, including the strengthening of national institutions and the exchange or secondment of personnel to train experts in the field of climate change.

In 2012, the eight-year Doha work programme on Article 6 was launched at COP18 in Doha (Decision 15/CP.18) to coordinate action, share best practices, identify needs, and provide recommendations on this aspect of capacity building.³⁸ The scope of the work programme covered six themes that were listed in an annex to the Decision: education; training; public awareness; public access to information; public participation; and international cooperation. The GEF was asked to provide financial resources to developing countries to support the implementation of the work programme, and two reviews were scheduled: an intermediate review in 2016, and a final one in 2020.

The SBI was also requested to hold annual in-session dialogues on UNFCCC Article 6 to share experiences and exchange ideas, best practices, and lessons learned; and countries were requested to designate and support national focal points for Article 6 activities. For the purposes of the dialogues, the six thematic areas are clustered into two focal areas: education and training; and public awareness, public participation and public access to information. International cooperation is considered a crosscutting theme for both focal areas. The dialogues produce recommendations for future action.

The activities under the work programme were labeled Action for Climate Empowerment (ACE) from 2016 onwards, following the adoption of the Paris Agreement, and consolidated with similar efforts under the Agreement (described below) in 2018. In 2019, the SBI proposed draft Terms of Reference for the review of the Doha work programme.

ACTION FOR CLIMATE EMPOWERMENT

Article 12 of the Paris Agreement echoes some of the more detailed content in the UNFCCC's Article 6 on education, training, and public awareness. Paris Decision 1/CP.21 also includes two paragraphs related to this Article but under the heading of capacity building (§§82 and 83). §82 calls on all Parties to ensure that education, training, and public awareness, as reflected in UNFCCC Article 6 and Article 12 of the Paris Agreement, are adequately considered in their contribution to capacity building. §83 invites CMA1 to explore ways of

enhancing the implementation of training, public awareness, public participation, and public access to information.

CAPACITY BUILDING INITIATIVE FOR TRANSPARENCY

Article 13.15 of the Paris Agreement stipulates that “support shall also be provided for the building of transparency-related capacity of developing country parties on a continuous basis”.

§84 of Decision 1/ CP.21 establishes a Capacity-building Initiative for Transparency (CBIT) to build developing countries' institutional and technical capacity to meet the transparency requirements under Article 13. CBIT will:

- Strengthen national institutions for transparency-related
- Activities in line with national priorities.
- Provide relevant tools, training, and assistance.
- Assist in the improvement of transparency over time.

WHAT ARE THE KEY ISSUES IN THE NEGOTIATIONS?

Negotiations on the initial institutional arrangements for capacity building under the Paris Agreement have been completed under Decision 3/CMA.2 and Decision 8/CP.25. The discussions on capacity building now revolve around a review cycle where information is gathered from Parties on capacity building needs, activities, and gaps; assessed by the different bodies; and mandates, activities, and terms of reference are adjusted accordingly.

The main issues at the heart of these discussions generally revolve around the following:

- Scale of, and access to, finance for capacity building.
- Coherence and coordination between efforts under different work programmes and bodies.
- A Need assessment at a country level to determine status of capabilities, skills and orgware.
- Monitoring of implementation and impact of capacity building support, particularly with regard to retaining capacities.
- Strengthening of institutional arrangements can assist in determining capacity building requirements.

FINANCE AND CAPACITY BUILDING

A perennial issue in the capacity building negotiations is that of finance – both the scale of finance available, and access to finance. For instance, in their submissions on the review of the PCCB, the LDC Group, and Africa Group called for adequate finance for the PCCB to implement its work plan, and carry out its work diligently, efficiently, and effectively.⁴⁸ These echo similar calls made during consultations for the creation of a PCCB network, and in the context of the Doha Work Programme, ACE, and the Capacity-building Framework for developing countries.

COHERENCE AND COORDINATION

The current fragmented architecture for capacity building under the UNFCCC is the result of both historical happenstance and compromise. As a result of the fragmentation, however, some tensions arise in the negotiations on which capacity building body should do what, which activities should be prioritized by each body, and how duplication should be avoided.

MONITORING AND REVIEW TO ASSESS PROGRESS

Well-developed and well applied metrics to measure capacity serve as an essential tool to gauge progress, and as an analytical base to understand patterns and determinants of successful capacity building. While the need for monitoring and review of the impacts of capacity building efforts to assess their impacts is recognized, progressing work in this area continues to remain a challenge, as noted in Decision 10/CP.25.

WHAT ARE THE MAIN GAPS IN EXISTING CAPACITY BUILDING EFFORTS?

While old capacity gaps, such as those related to data collection and analysis, persist, new gaps also emerge over time – for instance, the technical capacity needs related to the enhanced transparency framework of the Paris Agreement; assess and address loss and damage due to climate change; and participate in voluntary cooperation under Article 6 of the Paris Agreement.

A 2020 synthesis report on the implementation of the Capacity-building Framework identifies several such gaps, including inter alia:

- Individual and institutional capacity in government departments, including, in particular, gaps related to inter-agency and cross-sectoral coordination, and mainstreaming of climate considerations into national plans and budgets.
- Technical and institutional capacity in areas such as GHG emissions accounting, research and systematic observation, standardized data generation, collection and analysis, risk modeling, and vulnerability and adaptation assessments.
- Institutional capacity to enhance the resilience of key sectors such as agriculture, water, energy, transport, health, infrastructure, forestry, and waste.
- The capacities of policy makers to address cross-cutting issues such as gender responsiveness, human rights, and just transitions.
- The capacities of local governments and communities, particularly to address adaptation.
- Institutional capacity to identify, address, research, and act on resilience, adaptation, mitigation, and loss and damage.
- Public awareness and support for climate action.
- International support to build and retain individual and institutional capacity to prepare, implement, and report on NDCs.
- Also, it is linked to the Scale of, and access to, finance for capacity building.

HOW CAN GLOBAL CAPACITY BUILDING EFFORTS BE IMPROVED?

The key to successful implementation of capacity building will eventually rely on a keen understanding of national and local needs and challenges. This is broadly recognized,

including in the Paris Agreement, which calls for ‘country-driven’ capacity building, based on and responsive to national needs, while fostering country ownership (Article 11.2). The mandate of the PCCB also revolves around identifying and addressing needs and gaps in capacity building. Moreover, long-term, sustainable systems will have to replace the current consultancy and project-driven approach where any gains dissipate due to a lack of retention systems.

The ultimate indicator of judging the success of climate change capacity building should be whether in-country capacity systems and capacity suppliers have been developed at the national level, along with the appropriate arrangements for international flows of knowledge and other resources.

NATIONAL AND LOCAL NEEDS

Over time, the locus of capacity building efforts, including defining capacity needs, must shift to the national and local levels, where there is a greater understanding of needs and systemic strengths and challenges. More emphasis should also be placed on capacity retention. Potential repositories and custodians of this capacity likely already exist in countries, including academic, government, and non-government organizations at the local and national levels. For instance, the LDC Universities Consortium on Climate Change aims to capacitate LDCs by developing a knowledge sharing and capacity development programme on adaptation to climate change in universities and training institutes in LDCs.

ACCESS TO FINANCE

Improved access to finance for capacity building, not only at the regional and national level but also at the subnational/local level, is a priority. This will involve simplifying access procedures, and enhancing the capacity of multiple stakeholders at various levels to access funds. It can be achieved through, for instance:

- Pooling of resources and channeling them through multilateral entities with simplified procedures.
- Using mechanisms such as the GCF’s Enhanced Direct Access modality to promote sub-national programmatic access to funds.
- Providing guidance to bilateral and multilateral funders to complement UNFCCC efforts, and to ensure funding is available across all thematic areas where capacity building is needed.
- Promoting local level funds for capacity development.

COHERENCE AND COORDINATION, GLOBAL AND NATIONAL

The capacity-building architecture under the UNFCCC will need to be updated by Parties to avoid duplication, to avoid conflicts on the mandates of different bodies, and to avoid overburdening those that report to more than one governing body. The mandate of older bodies may need to be revisited and refreshed. This higher level of coherence and coordination will need to be addressed by Parties – it cannot be addressed by the PCCB, for instance, as part of its current mandate to enhance coherence and coordination.

INDICATORS TO TRACK IMPACT

Harmonized indicators to track progress on capacity building are essential not only for capacity building efforts, but also for measuring the impact of global efforts. Without clear indicators, the PCCB, for instance, will find it difficult to provide inputs on capacity building to the Global Stocktake Synthesis report in 2022. However, currently, none of the capacity building bodies under the Convention is mandated to develop such indicators. This is a considerable body of work, and a clear mandate from the governing bodies – and adequate resources – will be necessary to undertake it.

SOUTH-SOUTH AND TRIANGULAR COOPERATION

A more systematic approach to South-South and triangular cooperation under the UNFCCC could bolster capacity building efforts and address the capacity building needs of countries with similar challenges in a more targeted and effective manner. Efforts are already underway by other agencies, for instance, by the UN Office for South-South Cooperation (UNOSSC), which is coordinating the implementation of the South-South Cooperation Action Plan of the UN Secretary General's Climate Change Engagement Strategy. The UNOSSC has developed a global knowledge sharing and partnership-brokering platform called the South-South Galaxy

NETWORKS, PARTNERSHIPS, PEER LEARNING, AND KNOWLEDGE SHARING

Networks and partnerships can be an effective way to promote peer learning; share local knowledge and experiences; build synergies between entities and across application sectors and domains; and identify areas for collaboration.⁶⁰ They can also contribute to a better understanding of national and local capacity needs.

4. MITIGATION

4.1 Definition and Importance

The long-term goal of the Paris Agreement is to limit the global temperature increase to well below 2°C, and pursuing efforts limit the increase to 1.5°C, compared to pre-industrial levels. Almost all countries in the world are Parties to the Paris Agreement and they are required to submit Nationally Determined Contributions (NDCs) specifying their mitigation action. At the UNFCCC COPs, the “Conference of the Parties serving as the meeting of the Parties to the Paris Agreement” (or “CMA”) convenes to take decisions and steer implementation.

As there is a direct relation between global average temperatures and the concentration of greenhouse gases in the atmosphere, the key for the solution to the climate change problem rests in decreasing the amount of emissions released into the atmosphere and in reducing the current concentration of carbon dioxide (CO₂) by enhancing sinks (e.g. increasing the area of forests). Efforts to reduce emissions and enhance sinks are referred to as “mitigation”.

The Convention requires all Parties, keeping in mind their responsibilities and capabilities, to formulate and implement programmes containing measures to mitigate climate change. Such programmes target economic activity with an aim to incentivize actions that are cleaner or

disincentives those that result in large amounts of GHGs. They include policies, incentives schemes and investment programmes which address all sectors, including energy generation and use, transport, buildings, industry, agriculture, forestry and other land use, and waste management. Mitigation measures are translated into, for example, an increased use of renewable energy, the application of new technologies such as electric cars, simply making improvements to a cook stove design, or changes in practices or behaviors, such as driving less or changing one's diet. Further, they include expanding forests and other sinks to remove greater amounts of CO₂ from the atmosphere.

4.2 The Role of Mitigation in Climate Change

Under the UNFCCC, and notably under the Kyoto Protocol, negotiations resulted in mandatory economy-wide targets for the national emissions of developed countries, while developing countries have no binding targets and generally focused on specific programmes and projects.

Following the 2009 Copenhagen Accord and the 2010 Cancun Agreements, developed countries have communicated quantified economy-wide emission targets for 2020 and developing countries have agreed to implement nationally appropriate mitigation actions (NAMAs) with support from developed countries. In addition, Parties to the Kyoto Protocol – at the end of the first commitment period under the Protocol (2008-2012) – adopted a second commitment period with targets for 2013-2020 for developed countries, in the form of the Doha Amendment. For developing countries, the Kyoto Protocol's clean development mechanism (CDM) has been an important avenue of action for these countries to implement project activities that reduce emissions and enhance sinks. However, such emissions reductions are used to offset emissions in other developed countries and therefore cannot be counted as mitigation actions in developing countries.

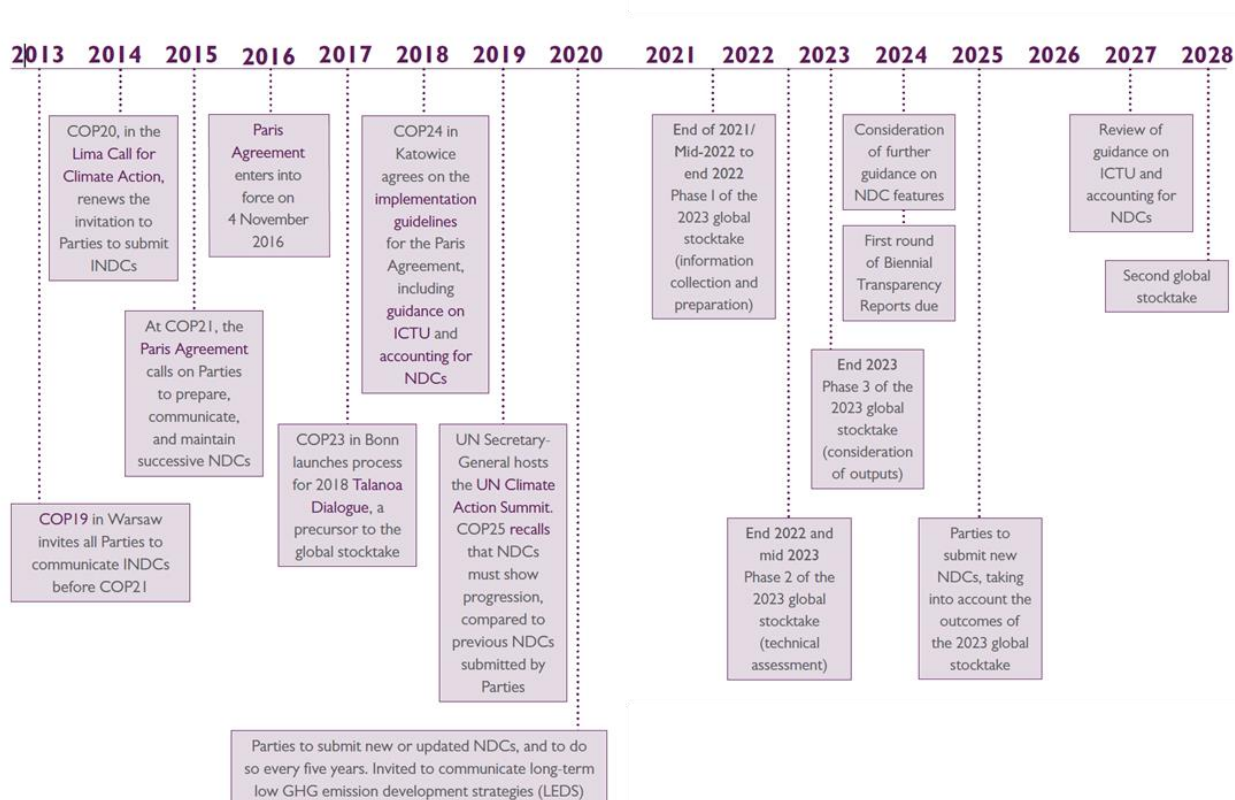
In the process leading up to the Paris Conference, all countries (developed and developing) prepared intended nationally determined contributions (INDCs), which outline national efforts to reduce emissions and increase resilience. As a result, a diversity of efforts was communicated, including absolute and relative quantified national targets, sectorial targets and programmes, policies and measures, and others. The new concept of INDCs was eventually formalized under the Paris Agreement as nationally determined contributions (NDCs), and Parties are requested to prepare and communicate successive NDCs every five years.

Parties to the Convention have also cooperated increasingly to reduce GHG emissions from deforestation in developing countries. Developing countries are encouraged to contribute to mitigation actions in the forest sector by undertaking activities to reduce emissions from deforestation and forest degradation, conserve forest carbon stocks, implement sustainable management of forests and enhance forest carbon stocks (REDD-plus) in return for payments for such activities. The Paris Agreement also recognizes the importance of sinks, including forests and encourages Parties to implement and support the existing framework of guidance and decisions that has been elaborated on REDD-plus under the Convention over the years.

5. THE PARIS AGREEMENT AND MITIGATION

5.1 Nationally Determined Contributions (NDCs)

- **Definition:** NDCs are at the heart of the Paris Agreement. They represent individual countries' plans for reducing their GHG emissions and adapting to the changes brought about by global warming.
- **Evolution:** Initially, countries submitted Intended NDCs (INDCs). Post-ratification of the Paris Agreement by a party, the INDC is automatically converted to an NDC. Every five years, countries are expected to present updated plans that reflect increased ambition over time.
- **Scope:** NDCs are broad and encompass various sectors like energy, agriculture, forestry, and transportation. Each country determines its targets based on its circumstances, capacities, and level of development.
- **Timeline:**



5.2 The Paris Agreement and Article 6

The idea of using carbon markets and other forms of international cooperation in meeting commitments was carried through from Kyoto protocol to the Paris Agreement in 2015. The successor to the Kyoto Protocol, the Paris Agreement calls for higher ambition, requires all countries to act and provides for international cooperation between countries. ~~The long-term goal of the Paris Agreement is to limit the global temperature increase to well below 2°C, and pursuing efforts limit the increase to 1.5°C, compared to pre-industrial levels. Almost all countries in the world are Parties to the Paris Agreement and they are required to submit~~

~~Nationally Determined Contributions (NDCs) specifying their mitigation action. At the UNFCCC COPs, the “Conference of the Parties serving as the meeting of the Parties to the Paris Agreement” (or “CMA”) convenes to take decisions and steer implementation.~~

Article 6 of the Paris Agreement outlines provisions for countries to collaborate internationally, aiming to elevate their ambition in their Nationally Determined Contributions (NDCs) for both mitigation and adaptation to climate change, while also fostering sustainable development.

Cooperation under this article is voluntary. However, countries choosing to participate must adhere to specific criteria. There are three primary approaches to this cooperation. The first, under Article 6.2, establishes carbon markets through "cooperative approaches." This mechanism allows for the transfer of mitigation outcomes (like emission reductions) between a "buyer" and a "seller" country. These outcomes, termed Internationally Transferred Mitigation Outcomes (ITMOs), are verified emission reductions approved by the host country for another country's use. Importantly, the host country will not count this mitigation outcome toward its NDC, making it available for transfer. ITMOs are typically quantified in terms of CO₂ equivalent but can be counted in other metrics as well (e.g. MWh of renewable energy), and principles of environmental integrity, robust accounting, and sustainable development are paramount.

The second mechanism, under Article 6.4, introduces an international system for emission credits, which is centrally governed by the UNFCCC. This system will grant emission credits against mitigation outcomes that adhere to specific quality criteria. An international supervisory body, in alignment with the Paris Agreement's directives, governs it.

The third mechanism, provided in Article 6.8, offers non-market-based cooperation. Distinctively, this form of cooperation doesn't involve the transfer of emission reduction credits.

5.3 What is the Carbon Market

Carbon markets represent a rapidly evolving financing mechanism towards international and country efforts to mitigate climate change, supporting increased involvement of the private sector. Carbon markets are trading systems in which carbon credits are sold and bought. one tradable carbon credit equals one ton of carbon dioxide or the equivalent amount of a different greenhouse gas reduced, sequestered or avoided.

There are broadly two types of carbon markets: Compliance and voluntary;

- **Compliance markets** are created as a result of any national, regional and or international policy or regulatory requirement.
- **Voluntary markets** are national and international issuance, buying and selling of carbon credits on a voluntary basis.

Most voluntary carbon credits are sourced from private entities and government programs certified by carbon standards, aiming for genuine emission reductions or removals. For effective carbon markets, challenges such as double counting of emissions, human rights violations, and greenwashing must be tackled. It is vital that emission actions align with a country's NDC and have a transparent infrastructure. Carbon markets need integrity, meaning credits must be verifiable, environmentally sound, and scientifically backed. Governments play a crucial role in ensuring real emission reductions and aligning voluntary efforts with national priorities. As carbon markets offer financial support for achieving climate goals, many developing nations are exploring engagement. However, comprehending the various carbon crediting mechanisms remains a challenge for governments.

5.4 The International Carbon Markets and The Kyoto Protocol

The Kyoto Protocol, established in 1997, defined legal GHG emission reduction targets for 38 industrialized nations, including former Soviet bloc countries, termed 'Annex I Parties'. These countries received emissions allowances called Assigned Amount Units (AAUs). Three primary market mechanisms were introduced to help these countries meet their targets:

- **International Emissions Trading (IET):** Governments traded AAUs. However, this faced issues due to corruption and the over-allocation of AAUs to some countries. Consequently, the IET struggled to establish itself.
- **Joint Implementation (JI):** Projects within Annex I countries generated Emission Reduction Units (ERUs). JI had two tracks: 'Track 1' allowed the host country to verify reductions and 'Track 2' was internationally supervised. While it had a modest start, several transactions later drew criticism for lacking environmental validity.
- **Clean Development Mechanism (CDM):** Projects in developing countries produced Certified Emission Reductions (CERs). Despite initial skepticism due to its complex process, CDM became the most active international carbon market tool. Over 8,000 projects were registered, and about 2.3 billion CERs were issued. The EU's "Linking Directive" in 2003 further propelled the CDM's popularity. However, some projects faced criticism for not aligning with sustainable goals. By 2011, a drop in CER prices and other challenges slowed down the development of new CDM projects.

These mechanisms, despite their challenges, pioneered international collaboration through carbon markets. They enhanced climate change awareness, bolstered local private sectors in mitigation efforts, and laid groundwork for domestic climate policies in many developing countries.

The Kyoto mechanisms also sparked interest in the private sector for offsetting emissions. The U.S., despite not ratifying the Kyoto Protocol, saw a surge in voluntary offsetting due to potential legislative changes and corporate responsibility. This led to the emergence of the

Voluntary Carbon Market (VCM), which initially drew from CDM methodologies. While VCM faced a dip in activities after 2010, it experienced a resurgence from 2017 onward, with a turnover surpassing USD 1 billion in 2021. The interaction between compliance and voluntary markets has grown, especially post the Paris Agreement.

5.5 What are the Internationally Transferred Mitigation Outcomes (ITMOs)

The Paris Agreement (PA), a landmark global treaty addressing climate change, introduced the concept of Internationally Transferred Mitigation Outcomes (ITMOs). ITMOs play a pivotal role in the international cooperation mechanism, aiming to help countries achieve and increase their mitigation ambitions.

What are ITMOs? ITMOs are mitigation outcomes generated from 2021 onwards that are real, verified, and additional. They can pertain to emission reductions and removals, and may encompass mitigation co-benefits arising from adaptation actions or economic diversification plans. An example includes Arab nations that have designed their NDCs to deliver adaptation benefits, like ensuring freshwater availability. The mitigation co-benefits in this instance could be the reduced energy consumption for desalination due to water efficiency improvements or the utilization of renewable energy in water desalination.

ITMOs can be expressed in terms of tCO₂eq (carbon credits and emission allowances) or, if in line with Parties' NDCs, a non-GHG metric. Such non-GHG ITMOs might relate to aspects like renewable energy, clean energy exports, energy efficiency, forest cover (like afforestation/reforestation areas), or incentives for initiatives including sustainable agriculture, public transport, and even short-lived climate pollutants like black carbon.

How do ITMOs work? The ITMOs can be generated through cooperative approaches as well as through the A6.4M. An emission credit or allowance is designated as an ITMO when the country where the mitigation occurred (often termed the host country) authorizes it, as mandated by Article 6.3. ITMOs can be authorized by host countries for various purposes, including:

- Fulfilling an NDC.
- Complying with international mitigation regimes outside of a country's NDCs, such as the carbon offsetting and reduction scheme for international aviation (CORSIA) from the International Civil Aviation Organization, or potential future agreements by the International Maritime Organization.
- Other purposes related to any other ITMO transfers countries may authorize, especially allowing ITMOs generated from activities in the Voluntary Carbon Market (VCM). After being authorized, ITMOs can be transferred multiple times before a nation or non-state actor utilizes them.

The system is akin to a "cap-and-trade" mechanism but on an international scale. Countries can both earn and purchase ITMOs:

- Selling ITMOs: Countries that reduce their emissions beyond their NDC commitments can translate these extra reductions into ITMOs and sell them.
- Purchasing ITMOs: Countries that foresee challenges in meeting their NDCs can acquire ITMOs from countries that have surplus reductions. This purchase allows them to meet their commitments without falling short.

The Paris Agreement emphasizes environmental integrity and transparency. Any ITMO transactions should ensure real, measurable, and long-term benefits in terms of climate mitigation. This is to prevent "double counting" where a single emission reduction is claimed by both the selling and purchasing country.

5.5 Emissions Trading Schemes (ETS):

Emissions Trading Schemes are market-based approaches to control pollution by providing economic incentives for achieving reductions in the emissions of pollutants. Each country or region with an ETS sets a cap on the total amount of greenhouse gases that can be emitted and allocates or sells emissions allowances within this cap.

Linking ETS is a concept that refers to the process where two or more different emissions trading schemes agree to recognize each other's emissions allowances. This means that participants in one ETS can use allowances issued by another linked ETS to comply with their own regulatory requirements.

This concept turns to be very beneficial for:

- Cost-Effectiveness: where Linking ETS can reduce the overall cost of meeting emissions targets by allowing reductions to occur where they are most economical.
- Expansion and Liquidity: Linking expands the market for emissions allowances, increasing liquidity and potentially leading to more stable and robust markets.
- Promoting Technological Innovation: By increasing market size and opportunities, linking can stimulate innovation in low-carbon technologies.

One of the famous examples of this is the Linked Emissions Trading System (ETS) between the EU and Switzerland: As an alternative to broaden the scope of the Swiss ETS, an agreement to link Switzerland and the EU ETS was enacted in 2020. It aims to regulate the mutual recognition of emission allowances from the two ETSs, each of which has its own legal basis. Aviation and fossil-thermal power plants are also integrated into this initiative. Under this linked system, participants in one ETS will be able to apply for admission to the auctions of emission allowances in the other ETS.

5.6 Accounting for ITMOs

The A6.2 guidance elucidates how Parties must account for ITMO transfers, making corresponding adjustments to their emission balance, which is also employed to monitor the accomplishment of NDCs. The principle is straightforward:

- The host country adds the related emissions to its balance, effectively "uncounting" the mitigation.
- The acquiring country reduces its emission balance by the same amount, "counting" the mitigation.

This system of double bookkeeping ensures that mitigation isn't double-counted. If both selling and buying countries were to use the same mitigation for their goals, it would inadvertently increase global emissions, contradicting the Paris Agreement's objectives.

What are the types of Double-Counting? There are three primary forms of double counting could occur:

- **Double Issuance:** Multiple carbon credits are given for the same mitigation outcome, with more than one of these credits counted towards achieving mitigation objectives.
- **Double Use:** One carbon credit is utilized twice for mitigation goals.
- **Double Claiming:** Two distinct entities claim the same mitigation outcome for their targets.

To prevent these scenarios, unique identifiers must be applied to halt the registration of similar activities or issuance of identical mitigation outcomes under more than one standard.

This can very much be linked to the transparency framework through:

- **Preventing double counting:** Unique identifiers can be used to track the ownership and use of ITMOs, ensuring that they are not used more than once to claim compliance with national climate goals. This is particularly important in the context of international carbon markets, where ITMOs can be traded between different countries.
- **Enhancing transparency:** Unique identifiers can be used to create a publicly accessible registry of ITMOs, making it easier for stakeholders to track the use of ITMOs and identify potential double counting. This can help to build trust in the carbon market and ensure that ITMOs are used in a transparent and accountable manner

The host country adjusts its balance based on when the mitigation occurred and the ITMOs are first transferred, whereas the acquiring country does so based on when the credit was used. This means adjustments might not occur simultaneously. The "first transfer" of the ITMO instigates the host country's accounting.

ITMOs can be authorized for various purposes, such as achieving another Party's NDC, adhering to international mitigation standards, or other objectives. Notably, the use of an ITMO must happen within the same NDC implementation period as its creation.

Parties must apply corresponding adjustments, ensuring their accounting approach's transparency, accuracy, completeness, comparability, and consistency. The guidance specifies different strategies for corresponding adjustments, considering:

- **ITMO Metrics:** ITMOs in tCO₂eq are pitted against an emission balance of sources and sinks covered by the NDC. Non-GHG metrics, like renewable energy capacity, would be matched against the respective NDC target indicator.
- **Type of NDCs:** Parties with multi-year targets can compare the adjusted emission balance annually. However, most Parties have a target for the NDC implementation period's end year, requiring accounting over the entire period.

While many Parties have set a singular mitigation target for the concluding year of the NDC period, there's a challenge. If Parties only account for the NDC achievement in this final year, ITMOs from earlier years might go unaccounted for. This means the entire NDC period's representation would be skewed. Furthermore, if the acquiring Party diminishes its mitigation by the amount acquired, global emissions could rise.

To foster effective market-based cooperation, Parties need a unified, international accounting foundation that contemplates the entire NDC timeline. Two approaches exist for adjustments with single-year NDC targets:

- **Multi-Year Emissions Trajectory:** Establish a clear emissions trajectory or budget for the whole NDC period. This offers stakeholders a predictable view of ITMO transfers or purchases throughout the NDC term. However, turning distant NDC targets into tangible trajectories might be complex or politically sensitive.
- **Averaging Method:** Derive an annual average of ITMOs transferred over the NDC period by dividing the total ITMOs by the years passed. Parties can then make annual adjustments based on this average, with a final adjustment in the NDC's target year. This method might boost transfer volumes, as acquiring Parties might need to buy more ITMOs than strictly necessary for their NDC. This method's uncertainty might lead to delayed governmental participation in carbon markets, especially with unforeseen events, like the COVID-19 pandemic, affecting future emissions.

5.7 Transparency Framework and Reporting

Parties to the Paris Agreement must report their greenhouse gas emissions, progress towards their NDCs, climate impacts, and adaptation efforts through the Biennial Transparency Report (BTR). The first BTR is due by December 31, 2024, with some flexibility for LDCs and SIDS.

While the adequacy and appropriateness of NDCs are not reviewed under the ETF, the tracking of NDC progress, including selected indicators and cooperative approaches under

Article 6, is subject to review. The structured summary of the BTR must include information on these elements.

Parties can also include additional elements in the structured summary consistent with CMA decisions on reporting under Article 6. This may involve listing cooperative approaches, ITMO transactions for international mitigation, and distinguishing ITMOs within or outside the NDC scope.

Parties involved in cooperative approaches must follow specific reporting requirements:

- Initial Report: Parties must submit this report when authorizing ITMOs, demonstrating compliance with requirements, NDC accounting, and cooperative approaches.
- Annual Information: Parties must provide annual ITMO transfer details by April 15 of the following year.
- Regular Information (Biennially): This information, annexed to Biennial Transparency Reports, covers participation updates, authorizations, adjustments, and explanations to prevent double counting.

5.8 Cooperative Approaches and Participation Criteria

While not explicitly defined, "cooperative approach" under article 6.2 typically refers to collaboration between two or more countries involving trading of ITMOs (Internationally Transferred Mitigation Outcomes). These ITMOs can originate from "baseline-and-credit" methods, where mitigation is measured against a set baseline, or from linking "cap-and-trade" systems covering both private and public sectors.

For countries to participate in these cooperative approaches, they must:

- Ratified the Paris Agreement.
- Have an active NDC (Nationally Determined Contribution) and update it every five years, ensuring that any cooperative approach contributes to the goals of the NDCs for both the buyer and seller nations.
- Establish systems to authorize and track ITMOs, which includes designating a national authority for approvals under Article 6.2 and maintaining a transaction registry.
- Submit the latest National Inventory Report (NIR) as per the Enhanced Transparency Framework (ETF) requirements.
- If available, align the cooperative approaches with the nation's long-term low-emission development strategy.

5.9 The Article 6.4 Mechanism

The **Article 6.4 Mechanism (A6.4M)**, as established under the Paris Agreement, serves as an international baseline and credit system aimed at fostering both climate change mitigation

and sustainable development. Drawing inspiration from the Kyoto Protocol's CDM and JI, the A6.4M is designed to register specific activities that lead to reduced emissions or enhanced carbon dioxide removals. Once these activities meet the stipulated requirements, they are eligible to earn emission credits, termed as A6.4ERs.

To govern the A6.4M, the **Article 6.4 Supervisory Body (A6.4SB)** has been set in place. This body, under the guidance of the CMA, is tasked with ensuring the mechanism's smooth operation. It provides oversight, develops the necessary procedures, and ensures the application of relevant standards and protocols. Furthermore, the A6.4SB offers a platform for stakeholders, activity participants, and participating Parties to appeal or express concerns about the decisions made under its mandate. This is facilitated through an independent grievance process.

Regarding the **eligibility of activities** under A6.4M, the mechanism is open to those activities that effectively reduce emissions and/or augment removals. Furthermore, activities that provide mitigation co-benefits stemming from adaptation actions or economic diversification plans are also considered eligible. These eligible actions encompass a wide range of activities, from implementation of renewable energy activities to afforestation and reforestation or sustainable forest management and urban forestry, among others. For an activity to be deemed eligible, it must meet specific criteria like proving its additionality to what would have occurred in the absence of the benefits from the mechanism, showcasing tangible, long-term climate benefits, and ensuring it does not contribute to a net increase in global emissions.

The host country plays a pivotal role in the A6.4M's functioning. Before participating, the host Party has to fulfill various requirements, including designating a national authority for the A6.4M and providing evidence of how its participation aligns with sustainable development goals. The host country also has the discretion to decide whether the A6.4ERs should be authorized as ITMOs under Article 6.2. Once authorized, these A6.4ERs can then be utilized towards NDCs or for other international mitigation purposes.

The A6.4M outlines a **cycle for activities**, which bears resemblance to the CDM project cycle. This cycle, overseen by the A6.4SB, spans from the registration of an activity to the issuance of A6.4ERs. Throughout this cycle, various stakeholders, including the host Party and activity participants, play crucial roles in defining the scope, selecting methodologies, and ensuring compliance with A6.4M rules.

5.10 Non-market-based Approaches

At the COP16 in Cancun in 2010, there was an agreement to consider the introduction of non-market-based approaches (NMAs) to augment mitigation efforts and enhance cost-effectiveness. However, a concrete definition and framework for NMAs were only proposed in subsequent meetings, with Bolivia suggesting a non-financial, non-market-oriented definition in 2013. Despite discussions, a concrete outcome wasn't achieved until COP21 in Paris.

Article 6.8 characterizes NMAs as tools to aid Parties in executing their NDCs without relying on market-based strategies or transferring mitigation outcomes. Meanwhile, Article 6.9 discusses a framework for NMAs, and the Glasgow Decision further solidified the work programme for them. The main objective of this framework, as defined in the Annex to Decision 4/CMA.3, is to enhance the coordination and synergies of NMAs, particularly between mitigation, adaptation, finance, technology, and capacity-building sectors.

NMAs are expected to bring about innovative, transformative actions that amplify mitigation and adaptation ambitions. These actions should also encourage participation from both public and private sectors, as well as civil society, and must contribute to achieving the objectives of the Paris Agreement. Examples of NMAs include initiatives related to adaptation, nature-based solutions with mitigation co-benefits, and new financial mechanisms.

SBSTA kickstarted a work programme for NMAs in 2022. The program focus on adaptation, mitigation measures, and the development of clean energy sources, among other areas. It aims to enhance linkages, create synergies, and facilitate the coordination and execution of NMAs. A significant tool in this endeavour is a web-based platform developed by the UNFCCC Secretariat to share information about NMAs, including best practices, case studies, and lessons learned.

The governance of NMAs has been placed under the Glasgow Committee on NMAs, which is convened by SBSTA and meets biannually. This committee is responsible for implementing the framework and work programme of NMAs. By 2027, the Parties will assess the committee's performance over its first five years and determine the need for different institutional arrangements.

In 2022, Parties and observers were invited to share their views on NMAs. The synthesis report that followed highlighted several focus areas and potential NMAs, including those related to adaptation benefits and initiatives like the UN Capital Development Fund's "LoCAL". As the NMA initiative is Party-driven, its success hinges on Party engagement. Given the potential of the NMA work programme to enhance ambition, it's evident that its implementation could bolster Parties' commitments under their NDCs.

In terms of next steps, the following actions will be significant to operationalize the work programme of NMAs:

- Review of the work programme by CMA 7 (November 2025);
- Review of the work programme by SBSTA 64 (June 2026); and
- Review of the work programme by SBSTA 65 (November 2026).

6. ADAPTATION

Adaptation is defined as the process of adjustment to actual or expected climate change and its effects. Adaptation seeks to reduce the vulnerability of ecological, social and/or economic

systems to climate change; and to minimize damage (or, in some cases, exploit benefits) associated with climate change.

6.1 Types of adaptation

- **Incremental adaptation:** Adaptation actions where the central aim is to maintain the essence and integrity of a system or process at a given scale.
- **Transformational adaptation:** Adaptation that changes the fundamental attributes of a system in response to climate and its effects.
- **Autonomous adaptation/ spontaneous adaptation:** Adaptation in response to experienced climate and its effects, without planning explicitly or consciously focusing on addressing climate change.
- **Community-based adaptation:** Local, community-driven adaptation that focuses on empowering and promoting the adaptive capacity of communities.
- **Ecosystem-based adaptation:** The use of biodiversity and ecosystem services as part of an overall adaptation strategy to help ecological, social, or economic systems adapt to the adverse effects of climate change.
- **Maladaptation:** Actions that may lead to increased risk of adverse climate-related outcomes, increased vulnerability to climate change, or diminished welfare, now or in the future.

RELATIONSHIP BETWEEN ADAPTATION AND MITIGATION

Adaptation is recognized as a strategy that is complementary to mitigation, under the UNFCCC, Paris Agreement and Kyoto Protocol.

Adaptation can help deal with these unavoidable consequences, by anticipating and preventing or reducing major impacts.

VULNERABILITY, ADAPTIVE CAPACITY, RISK

Vulnerability to climate change refers to the likelihood of being negatively affected by its impacts. It includes elements such as sensitivity to harm and a lack of adaptive capacity. It can affect various systems, institutions, humans, and organisms.

Adaptive Capacity is the ability of systems, institutions, humans, and other organisms to adjust to potential damage, exploit opportunities, or respond to consequences caused by climate change. It plays a critical role in determining vulnerability.

Risk is at the core of climate change assessment, as defined by the IPCC. It arises from the intersection of vulnerability, hazards, and exposure. Different individuals and societies may perceive and prioritize risks differently based on their values and goals.

ECONOMIC COSTS OF ADAPTATION

Adaptation costs incorporate the costs of planning, preparing for, facilitating, and implementing adaptation measures, including transition costs. The costs of adaptation are emission-dependent.

The costs increase under higher emissions scenarios. If mitigation action is delayed, more – and costlier – adaptation will be needed. Deep and early mitigation actions are therefore the best insurance against rapidly rising adaptation costs and the potential limits of adaptation.

According to the 2018 Adaptation Gap Report, the annual costs of adaptation globally could range from US\$140 billion to US\$300 billion by 2030; and from US\$280 billion to US\$500 billion by 2050.

LIMITS TO ADAPTATION

An adaptation limit is defined as the point at which an actor's objectives or system needs cannot be secured from intolerable risks through adaptive actions.

A **“hard” limit** implies that no adaptive actions are possible.

A **“soft” limit** implies that adaptation options are not yet available but could be available in future through new technologies or changes in laws, institutions, or values, because it mainly depends on human factors.

WHY DOES ADAPTATION MATTER IN THE GLOBAL NEGOTIATIONS?

Adaptation remained a secondary concern for the international negotiations for over a decade, as the focus was on mitigation. This was partly because not all developed countries viewed adaptation as a global problem, therefore did not eligible for funding.

As the impacts of climate change became more tangible, developing countries pushed for greater emphasis on adaptation, pointing to increased domestic spending to deal with climate impacts, resulting in a diversion of scarce resources from investments in the development sector.

Adaptation finance flows have generally increased in recent years, although a major gap between adaptation finance needs and adaptation finance flows persists, and is expected to deepen in the future. Meanwhile, the emissions of some developing countries have grown, increasing their own share of responsibility. Furthermore, adaptation has become a major issue for developed nations too, as adverse impacts have intensified across the world.

6.2 How has adaptation evolved under the UNFCCC?

The preamble recognizes the adverse impacts of climate change as a “common concern of humankind”. **Article 4 then requires Parties to:**

- **(Article 4.1.b) said to** Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to facilitate adequate adaptation to climate change
- **(Article 4.1.e) to** cooperate in preparing for adaptation to the impacts of climate change.
- **(Article 4.4.) to** ensure assistance from developed countries in meeting the costs of adaptation for developing countries.
- **(Article 4.8) calls for** “actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties

arising from the adverse effects of climate change and/or the impact of the implementation of response measures,” particularly for:

- (a) **Small island countries;**
 - (b) **Countries with low-lying coastal areas;**
 - (c) **Countries with arid and semi-arid areas, forested areas and areas liable to forest decay;**
 - (d) **Countries with areas prone to natural disasters;**
 - (e) **Countries with areas liable to drought and desertification;**
 - (f) **Countries with areas of high urban atmospheric pollution;**
 - (g) **Countries with areas with fragile ecosystems, including mountainous ecosystems;**
 - (h) **Countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products; and**
 - (i) **Landlocked and transit countries.**
- **Article 4.8** The reference to “the impact of the implementation of response measures”.

1995 BERLIN MANDATE - COP1

During Parties agreed to a three-stage approach to adaptation:

Stage I: Identification of particularly vulnerable areas and appropriate policy options.

Stage II: Implementation of measures to prepare for adaptation.

Stage III: Implementation of measures to facilitate adaptation, including insurance.

Financial support was limited to stage 1, Stage 2 and 3 financing was to be discussed on an Ad Hoc basis.

1997 KYOTO PROTOCOL - COP3

Article 10 called on all countries to formulate mitigation and adaptation programmes.

(Article 10.8) Parties agreed that a “share of the proceeds” (later fixed at 2%) from the Clean Development Mechanism (CDM) would be used to fund adaptation activities.

COP4, in 1998 it was decided that the GEF should provide funding to implement “Stage II” activities; and Parties should cooperate to facilitate the transfer of technologies, including for adaptation.²² At COP5, in Bonn, in 1999, attention was once again focused mainly on the identification of adaptation needs.

At “COP6-bis” held in Bonn, in July 2001, three new funds were created: the Special Climate Change Fund (SCCF) for adaptation and other climate areas in all vulnerable developing countries; the LDC Fund (LDCF) for LDCs to prepare National Adaptation Programmes of Action (NAPAs); and the Adaptation Fund, under the Kyoto Protocol, to govern the funds collected from the 2% levy on CDM.

2001 MARRAKESH ACCORDS - COP7

Work on adaptation was taken up under UNFCCC **Articles 4.8** and **4.9** which included the establishment of a work programme to support the LDCs in preparing and implementing National Adaptation Programmes of Action (NAPAs), listing their priority, short-term adaptation requirements

An LDC Expert Group (LEG) was established, to guide the work on NAPAs (this mandate was later expanded). It was also decided that the two funds created under the UNFCCC, in Bonn, the SCCF and LDCF, would be managed by the GEF Council.

2002 DELHI DECLARATION - COP8

Delhi Ministerial Declaration on Climate Change and Sustainable Development sought to highlight adaptation as a priority. In addition, guidelines for developing country National Communications were adopted, calling for the inclusion of information on vulnerability and adaptation. The (CGE) produced training material on vulnerability and adaptation assessments to assist developing countries with this request.

2004 BUENOS AIRES PROGRAMME OF WORK ON ADAPTATION AND RESPONSE MEASURES - COP10

Parties agreed on two new agenda items focused on adaptation and mitigation. Under adaptation, the issue of compensation for countries negatively affected by climate change was discussed, but rejected by industrialized countries on the grounds that improving knowledge on adaptation would prevent harmful impacts, and therefore there was no need for reparation.

The Buenos Aires programme provided a basis for furthering work on adaptation, while maintaining the link between adaptation and response measures, both (SBI) and (SBSTA). This resulted in highly politicized and inconclusive debates under the Convention for a number of years.

2005 NAIROBI WORK PROGRAMME - COP11

The NWP is established under SBSTA, to engage non-Party stakeholders, and gather and share knowledge to inform and support adaptation planning and implementation. The Adaptation Knowledge Portal, launched under the NWP, provides a range of tools and knowledge resources on adaptation. In addition, taking stock of activities undertaken by organizations and institutions on impacts, vulnerability and adaptation to climate change; and to promote dialogue between Parties and engaged organizations and institutions.

2007 BALI ACTION PLAN - COP13

Bali Action Plan encompassed five key building blocks for a future climate regime:

- Shared vision
- Mitigation
- Adaptation
- Technology
- Financial resources

The Bali Action Plan supported enhanced action on adaptation including:

- financial and capacity development support;
- risk management and reduction strategies;
- linking disaster risk reduction and adaptation measures;
- Partnerships between public, private, multilateral, and civil society organizations.

The Adaptation Fund was also operationalized at COP13.

2009 COPENHAGEN ACCORD - COP15

The Accord recognized the importance of adaptation, and agreed that developed countries shall provide scaled-up, new and additional, predictable and adequate funding, through improved access, to developing countries. US\$ 30 billion was promised for the 2010-2012 period, with balanced allocation between adaptation and mitigation. It was agreed that “new multilateral funding for adaptation will be delivered through effective and efficient fund arrangements, with a governance structure providing for equal representation of developed and developing countries.

2010 CANCUN ADAPTATION FRAMEWORK - COP16

The Cancun Adaptation Framework called for adaptation to be “addressed with the same priority as mitigation”, and included the following elements:

- Establishment of an Adaptation Committee to promote implementation of enhanced action;
- Establishment of a National Adaptation Plan (NAP) process
- Establishment of a work programme to consider approaches to address loss and damage;
- An invitation to strengthen or establish international, regional, and national institutions focused on adaptation;
- A request to developed countries to provide financial support for developing countries.

The Cancun decision also calls for “long-term, scaled-up, predictable, new and additional finance, technology and capacity-building, consistent with relevant provisions, to implement urgent, short-, medium- and long-term adaptation actions, plans, programmes and projects

at the local, national, subregional and regional levels, in and across different economic and social sectors and ecosystems”. **In this context, the Green Climate Fund (GCF) was established at COP16, and formally launched in Durban the following year.**

2011 DURBAN PLATFORM - COP17

The Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) was established for this purpose, to discuss mitigation, adaptation, finance, technology development and transfer, transparency of action and support, and capacity building.

The composition and procedural details of the Adaptation Committee, as well as the modalities and guidelines for the NAP process, were agreed in Durban. The decision on the NAP process stresses national ownership, and integration into existing national processes; and invites countries to draw on existing institutions, in particular the LEG, for technical guidance and support. The mandate of the LEG has expanded over time and also includes the NAP process.

6.3 National adaptation plan process

The National Adaptation Plan (NAP) process, initiated in 2010 during COP16, is a continuous and inclusive approach to address long-term climate adaptation needs. Initially for Least Developed Countries (LDCs), it later expanded to other developing nations in 2011. The NAP process focuses on country-driven, male and Female-sensitive, and participatory adaptation efforts, integrating them into national policies. Technical guidelines and support are provided by organizations like LEG.

The GEF, SCCF, and GCF offer financial support for NAP preparation, with GCF providing assistance since 2015 through its Readiness and Preparatory Support Programme. Developing countries can share their NAPs on the NAP Central site, which also hosts adaptation strategies and events.

In essence, the NAP process fosters climate resilience, emphasizes national ownership, and benefits from international support and knowledge-sharing.

2012 DOHA CLIMATE GATEWAY - COP18

The Adaptation Committee was requested to establish an annual adaptation forum, to maintain a high profile for adaptation, raise awareness and ambition, and facilitate enhanced coherence of adaptation actions. It was also requested to publish The State of Adaptation under the UNFCCC in 2013.

2013 WARSAW INTERNATIONAL MECHANISM - COP19

The Warsaw International Mechanism on Loss and Damage.⁴⁶ COP19 also extended a call for Parties to “initiate or intensify domestic preparations for their intended nationally determined contributions”, although the focus of these intended NDCs.

2014 LIMA CALL FOR ACTION - COP20

Inclusion of Adaptation in INDCs: The call for Intended Nationally Determined Contributions (INDCs) was emphasized in COP20's Lima Call for Action. Many developing countries, in response to this call, included an adaptation component in their INDCs. This highlights the recognition of adaptation as a crucial aspect of climate action for developing nations.

Differences on Adaptation: The text highlights key areas of divergence between Parties (countries) concerning adaptation. These include establishing a global goal for adaptation, clarifying the relationship between mitigation and adaptation actions, specifying targets for adaptation finance from developed countries, acknowledging the adaptation efforts of developing countries, including adaptation in NDCs, reporting financial contributions for adaptation, and proposing new institutional arrangements.

Separation of Loss and Damage: The separation of the topics of loss and damage from adaptation was a contentious issue leading up to the Paris Agreement. Developing countries favored keeping these two aspects distinct. This reflects the complex negotiations and differing perspectives on how to address the impacts of climate change.

6.4 UNFCCC bodies and work streams on adaptation

BODIES	
LDC Expert Group (established 2001)	Provide technical guidance and support to LDCs on NAPAs and NAP process (including access to GCF funds); implement LDC work programme.
Adaptation Committee (2010)	Provide technical support, guidance to Parties; share information, knowledge, experience, and good practices; promote synergy and strengthen engagement with national, regional, and international Organizations, centers and networks; provide information and recommendations, drawing on adaptation good practices, for consideration by the COP; and consider information communicated by Parties on their adaptation actions, support provided, and received.
WORKSTREAMS	
NAPAs (2001)	Identify urgent and immediate adaptation needs of LDCs.

Nairobi Work Programme (2005)	Facilitate and catalyze development, dissemination, and use of knowledge to inform and support adaptation policies and practices.
NAP process (2010)	Continuous, progressive, and iterative process to identify medium- and long-term adaptation needs and implement strategies and programmes.
Technical Examination Process on Adaptation (2015)	Technical expert meetings, papers and other events during 2016-2020, to identify concrete opportunities to strengthen resilience, reduce vulnerabilities, and increase understanding and implementation of adaptation actions.
Adaptation Communications (2015)	Communicate adaptation priorities, implementation and support needs, plans and actions.
Adaptation Registry (2015)	Record of adaptation communications maintained by the UNFCCC secretariat.
Adaptation section in BTRs (2015)	Communicate information related to climate impacts and adaptation to facilitate, inter alia, recognition of adaptation efforts of developing countries.

ADAPTATION IN THE PARIS AGREEMENT AND RULEBOOK

The rules for implementing the Agreement were discussed under the Ad Hoc Working Group on the Paris Agreement (APA), in seven sessions that took place between 2016-2018, including during the Marrakesh (2016), Bonn (2017), and Katowice (2018) COPs. The “Paris rulebook” was adopted as part of the Katowice Climate Package.

Article 7.1 Global Goal on Adaptation

Article 7.2 Global Challenges

Article 7.3 Recognition of Efforts

Article 7.4 Adaptation and Mitigation Link

Article 7.5 Inclusive Approach

Article 7.6

Article 7.7 Support and International Cooperation

Article 7.8

Article 7.9 Adaptation Planning

Article 7.10

Article 7.11 Adaptation and Communications

Article 7.12 Public Registry

Article 7.13 Enhanced Support

Article 7.14 Adaptation in the Global Stocktake

Article 13 Adaptation and Transparency

INSTITUTIONAL ARRANGEMENTS

The Paris Decision 1/CP.21 also contains provisions on the review of adaptation-related institutional arrangements under the UNFCCC. At COP24, it was decided that the Adaptation Committee and the LEG shall serve the Paris Agreement. The CGE and the LEG are invited to continue to work together on adaptation-related training, including vulnerability assessments. Institutional arrangements related to finance, technology development and transfer, and capacity building are encouraged to make every effort to achieve a balance between adaptation and mitigation. The Adaptation Committee will continue making recommendations on ways to enhance collaboration and promote coherence and synergies among adaptation-related institutions.

TEP-A

The Paris Decision 1/CP.21 considers enhanced pre-2020 action. It calls for a technical examination process on adaptation (TEP-A) to be organised by SBI/SBSTA and conducted by the Adaptation Committee between 2016-2020, to identify concrete opportunities for strengthening resilience, reducing vulnerabilities, and increasing the understanding and implementation of adaptation actions.

COP23 urged Parties to focus the TEPs on specific policy options and opportunities for enhancing mitigation and adaptation that are actionable in the short term, including those with sustainable development co-benefits.

6.5 Adaptation finance

The Global Environment Facility (GEF) was named as the operating entity of the UNFCCC Financial Mechanism (initially on an interim basis). Developing countries found it difficult to access GEF funds, as it had complicated criteria to ensure that the funds were used only for “global environmental benefit”, and complex methodologies for working out the “incremental cost” of such global benefits. Adaptation was viewed as a national challenge, and did not qualify for GEF funding. (It was not until 2004 that the GEF received a one-time contribution of US\$ 50 million for a Strategic Priority on Adaptation to run until 2010, for a programme to reduce vulnerability and increase resilience to the adverse effects of climate change. After this programme ended, adaptation was addressed only as a cross-cutting issue for its thematic areas.

Two new funds were established at COP7 in Marrakesh later the same year:

- **The LDC Fund**, focusing on the special needs of the LDCs (as discussed earlier). LDC Fund was created to prioritize the needs of the LDCs, at first specifically for the NAPAs and later for the NAP process as well. In addition to a shortage of actual

funds to achieve these objectives. The procedures however were very complicated and time consuming.

- **Special Climate Change Fund (SCCF)**, open to all vulnerable developing countries. Despite objections from developing countries.

The GEF was entrusted with managing both these funds.

- **The Adaptation Fund** was created under the Kyoto Protocol, in Marrakesh, to manage the disbursement of the 2% CDM levy. The Adaptation Fund Board was created in Bali, in 2007, with a majority of the 16 board members representing developing countries. Unlike the GEF, the Adaptation Fund Board would report directly to the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP). The Adaptation Fund Board was quick to seek solutions for some of the problems faced by developing countries in accessing global climate finance. It operationalised “direct access” “national implementing entities” (NIEs) can access funds directly, without needing an international entity (a requirement for GEF, and the LDCF and SCCF). **However, the Fund faced a resource shortage when the price of carbon plummeted, and the share of proceeds from the CDM began to dry up.** It has since been mainly reliant on voluntary contributions. The Adaptation Fund will also serve the Paris Agreement, which gave hope to the parties and work in progress to allocate the funds to serve under the fund.
- **The Green Climate Fund (GCF)** emerged from the wreckage of the 2009 Copenhagen conference. It was formally established in Cancun in the following year as an operating entity of the UNFCCC. The Fund would be governed by 24 board members, comprising an equal number of members from developing and developed countries. The Governing Instrument also lays out that the Fund will have thematic windows for adaptation and mitigation; and the Board the urgent and immediate needs of developing countries that are particularly vulnerable to the adverse effects of climate change, including LDCs, SIDS and African States, using minimum allocation floors for these countries as appropriate.

Under the Paris Agreement, it was decided that the GCF, GEF, LDCF, and SCCF will serve the Agreement (Article 9.8 and paragraph 58 of Decision 1/CP.21).

COUNTING ADAPTATION FINANCE

The UNFCCC includes the following elements related to adaptation finance:

Article 4.3

Article 4.4

Article 4.8

Article 4.9

The SCF (Standing Committee on Finance) was created at COP16 in Cancun to resolve some of these ambiguities, including the measurement, reporting, and verification of support provided to developing countries.

6.6 Climate finance accounting in the Paris Agreement and rulebook

The principles of climate finance, and the uncertainties regarding them, were addressed in the Paris Agreement. Article 9.4 states that the “provision of scaled-up financial resources should aim to achieve a balance between adaptation and mitigation, taking into account country-driven strategies, and the priorities and needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change and have significant capacity constraints, such as the least developed countries and small island developing States, considering the need for public and grant-based resources for adaptation”.

In the **LONG-TERM, PREDICTABLE FINANCE** Developed countries resist longer-term commitments to finance, citing political uncertainty and the unwillingness of treasuries to earmark funds over a longer period of time. The adaptation-related funds have experienced problems in raising sufficient resources to fund a backlog of fundable projects in the pipeline. Attempts have been made to address the predictability problem, particularly for adaptation, through “innovative sources” (or alternative sources). For instance, the LDC Group proposed an **International Air Passenger Adaptation Levy** in 2008, with the potential to raise between US\$ 8-10 billion annually for adaptation. Ahead of COP16 in Cancun, the UN Secretary-General’s (UNSG’s) High-Level Advisory Group on Climate Change Financing identified a number of innovative sources of finance, including from the **carbon market, carbon taxes, international transport, and the removal of fossil fuel subsidies**. More recent efforts to raise adaptation funds include proposals for contributions from sub-national carbon markets for the LDC Fund, and crowd funding for the Adaptation Fund. Political will for such mechanisms appears to be lacking.

7. LOSS AND DAMAGE

Loss and damage related to climate change has not been formally defined under the UN Framework Convention on Climate Change (UNFCCC). It is most often conceptualized as climate change impacts that are not avoided through mitigation and adaptation. A working definition was proposed by researchers working to better understand how loss and damage is incurred by households in developing countries:

Loss and damage refers to negative effects of climate variability and climate change that people have not been able to cope with or adapt to.

Distinctions are also made between:

- loss and damage that is avoided (avoided loss and damage);
- loss and damage that is not avoided but could have been through greater mitigation and adaptation efforts (unavoided avoidable loss and damage); and
- Loss and damage which cannot be avoided (unavoided unavoidable loss and damage).

This framing highlights the fact that there is significant potential to avoid loss and damage by increasing mitigation ambition and enhancing adaptation efforts.

Loss and damage is sometimes also referred to as the “residual impacts” or “residual costs” of climate change not avoided by mitigation and adaptation – including by the Intergovernmental Panel on Climate Change (IPCC).

Loss and damage occurs as a result of both slow onset climatic processes (called slow onset events under the UNFCCC) and extreme weather events (called extreme events). The Cancun Adaptation Framework defines slow onset events as including sea level rise, increasing temperatures, ocean acidification, glacial retreat and related impacts, salinization, land and forest degradation, loss of biodiversity, and desertification.

The emphasis on slow onset events is important. Losses and damages due to such events are not covered under other processes such as the UN’s International Strategy for Disaster Risk Reduction (UNISDR), where the emphasis is on losses and damages incurred as a result of extreme events. However, slow onset events caused by climate change are already manifesting in significant losses and damages worldwide. Ensuring these are averted, minimized and addressed to the extent possible is a critical issue, especially for particularly vulnerable developing countries, and needs to be continually emphasized within discussions under the UNFCCC.

7.1 What are the different types of loss and damage?

In addition to the distinctions described above, the UNFCCC negotiations differentiate between economic losses, goods and services commonly traded in markets, and non-economic loss and damage (NELD) – items which are not commonly traded in markets.

Examples of NELD include loss of life, health, territory, cultural heritage, sense of place, agency, identity, indigenous and local knowledge and biodiversity and ecosystem services. Addressing NELD is an important aspect of the loss and damage discussions under the UNFCCC. While NELD is difficult to measure, there are ways in which it can be addressed, and this is part of the on-going discussion on loss and damage.

Permanent and irreversible loss and damage is also discussed within the UNFCCC negotiations. This type of loss and damage is particularly important for the small island developing States (SIDS), which are faced with losing their entire territory in some cases as a result of sea level rise. Many communities within developing countries have already been permanently displaced as a result of climate change impacts. Addressing permanent losses and the loss of ecosystems, livelihoods and statehood – among others – is therefore a significant issue for developing countries.

7.2 Why is it important to discuss loss and damage under the UNFCCC?

The overarching objective of the UNFCCC – to stabilize emissions at levels and within a timeframe that will allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner – is, in fact, to avoid loss and damage.

Monitoring loss and damage therefore provides a measure of the overall effectiveness of global (mitigation and adaptation) efforts. Mitigation efforts are the primary way of avoiding and minimizing loss and damage – the lower the mitigation ambition, the greater the risk of

loss and damage. Where mitigation ambition is not high enough, adaptation efforts can help avert or minimize loss and damage.

However, the IPCC warns that existing efforts have not been successful: Without additional mitigation efforts beyond those in place today, and even with adaptation, warming by the end of the 21st century will lead to high to very high risk of severe, widespread and irreversible impacts globally (high confidence).

In addition to mitigation and adaptation efforts, support to enhance action in developing countries, including finance, technology transfer and capacity building, is crucial. That said, the IPCC maintains that even with mitigation and adaptation, there will still be “residual impacts”, or loss and damage.

In the Paris Agreement, Parties agreed to undertake collective efforts to keep global average temperatures below 2°C and to do their utmost to limit the increase in global average temperatures to 1.5°C. However, the nationally determined contributions which countries submitted in the lead up to the Paris Conference translate into global average warming closer to 3°C. Increasing ambition on mitigation, adaptation and means of implementation (finance, technology development and transfer and capacity building) remain critical to avert loss and damage.

Losses and damages from climate change impacts are already being manifested, and will continue to increase because of historical emissions and the current lack of mitigation ambition. As 2017 went on record as the warmest year on record without an El Niño, for instance, extreme weather events inflicted losses and damages all over the world. 41 million people lost their homes in Bangladesh, India, and Nepal, when floods hit South Asia.

The Caribbean region was ravaged by no less than ten hurricanes in 2017, inflicting significant damage on islands – for instance, 99% of the buildings were destroyed in Barbuda, and 60% of the population was made homeless in the wake of Hurricane Irma.¹⁹ A short week later, a second category 5 hurricane devastated Dominica, claiming over 25 lives and severely damaging more than 80% of the housing sector. (This was only two years after losses and damages from tropical storm Erika were estimated at 90% of Dominica’s GDP.)

Countries in the Pacific suffered from a shortage of water from 2015-2017 due to a lack of rainfall. Food security was threatened in the Solomon Islands, when crops were hit by floods, drought and cyclones.

In the Horn of Africa, meanwhile, the severe drought that has affected the region since 2015 continued, rendering 15 million people food insecure (including 8.5 million in Ethiopia alone) and displacing two million people.

While some of these losses and damage could have been averted through adaptation, there is evidence that the limits of adaptation are already being reached in some parts of the world,²⁴ with the affects particularly acute in least developed countries (LDCs). While acknowledging that limits to adaptation exist, that IPCC differentiates between the soft levels

of adaptation, where adaptation options exist but are not available or accessible, and hard limits of adaptation where adaptation options do not yet exist.

Evidence of hard limits to adaptation being reached and losses and damages incurred as a result have been found in the coastal region of Bangladesh, where rising salinity levels have rendered cultivation of even the most saline tolerant varieties of rice impossible.²⁶ A study in the region found that the loss in rice yields due to salinization in three villages alone was estimated to be US\$ 1.9 million. Some of the poorest households lost 74% of their income during that period. In Burkina Faso, a study in ten villages found that 99% of households experienced significant negative impacts as a result of a prolonged drought, lasting from 2004 to 2010. 40% of those who adopted coping strategies such as reducing food consumption and selling livestock still experienced severe negative impacts.

Loss and damage associated with the adverse impacts of climate change has significant repercussions on development. A study in Kenya found that when faced with loss and damage many households adopt erosive coping strategies, selling assets for short-term gains, which ultimately make them more vulnerable to future climate change impacts.²⁸ A lack of development also makes countries more vulnerable to loss and damage, making the implementation of sustainable approaches to address loss and damage even more critical.

These examples speak to two critical issues: more support is needed for adaptation to ensure that loss and damage is avoided and minimized to the extent possible; and approaches to address loss and damage are needed for impacts that cannot be avoided through adaptation.

Already overwhelmed with the implementation of development policies and plans, policy makers and implementers in developing countries must deal with the additional burden of implementing adaptation strategies. Dealing with loss and damage is a tertiary burden, which will be even more challenging without additional capacity and resources.

7.3 How has loss and damage evolved under the UNFCCC?

Discussions on loss and damage in the global climate change regime began before the UNFCCC was agreed. In 1991, during the negotiations that resulted in agreement to the UNFCCC in 1992, Vanuatu, on behalf of the Alliance of Small Island States (AOSIS), proposed an international fund to support measures to address the impacts of climate change, and an insurance pool to provide insurance against sea level rise in SIDS. Revenue for the insurance pool would come from mandatory contributions from developed countries.

In the end, neither an insurance pool nor a global fund was incorporated into the Convention. (Of Course this was before the emerging proposals and the formation of the Loss and Damage Fund under the World Bank/Global Environment Facility that was announced during COP27 Sharm AlSheikh 2022) However, insurance was acknowledged in Article 4.8:

Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impacts of the implementation of response measures...

After the UNFCCC was adopted, negotiations focused on mitigation and the adoption of the Kyoto Protocol in 1997. At COP7 in Marrakech, in 2001, insurance arose again, when Parties decided to consider, at its eighth session, the implementation of insurance-related actions to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change. In the end, there was no decision on insurance at COP8 in Delhi in 2002. However, there were two workshops to explore insurance in 2003, accompanied by a background paper that considered insurance-related actions and risk assessment in the context of the UNFCCC. In subsequent years there were calls for exploring insurance further and at least one call for compensation for the impacts of climate change, but nothing substantial arose from these requests.

It was not until COP13 in Bali, in 2007, that the term loss and damage appeared explicitly for the first time in a decision, in the context of calls for enhanced action on adaptation including:

Disaster risk reduction strategies and means to address loss and damage associated with climate change impacts in developing countries that are particularly adverse to the impacts of climate change.

A subsidiary body – the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA) – was created to implement the Bali Action Plan. In response to a call for submissions on how the work of the AWG-LCA should be carried out, AOSIS submitted a proposal for a multi-window mechanism to address loss and damage from the adverse impacts of climate change in 2008. The proposed mechanism consisted of three interdependent components:

- Insurance, to address climate-related extreme weather events and risks to crop production, food security and livelihoods.
- Rehabilitation and compensation, to address progressive negative impacts that result in loss and damage.
- Risk management, to promote risk assessment and risk management tools and strategies at all levels.

This proposal was also included by AOSIS submission for a legally-binding agreement submitted in advance of COP15 in Copenhagen, in 2009. The African Group of Negotiators also included loss and damage in its proposal for a Copenhagen Agreement.

In the wake of the failure of the Copenhagen conference to deliver a successful outcome, the next opportunity to address loss and damage came at COP16 in 2010, where Parties agreed to establish a work programme on loss and damage to consider approaches to address loss and damage in developing countries particularly vulnerable to the impacts of climate change.³⁹ At the 34th session of the Subsidiary Body for Implementation (SBI) in the spring of 2011, the work programme was further differentiated into three thematic areas:

- Assessing the risk of loss and damage associated with the adverse effects of climate change, and the state of current knowledge.

- A range of approaches to address loss and damage associated with the adverse effects of climate change, including impacts related to extreme weather events and slow onset events, taking into consideration experience at all levels.
- The role of the UNFCCC in enhancing the implementation of approaches to address loss and damage associated with the adverse effects of climate change.

At COP17 in Durban, Parties agreed that an international mechanism was a possible modality for addressing loss and damage. At COP18 in Doha in 2012, discussions focused on the role of the UNFCCC in addressing loss and damage. After extended discussions, it was decided that the role of the Convention is to:

- Enhance knowledge and understanding of comprehensive risk management approaches to address loss and damage associated with the adverse effects of climate change, including slow onset impacts;
- Strengthen dialogue, coordination, coherence and synergies among relevant stakeholders; and
- Enhance action and support, including finance, technology and capacity building, to address loss and damage associated with the adverse effects of climate change.

In addition, it was decided that institutional arrangements – including an international mechanism – would be established at COP19 in Warsaw to help the UNFCCC carry out these functions.

WARSAW INTERNATIONAL MECHANISM

One of the key issues in Warsaw was whether loss and damage was part of adaptation, or beyond adaptation. In the end a compromise text was struck that recognizes the synergies with adaptation but acknowledges that loss and damage involves more than can be addressed by adaptation.⁴² The WIM was established under the Cancun Adaptation Framework, but it was decided that a review of the WIM would take place in 2016 at COP22, including of its mandate, structure and effectiveness.

After two weeks of intense negotiations at COP19, the Warsaw international mechanism for loss and damage associated with climate change impacts (WIM) was established, to address loss and damage associated with the impacts of climate change in developing countries particularly vulnerable to the adverse effects of climate change. The functions of the Mechanism are elaborated in Box 1.

The WIM is overseen by an Executive Committee or

The functions of the WIM from Decision 2/CP.19 and following from discussions in Doha were determined to be:

- Enhancing knowledge and understanding of comprehensive risk management approaches to address loss and damage associated with the adverse effects of climate change, including slow onset impacts, by facilitating and promoting:

- Action to address gaps in the understanding of, and expertise in, approaches to address loss and damage associated with the adverse effects of climate change, including, inter alia, the areas outlined in **Decision 3/CP.18, paragraph 7(a)**;
- Collection, sharing, management and use of relevant data and information, including gender-disaggregated data; and
- Provision of overviews of best practices, challenges, experiences and lessons learned in approaches to address loss and damage.
- Strengthening dialogue, coordination, coherence and synergies among relevant stakeholders by:
 - Providing leadership and coordination and, as and where
 - appropriate, oversight under the Convention, on the assessment and implementation of approaches to address loss and damage associated with the impacts of climate change from extreme events and slow onset events associated with the adverse effects of climate change; and
 - Fostering dialogue, coordination, coherence and synergies among all relevant stakeholders, institutions, bodies, processes and initiatives outside the Convention.
- Enhancing action and support, including finance, technology and capacity building, to address loss and damage associated with the adverse effects of climate change, so as to enable countries to undertake actions pursuant to Decision 3/CP.18, paragraph 6, including by:
 - Providing technical support and guidance on approaches to address loss and damage associated with climate change impacts, including extreme events and slow onset events;
 - Providing information and recommendations for consideration by the COP when providing guidance relevant to reducing the risks of loss and damage and, where necessary, addressing loss and damage, including to the operating entities of the financial mechanism of the Convention, as appropriate;
 - Facilitating the mobilization and securing of expertise, and enhancement of support, including finance, technology and capacity building, to strengthen existing approaches and, where necessary, facilitate the development and implementation of additional approaches to address loss and damage associated with climate change impacts, including extreme weather events and slow onset events.

ExCom, whose official mandate is to guide the implementation of the functions of the WIM. The Committee has 20 members – ten from Annex I (developed) countries, and ten from non-Annex I (developing) countries.

The ExCom meets twice a year to discuss the implementation of its work plan. These meetings are where the substantive discussions on loss and damage take place.

WHAT DOES THE PARIS OUTCOME INCLUDE ON LOSS AND DAMAGE?

In the run up to COP21 in Paris, loss and damage was a contentious and highly political issue. Many developed countries did not want to see loss and damage in the Agreement, while developing countries needed the Agreement to address loss and damage, particularly after the IPCC's Fifth Assessment Report predicted increased warming and rising impacts.

In the end, loss and damage was treated separately from adaptation and included as a stand-alone article (Article 8). As part of the 'deal' for this treatment, an 'exclusion clause' was included in Decision 1/CP.21, which indicates that Article 8 does not serve as a basis for any liability or compensation.

The WIM was established as the overarching body on loss and damage under the Paris Agreement and subject to the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA). The body is currently under the authority of the COP as a joint agenda item under both the SBI and the Subsidiary Body for Technological and Scientific Advice (SBSTA). Once the Paris Agreement is implemented, the WIM will serve both the UNFCCC and the Paris Agreement, and will be accountable to both the COP and the CMA. That said, guidance from the CMA may take precedence over COP decisions.

The Paris outcome on loss and damage also strengthened the WIM. In Decision 1/CP.21 the ExCom was requested to establish a clearing house for risk transfer to serve as a repository of information on insurance and risk transfer, in order to facilitate the efforts of Parties to develop and implement risk management strategies, now known as the Fiji Clearing House for Risk Transfer.

The ExCom was also asked to establish a Task Force on Displacement to develop recommendations for integrated approaches to avert, minimize and address displacement related to the adverse impacts of climate change.⁴⁶ Both the Fiji Clearing House for Risk Transfer and the Task Force on Displacement have now been operationalised.

Loss and damage is also increasingly being raised in discussions under the Ad-hoc Working Group on the Paris Agreement (APA) – including in discussions on transparency and the global stocktake. This is being driven by both evidence of loss and damage today and predictions of loss and damage in the future, particularly given a lack of both historical and current mitigation ambition.

DOES THE PARIS OUTCOME RULE OUT COMPENSATION AND LIABILITY FOR LOSS AND DAMAGE?

Legal interpretations of the "exclusion clause" in Decision 1/ CP.21 vary. Some legal scholars have concluded that all options remain for the development of a system under the climate regime that can address the underlying concerns raised by Small Island developing states (SIDS) and others in calling for a system of compensation and liability.⁴⁷ Several proposals for compensation frameworks have been put forth since COP21. It has also been argued that the

exclusion clause is contained within a COP decision, and would need to have been put forth by the CMA, as its governing body, in order to apply to the Paris Agreement.

Compensation could also be sought within other international legal frameworks. The governments of Nauru, the Marshall Islands, and Tuvalu have all declared that in agreeing to Decision 1/CP.21 they do not renounce their rights under others laws, including international laws. It has been argued that under the no-harm rule, widely recognized under international law, states are obligated to prevent loss and damage and minimize the risk of loss and damage to other states.

The fact remains that developing countries face debilitating losses from climate impacts, which they cannot possibly bear on their own. For instance, the Government of Kiribati purchased land on Vanua Levu, Fiji's second largest island, in 2014 at a cost of US\$ 8.77 million in anticipation that its entire citizenry of 100,00 people spread over 33 islands may need to relocate in the near future due to impacts of sea level rise. Relocating all its citizens to the purchased territory – located 2,000 km away from Kiribati – will be an expensive undertaking that the Government of Kiribati will not be able to bear.

There are a number of on-going cases currently being considered in courts around the world. In early 2015 Saul Luciano Lliuya, a Peruvian farmer brought a case against RWE, a German utility cost seeking US\$ 21,000, a fraction of the costs of protecting his village from flooding due to the overflow of glacial lakes.⁵³ In November of 2017 a German court determined that the case had merit and could therefore proceed.⁵⁴ Cases are also being brought against states. In 2015, in a case brought by Urgenda, a Dutch NGO, and 900 Dutch citizens against the Dutch government, a court ruled that a causal link exists between Dutch emissions, global climate change and its impacts exist, and the Netherlands must do more to avert loss and damage from climate change impacts.

It has been argued that as a result of historical emissions developed countries have amassed an emissions debt (leaving very little of the atmospheric space for developing countries to develop); an adaptation debt (by disproportionately contributing to the impacts to which developing countries must adapt to); and a loss and damage debt in the cases in which no amount of adaptation will avoid impacts of climate change.

7.4 When can loss and damage be attributed to climate change?

The fact that anthropogenic climate change is taking place is now well established by scientists. The IPCC's Fifth Assessment Report maintains that it is extremely unlikely that the increase in global temperatures observed since the 1880s would have occurred without anthropogenic greenhouse gas emissions. Studies have also linked the rise in anthropogenic greenhouse gas emissions to the rise in regional temperatures and global sea levels. but can loss and damage caused by individual slow onset or extreme events be attributed to climate change?

In theory, to do so will require a causal chain from emissions of greenhouse gases to impacts, or losses and damages, and then the individual event must be linked to anthropogenic climate change. In practice, however, this is easier said than done, as there could be many drivers of

risk. Some slow onset events such as increasing temperatures, sea level rise, and glacial retreat can be more easily attributed to anthropogenic climate change. Others, such as salinization and the loss of biodiversity, are more difficult to attribute.

It is even more complex to attribute extreme weather events, such as heat waves, droughts and floods, to anthropogenic climate change. However, the IPCC agrees that anthropogenic climate change is causing extreme weather events to increase in both magnitude and frequency. Increasingly, attribution science is able to indicate the extent to which anthropogenic climate change increased the probability of an event, referred to as probabilistic attribution. Scientists are better able to determine the extent to which some events, such as heat waves and precipitation-related events, were made more likely by anthropogenic climate change than others.⁶⁴ Probabilistic attribution is still difficult to establish for hurricanes, however. That said, attribution science is quickly evolving. A 2016 study found, with 95% probability that at least half of the flooding that has occurred within the US over the past ten years would not have occurred without anthropogenic climate change.

There remain many challenges even with observing changes in extreme events, such as greater frequency or higher magnitude. The availability and quality of data varies, and significant data gaps exist. Unsurprisingly, more data is available in developed countries than developing countries.

As attribution science has evolved, both moral and legal questions about the need to establish attribution have been raised over the past decade. It has been argued that attribution of climate-related hazards to anthropogenic climate change should not be a prerequisite for global action to ensure that developing countries have support to address loss and damage. Many have argued that the international community is ethically obliged to help developing countries build resilience to climate change, including by helping to build their capacities to address climate change. As such, support should be provided to help vulnerable countries and communities address loss and damage regardless of whether they can be attributed to anthropogenic climate change. In fact, Article 8.3 of the Paris Agreement provides for enhancing action and support on loss and damage on a cooperative and facilitative basis, and it follows that attribution should not be a necessary precondition for international cooperation.

WHAT HAS THE WIM WORKED ON, AND WHAT WILL IT DO IN FUTURE?

The WIM initially focused on a two-year work plan, which concluded in 2017. The body's structure, mandate and effectiveness came up for review in 2016 at COP22 in Marrakech – before the initial two-year work plan period ended and work on the plan was completed, but after the Paris Agreement was adopted.

In a report to the COP during this review, the ExCom highlighted progress on a number of elements of the work plan, including agreeing terms of reference for the task force on displacement to deliver their recommendations by COP24; setting up expert groups on facilitating support; closer collaboration with the Standing Committee on Finance and

Technology Executive Committee; and knowledge products on slow onset events, NELD, financial instruments, and displacement.

A key issue for the 2016 review was that of making a clear distinction between adaptation and loss and damage. The WIM was established under the Cancun Adaptation Framework – an adaptation framework – but on the understanding that the placement would be reviewed at a later date. However, the issue was complicated by the fact that the WIM now serves both the COP and the CMA, following the ratification of the Paris Agreement. Legal interpretations of how Article 8 of the Paris Agreement affects the placement of the WIM therefore remain unsettled.

Another key issue for the 2016 review was the call for strengthening and enhancing the WIM to better support developing countries in addressing loss and damage. Specifically, developing countries argued that more focus was needed on the third function of the WIM – enhancing action and support from developed countries. As a result, the ExCom was asked to include a strategic workstream on enhancing action and support, including finance, technology and capacity building, to address loss and damage in its five year rolling work plan.

It was also agreed that the implementation of activities that were not concluded from the ExCom's initial two-year work plan would be taken up within its five-year rolling workplan, developed during the course of 2017 and implemented from 2018. The five-year rolling work plan calls for enhanced cooperation and facilitation in relation to the following five strategic workstreams:

- Slow onset events.
- Non-economic losses.
- Comprehensive risk management approaches, including assessment, reduction, transfer, and retention.
- Human mobility, including migration, displacement and planned relocation.
- Action and support, including finance, technology and capacity-building.

The work plan identifies concrete activities to be implemented in 2018 and 2019 and outlines priority activities to be implemented from 2019 to 2021. However, the COP23 decision also gives the ExCom the flexibility to prioritize activities, including emerging issues, and allow for the consideration of timely issues and emerging and urgent needs.⁷⁶ The ExCom is expected to assess progress of the implementation of the work plan in 2020, and regularly thereafter.

The ExCom also has the mandate to develop expert groups, sub-committees, panels, thematic advisory groups or task-focused ad hoc working groups to help it guide the implementation of the WIM. Currently these include an expert group on non-economic losses (NELs), a technical expert group on comprehensive risk management approaches, and a task force on displacement. The Fiji Clearinghouse for Risk Transfer is also overseen by the ExCom.

7.5 What is comprehensive risk management in addressing loss and damage?

Comprehensive risk management in the context of addressing loss and damage from climate change consists of addressing the entire gamut of possibilities from reducing loss and damage before it occurs, to addressing loss and damage that cannot be avoided.

While mitigation is the best way to reduce loss and damage before it occurs, and adaptation is the best alternative once climate change impacts are inevitable, risk reduction efforts can play a role in both averting and minimizing loss and damage.

To address loss and damage that cannot be avoided, meanwhile, risk transfer approaches (like insurance) and risk retention approaches (like social safety nets) can play an important role. Developing countries are already implementing a range of approaches to comprehensively address loss and damage. For example, the Government of Bangladesh is considering the development of a national mechanism to address loss and damage. However, a number of gaps exist – as highlighted, for instance, in a report by the UNFCCC secretariat on institutional arrangements to deal with loss and damage.

In response to a request from the WIM ExCom, the secretariat has prepared a compendium of existing comprehensive risk management approaches based on a survey.⁸¹ In addition, the ExCom has synthesized submissions on the best practices, challenges and lessons learned from existing financial instruments that address the risk of loss and damage.

In recent years, there has been increasing focus on risk transfer approaches, particularly climate risk insurance. In 2015, the G7 launched the InsuResilience Initiative with the goal of providing 400 million people with access to insurance by 2020 through direct insurance schemes, financial support of funds which provide support for the implementation of insurance, and broader resilience building efforts.⁸³ In 2017, the InsuResilience Global Partnership for Climate and Disaster Risk Finance was launched with the aim of bringing together a range of actors with the collective goal of helping countries respond more readily to disasters and being better prepared for future climate and disaster risks through risk finance and insurance tools. InsuResilience also supports regional initiatives including the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI), African Risk Capacity (ARC), and the Caribbean Catastrophe Risk Insurance Facility (CCRIF), among others.

While insurance is an important tool in comprehensive risk management, many feel that there has been undue focus on risk transfer in the UNFCCC discussions. For developing countries, other measures such as social protection measures are also very important components of comprehensive risk management strategies for loss and damage.

Some risk management approaches were not covered in the UNFCCC compendium, but are very important for developing countries – particularly in the context of unavoidable loss and damage⁸⁴ such as sea level rise and extreme events of severe magnitude. These include recovery, reconstruction and rehabilitation to limit economic and NELD that households and communities suffer in the wake of slow onset and extreme weather events. Increasingly, reconstruction efforts are aimed at building back better to ensure that the original conditions and levels of vulnerability are not re-built and re-created. However, focus is also needed on rehabilitating livelihoods – particularly in cases where agriculture, an important source of livelihood for the poor, becomes unviable.

7.6 What challenges do the loss and damage negotiations face?

Negotiations on loss and damage under the UNFCCC have faced considerable challenges, not least because of the highly politicized nature of the issue, and the reluctance of some countries to actively engage, particularly on the issue of support. From the very beginning, loss and damage has been associated with liability, compensation and justice. Although the focus on liability and compensation has diminished since Paris, progress remains slow.

There have also been technical, financial, capacity-related and territorial challenges – such as the complexities of drawing a distinction between adaptation and loss and damage; attributing loss and damage to climate change; finance for loss and damage; the capacity of developing countries to take the issue forward, and to engage effectively in the work of the WIM; and potential synergies with the Sendai Framework on Disaster Risk Reduction (SFDRR) and the Sustainable Development Goals (SDGs).

The most significant challenge in the negotiations is the fact that loss and damage is a very political issue, one that goes to the very heart of the climate change negotiations. Acknowledging that loss and damage is already being caused by climate change amounts to a sense of failure of the Convention in achieving its ultimate objective – that of limiting damage. It can be construed, to some extent, as failure not only to mitigate climate change, but also to adequately enable adaptation, or to enable the global cooperation that is necessary to tackle an issue where the perpetrators are not the victims, and the latter are among the poorest and most vulnerable. Such acknowledgement raises uncomfortable questions related to responsibility and liability, which historic (and even current) emitters are unwilling to face.

After the considerable hurdle of adding loss and damage to the UNFCCC agenda was overcome, some countries continued to question the difference between loss and damage and adaptation. Many developed countries argued that loss and damage is part of adaptation, while developing countries argued that loss and damage is ‘beyond adaptation’. Developing country negotiators argued, in the wake of COP19 in Warsaw, that this debate has little practical value. The linkages and synergies between addressing adaptation and loss and damage have long been acknowledged. The UNFCCC has also acknowledged that loss and damage results from climate change impacts that cannot be averted or minimized by adaptation. This is clearly recognized in the Paris Agreement, where loss and damage is treated independently of adaptation in a separate article.

The scientific and legal challenges of attributing loss and damage to climate change has been another significant challenge. Progress in being made in this regard, as elaborated earlier.

Means of implementation, finance, technology development and transfer, and capacity building, to enable developing countries to address loss and damage is another considerable challenge in the negotiations. The Paris Agreement does not include separate provisions for support for loss and damage, although developing countries pointed out that relying on adaptation finance to respond to climate-related loss and damage would further deplete an already inadequate adaptation pot. That said, Article 8.3 of the Agreement recognizes the importance of enhancing action and support. The magnitude of existing and (projected)

future needs to address climate-related loss and damage is daunting. Despite the growing needs, discussions on means of implementation for loss and damage remain difficult. The issue of compensation aside, the uncertainty of the potential cost of addressing loss and damage associated with the adverse impacts of climate change has had a significant effect on the willingness of developed country Parties to agree to actions beyond those of enhancing understanding and coordination on loss and damage.

The lack of support for developing countries to address loss and damage is a contributory factor to the lack of capacity for developing countries to engage in the ExCom meetings as observers. Few developing countries attend the ExCom meetings because they lack resources. COP23 called on Parties to actively engage in the work and to disseminate, promote and make use of the WIM, including by participating in the meetings of the ExCom as observers, recognizing the constraints of time and resources. However, no additional resources were forthcoming to make this happen.

The overlapping mandates within global policy agendas is another challenge, the most obvious perhaps being overlaps with the SFDRR and SDGs. However, under the SFDRR and SDGs, states are responsible for implementing actions, with a very limited role for global cooperation. The SDGs, for instance, are focused mainly on voluntary national action. Unlike the SDGs and the SFDRR, common but differentiated responsibilities and respective capabilities is a founding principle of the UNFCCC.

While the SDGs have an important role to play in fostering resilience to the adverse impacts of climate change, climate change impacts represent an additional development burden. Sustainable development approaches will not suffice in cases where climate change impacts overwhelm development efforts and result in permanent loss and damage.⁸⁹ Moreover, it has been estimated that implementing the SDGs will alone require US\$ 1 trillion – 750% more than what is currently provided for development through overseas development assistance.

Finally, ‘transformational approaches’ are increasingly discussed in the loss and damage negotiations. The term was included in both the initial two-year work plan and the five-year rolling work plan of the ExCom. While it is increasingly recognized that addressing climate change will require moving beyond business as usual approaches, and loss and damage will occur when the limits to adaptation are reached unless transformation takes place, there is no universal definition of transformation. The term has had a tendency to be ambiguous and open to interpretation. For example, some consider permanent relocation a form of transformational adaptation when the limits to adaptation have been reached. Others describe it as a permanent loss, including NELD. It is essential that transformation not be used as a vehicle for shifting responsibility for the impacts of climate change to states who bear little responsibility for its effects.

7.7 What are the prospects for finance for loss and damage?

Several estimates exist of the potential costs of loss and damage in future, although they vary considerably. For instance, in 2015, a report commissioned by the Climate Action Tracker estimated that the cost of economic damage from the economic costs of climate change in developing countries could reach US\$ 428 billion annually by 2030, and US\$ 1.67 trillion by

2050 if average global temperatures rise by 3°C. If temperatures rise by 2°C, annual costs could be US\$ 399 million by 2030, and US\$ 1.07 trillion by 2050.

Estimates by the UN Environment Programme were more conservative, with the 2014 Adaptation Gap Report estimating that the costs of adaptation and loss and damage by 2025/2030 could be US\$ 50 billion annually in LDCs, and rise to US\$ 100 billion by 2050. The report estimates that the cost of adaptation and loss and damage for all developing countries in a 2°C world could be US\$ 150 million by 2025/2030 and between US\$ 250 million and US\$ 500 million by 2050. In 2015, another report by UNEP estimated that the annual costs of loss and damage, even with cost effective adaptation, for Africa alone would be US\$100 billion per year by 2050 with a below 2°C warming scenario; and double that with warming in the magnitude of 4°C.

The Climate Action Network has recommended that in addition to adaptation finance, the goal should be to raise US\$ 300 million annually for loss and damage by 2030.

Article 8.3 of the Paris Agreement could be seen as a vision for action and support to be provided to developing countries, though on a voluntary basis. At some point it will be necessary to be more explicit both about responsibility and about goals for raising finance for loss and damage, particularly given current emission trajectories and warming scenarios.

The 2016 topic of the annual forum of the Standing Committee on Finance (SCF) was financing the risk of loss and damage. It highlighted that:

1. An understanding of risks is a critical prerequisite for developing and operationalizing financial instruments to address loss and damage. Many countries lack the capacity needed to collect data and develop risk models, and therefore the data needed to develop appropriate financial instruments. Providing support to build the capacity of institutions is important.
2. There are a range of financial instruments to address the risk of loss and damage, but there is no 'one-size-fits-all' approach to addressing loss and damage, and no one instrument can address loss and damage on its own.
3. Complementary approaches are needed – such as a combination of context-specific instruments and enabling policies to facilitate comprehensive risk management.
4. Significant gaps exist on financing approaches, particularly to address slow onset events as most approaches are targeted at extreme weather events and rapid-onset events. Their insurance sector can support the development of new tools for slow onset events.
5. Policies and regulatory frameworks can be strengthened to incentivize public and private stakeholders to avert, minimize, and address loss and damage, along with public-private partnerships.
6. More discussions are needed on the sustainability, affordability and accessibility of financial instruments, particularly for the most vulnerable. The Green Climate Fund (GCF) could play a role in supporting financial approaches to address loss and damage.

The SCF was asked to follow up on the 2016 Forum with additional work on loss and damage finance.⁹⁹ Loss and damage is also included in the outline for the 2018 biennial assessment

and overview of climate finance flows. Engagement with the SCF and other relevant institutions is critical to ensure that this issue remains an important part of their agenda.

There has been increasing focus on innovative sources of finance. Suggestions have included a fossil fuel extraction levy, also known as Climate Damages Tax, the proceeds of which would be channeled to the Financial Mechanism of the UNFCCC through a dedicated window.

Ensuring that support for loss and damage reaches those who most need it is also a critical issue, with some discussion on the modalities for channeling funds for loss and damage. Developing countries have advocated for a financial arm under the WIM, to channel finance from the Financial Mechanism and from other sources. It has also been proposed that a “loss and damage window” be established under the GCF, although this raises the concern that there will be demands for other specialized windows to be established in the Fund.

7.8 What lies ahead?

The loss and damage negotiations are inching forward slowly. The focus is likely to remain on the elements of the WIM work plan until the next review takes place in 2019, in particular on enhancing action and support to meet the needs of developing countries. Unsurprisingly, the focus of the loss and damage negotiations at COP22 and COP23 remained centered in large part on means of implementation. Some developing country groups have expressed the opinion that the WIM will not be fully operational until it includes a financial arm to channel resources to developing countries.

At COP23 in 2017, Parties decided to hold an expert dialogue (now known as the Suva Expert Dialogue) in conjunction with the 48th session of the UNFCCC Subsidiary Bodies in May 2018. The Suva Expert Dialogue will explore ways to facilitate the mobilization and securing of expertise, and enhancement of support, including finance, technology and capacity building, for averting, minimizing and addressing loss and damage to inform a technical paper by the secretariat, on financial support.

A second review of the WIM will take place in 2019, at COP25, to consider progress in implementing the ExCom workplan, and a long-term vision to guide how the WIM can be enhanced and strengthened. The terms of reference for the review will be developed by the Subsidiary Bodies in June 2019 – it is expected that this will be much more comprehensive review than the first (2016) review. A technical paper elaborating the sources of financial support for addressing loss and damage, provided both through the UNFCCC Financial Mechanism and outside it, will be made available by Subsidiary Bodies in June 2019, to serve as an input into the terms of reference for the review.

8. RESPONSE MEASURE

8.1 What are response measures?

Response measures are actions, policies, and programmes that countries, as Parties to the UN Framework Convention on Climate Change (UNFCCC), undertake in response to climate change, mostly for mitigation of greenhouse gas (GHG) emissions. Examples include emissions

trading schemes, carbon taxes and levies, subsidies to promote low-carbon development, carbon border adjustment measures, or carbon labeling.

Response measures can be:

- Unilateral (implemented in one country, like the carbon dioxide tax in Chile).
- Bilateral (implemented in two countries, like Japan's Joint Crediting Mechanism, which covers a number of countries but works bilaterally).
- Multilateral (implemented simultaneously in many countries, like the EU Emissions Trading System, that covers the EU Member States, but also some neighboring countries).

Response measures can also be designed and implemented at subnational, regional, or company level, and be voluntary in nature (for instance, voluntary offsetting schemes).

The term 'response measures' is not in regular use outside of the UNFCCC process, and is not easily understood by policymakers and stakeholders even within the process. This Guide aims to increase understanding of the topic, particularly among climate negotiators, to facilitate the UNFCCC negotiations on response measures.

8.2 What are the impacts of the implementation of response measures?

As in the UNFCCC process, the term 'response measures' is used in this Pocket Guide as shorthand for the "impacts of the implementation of response measures", rather than the actual response measures themselves.

The implementation of measures to address climate change can result in social, economic, political, and environmental impacts. Social impacts include changes in equality levels between men and women, impacts on social relationships, health, education, ethnic minorities and social groups, indigenous peoples, and access to rights. Economic impacts include national or regional impacts on GDP, employment, and the income of workers and their families. Environmental impacts include changes in pollution levels, and biodiversity impacts.

Impacts of response measures can be thought of as 'second order' impacts of responses to climate change (the first-order impact is the reduction of GHG emissions). These second order impacts can be positive or negative. Negative impacts can include, for example, loss of existing jobs and incomes, and increase in gender inequalities. Positive impacts can include, for example, cleaner environment, increased energy security, and the creation of new jobs. Positive impacts are also commonly called 'co-benefits'. The Intergovernmental Panel on Climate Change (IPCC) defines co-benefits as:

"The positive effects that a policy or measure aimed at one objective might have on other objectives, thereby increasing the total benefits for society or the environment. Co-benefits are often subject to uncertainty and depend on local circumstances and implementation practices, among other factors. Co-benefits are also referred to as ancillary benefits."

A review of the scientific literature indicates that improved air quality and reduced pollution levels are the most researched co-benefits, but there is an increasing understanding of co-

benefits in other areas such as diet and health, energy security, and economic performance and efficiencies.² For instance, reducing fossil fuel power generation, while reducing carbon emissions, will also reduce particulate matter emissions that causes respiratory diseases. One recent study has found that such air pollution from coal, petrol, and diesel was responsible for 18% of global deaths in 2018 – slightly less than one in five of all global deaths that year.

Issues related to response measures are also frequently referred to as ‘trade-offs’ and ‘synergies’. The IPCC’s special report on Global Warming of 1.5°C, for instance, states that “mitigation options consistent with 1.5°C pathways are associated with multiple synergies and trade-offs across the Sustainable Development Goals (SDGs).”⁴ While much of the prevailing discussion on response measures has focused on negative impacts, it has also sought to highlight positive impacts. Recently, for instance, there been a greater interest in the World Health Organization’s work on health benefits of climate policies, and the work of the International Labor Organization (ILO) on green employment

In addition, the impacts of response measures can be broadly categorized either as domestic (felt in countries where the measure was implemented, such as the loss of jobs) or as cross-border (felt by other countries that did not implement that particular measure, like domestic climate policies that impact global trade in agricultural commodities).

8.3 What is the history of response measures under the UNFCCC?

The UNFCCC, adopted in 1992, was drafted and negotiated at a time when the concept of ‘sustainable development’ was gaining broader acceptance, following the adoption of the report of the World Commission on Environment and Development, *Our Common Future*, in 1987. The report, and the concept of sustainable development, sought to promote a balanced approach to environmental conservation, and social and economic development.

COP3, KYOTO

During the 1990s, some oil-exporting countries proposed that they should be compensated for declining revenues from their fossil fuel exports due to climate change mitigation measures undertaken in other countries. A proposal to establish such a ‘compensation mechanism’ was advanced during the Kyoto Protocol negotiating process, to assess lost income from reduced fossil fuel exports and provide support to affected countries.⁸ This proposal was opposed by developed countries, who thought it would penalize mitigation actions that they were taking in their Protocol commitments, and by some other developing countries, such as Small Island Developing States (SIDS), who saw such a mechanism as weakening overall mitigation efforts to reduce future climate impacts.

Alongside the Protocol, Parties also adopted separately Decision 3/CP.3 that mandated further work to operationalize Article 4.8 of the Convention in a broader way than the Protocol commitments.⁹ This Decision requested the Subsidiary Body on Implementation (SBI) to “...undertake a process to identify and determine actions necessary to meet the specific needs of developing country Parties, ..., arising from adverse effects of climate change

and/or the impact of the implementation of response measures. Issues to be considered shall include actions related to funding, insurance and transfer of technology”.

As part of the Kyoto Protocol’s reporting processes (in Decision 15/CMP.1 and Decision 31/CMP.1), Annex I Parties are required to submit information on how they are meeting the requirement in Article 3.14 to implement their overall commitments in a way that minimizes the impacts of these response measures. This information is included in their annual National Inventory Reports, and since the entry into force of the Protocol in 2004, have been compiled by the UNFCCC Secretariat and published online. For instance, in the most recent reports submitted (in 2020), 39 of out 43 reports included information on minimizing the impacts of response measures.

COP10, BUENOS AIRES

UNFCCC Article 4.8 established the need to take action on both the “adverse effects of climate change and/or the impact of the implementation of response measures”. This created a procedural linkage between discussions on response measures, and those of adaptation.¹¹ Subsequent decisions to operationalize action on adaptation under the Convention therefore combined discussions on adaptation and response measures, with a series of decisions and work programmes addressing the two subjects together.

COP13, BALI

Over time, the linkage between adaptation and response measures has weakened, with a separate workstream developed on response measures as a component of mitigation action, and adaptation gaining recognition as a primary topic of the climate negotiations.

COPS 16, 17, AND 18 IN CANCUN, DURBAN, AND DOHA

While no agreement was possible at Copenhagen, COPs 16, 17 and 18 in Cancun, Durban, and Doha respectively (in 2010, 2011, and 2012), agreed Decisions 1/CP.16, 2/CP.17 and 1/CP.18, which included paragraphs on response measures, mostly reaffirming principles for cooperation in general terms.

During these negotiations on a post-2012 climate architecture in the AWG-LCA from 2008 onwards, the topic of response measures was also discussed across a number of UNFCCC agenda items: under Kyoto Protocol Article 2.3 and 3.14 obligations; under the Ad-Hoc Working Group on the Kyoto Protocol (AWG-KP), working on the Protocol’s second commitment period; under the AWG-LCA; and during discussions on implementing Decision 1/CP.10.

COP19, WARSAW

While the Forum and its work programme were mandated to be reviewed at COP19 in 2013, Parties disagreed on the institutional process to follow the forum. Some Parties proposed a more intensive ‘mechanism’ while others proposed a more streamlined ‘dialogue’. No consensus was reached, and these negotiations continued until COP21 in Paris.

COP21, PARIS

The response measures negotiations reached consensus in COP21. The preamble of the Paris Agreement recognizes that “Parties may be affected not only by climate change, but also by the impacts of the measures taken in response to it”. Article 4.15 of the Paris Agreement calls for Parties to take into consideration the concerns of Parties with economies most affected by the impacts of response measures, particularly developing country Parties, while implementing the Agreement.

The preamble to the Paris Decision 1/CP.21 also acknowledges the specific needs and concerns of developing country Parties arising from the impact of the implementation of response measures. Parties agreed that “...the forum on the impact of the implementation of response measures, shall continue, and shall serve the Paris Agreement” (§33). It called on SBSTA and SBI to recommend modalities, a work programme, and functions of the Forum (§34). The Ad Hoc Working Group on the Paris Agreement (APA) was also requested to consider information on the social and economic impact of response measures (§94) while developing recommendations for modalities, procedures, and guidelines for transparency of action and support, under Article 13 of the Paris Agreement.

COP22, MARRAKECH

At COP22 in 2016, an Ad Hoc Technical Expert Group (TEG) was established to elaborate on technical work of the two areas contained in the work programme. The Group met during SB46, in May 2017, for two days (one day per work area).

COP24, KATOWICE

The functions, work programme and modalities of the Forum were adopted at COP24 in Katowice, in December 2018 (Decision 7/ CMA.1). The Decision also establishes a Katowice Committee of Experts on the Impacts of the Implementation of Response Measures (referred to as the Katowice Committee on Impacts, or KCI) to support the work of the Forum (§6). It calls for the meetings of the KCI to be held twice each year, for two days per meeting, in conjunction with SB sessions. (§7).

COP25, MADRID

The six-year work plan of the Forum and its KCI was adopted at COP25 in 2019, in Decision 4/CMA.2, along with the rules of procedure for KCI proposed by its first meeting in June

2019. To implement this work-plan, the Forum and KCI may

Use the following modalities (Decision 7/CMA.1):

- Building awareness and enhancing information-sharing through the exchange and sharing of experience and best practices.
- Preparing technical papers, case studies, specific examples and guidelines.
- Receiving inputs from experts, practitioners and relevant organizations.
- Organizing workshops.

Eleven activities were added to the work plan, to be implemented over twelve SB sessions, from SB52-SB63 (Annex II of Decision 4/CMA.2, and see Table 1 in Annex I of this Guide). Of

these, four specifically refer to a just transition, while three refer to economic diversification. While most activities will be implemented during one or two SB sessions, two activities are open-ended. In addition, five activities mandated from other relevant decisions are listed in the work-plan. These include inputs related to response measures for the first global stocktake, gender training, reporting, and reviews of the work-plan.

8.4 Why is the issue of response measures important for developing countries?

Policies implemented to reduce emissions in one country (such as carbon taxes, subsidies, energy reforms, green investments, cap-and-trade schemes, trade-related measures, standards and labeling) can lead to impacts in the implementing and in other countries (for example, on economic growth, income distribution, employment, environment, health, and food security).

For developing countries, the imperative has been to avoid a ‘double-burden’ – first due to climate change impacts, and then due to the impacts of response measures implemented in their own country, or in another country. Developing countries have also sought to maintain their own policy space to pursue national development strategies, and to avoid the use of measures that could be construed as transferring the burden of climate action onto them.

Therefore, Article 3.14 of the Kyoto Protocol calls on Annex I countries to strive to implement their mitigation commitments “in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties”. The Cancun Agreements confirm that developing countries that “would have to bear a disproportionate or abnormal burden... should be given full consideration”.

This has been interpreted to mean that developing countries, with lower capacities to adjust and cope with response measures impacts, need international support – both in advancing work on particular climate policy areas to avoid or minimize harm, and capacity building support. As a result, discussions on response measures have tended to focus on minimizing the negative impacts of response measures in the past.

With the widening of mitigation actions to all countries in the Paris Agreement, the discussion on response measures has become relevant for all countries. The Paris Agreement recognizes this by calling on Parties to “take into consideration... the concerns of Parties with economies most affected by the impacts of response measures, particularly developing country Parties”. The subsequent Katowice Decision 7/CP.24 also adopts this broader framing for all countries, stating that “response measures should be understood in the broader context of the transition towards low greenhouse gas emissions and climate-resilient development”.

8.5 What is the current focus of response measures discussions?

The response measures discussions under the UNFCCC currently focus on four key areas: economic diversification and transformation; just transition towards a low-carbon economy; building the capacity of countries to assess and analyze the impacts of response measures; and facilitation tools for assessing the impacts of response measures.

ECONOMIC DIVERSIFICATION AND TRANSFORMATION

Under the UNFCCC, economic diversification refers to moving an economy away from reliance on a narrow range of products that are affected by response measures taken to combat climate change. The case of fossil fuel-exporting countries is most commonly highlighted – as the demand for fossil fuels declines, economies that are heavily reliant on fossil fuel exports will need to diversify to other economic activities.²⁵ Economies that rely on the export of carbon-intensive goods, which could be subject to climate change measures such as border carbon adjustments, will also need to diversify.

The COVID-19 pandemic has highlighted the economic risks faced by tourism-dependent countries, especially SIDS, from a complete or near-complete halt to international travel. Similar negative impacts could be caused to tourism dependent countries by a reduction in international travel due to measures to address climate change, such as an increase in the costs of air travel.

JUST TRANSITION OF THE WORKFORCE AND THE CREATION OF DECENT WORK AND QUALITY JOBS

Green jobs and employment creation in low-carbon sectors are often highlighted as a labor-friendly outcome of climate policy, with a net increase of 18 million jobs.³³ However, climate policy will also involve adjustments in the labor force as patterns of production and consumption shift, both between industries (for instance, from fossil fuel generation to renewable energy) and within industries (for instance, from vehicles with internal combustion engines to electric vehicles). Communities and economies reliant on these sectors to fund social services could also be impacted.

While there is no single definition for the concept, a just transition in the climate change context refers to efforts to ensure that a transition to a low-carbon world is fair to workers involved in high-carbon and carbon-intensive sectors, and that no one is left behind in the low-carbon transition. A just transition is applicable to a range of economic sectors and activities that will see structural transformations in a low-carbon direction. The transition challenge will vary from sector to sector, and depend on the speed of the transition anticipated.

A just transition is raised particularly in relation to the coal mining and power industry as coal consumption is being phased out, and movements like the Powering Past Coal alliance have gathered momentum. So far, frameworks for analysis and advocacy, and most concrete examples, are based on experiences of coal phase outs in developed country contexts (with the exception of South Africa).

8.6 Assessing and analyzing the impacts of response measures

There are two work areas related to assessment of the impacts of the implementation of the response measures:

- Assessing and analyzing the impacts of the implementation of response measures.
- Facilitating the development of tools and methodologies to assess the impacts of the implementation of response measures.

While many developed countries have conducted assessments of domestic and cross-border impacts of response measures, very few developing countries have done so. According to a 2017 technical report by the UNFCCC Secretariat, the developing country assessments are mostly limited to the overall impact on the economy (using GDP as a measure) and have an emphasis on fossil fuel sectors. However, there are many other impacts that should be investigated through such assessments, including impacts on employment and jobs, on competitiveness and other socioeconomic factors, and on the environment. In addition, these assessments do not reflect the continuing change in the climate change regime at the international level.

8.7 Possible topics for future discussions

As countries ramp up the implementation of measures to address climate change, a number of new issues could arise. It is possible that these could emerge while implementing the six-year work plan of the Forum and its KCI. Some of these are described below.

NEGATIVE EMISSION TECHNOLOGIES

Most modeled emission scenarios that keep global warming to or below 1.5°C assume the widespread availability and implementation of bioenergy and capture carbon and storage (BECCS), as well as afforestation and reforestation and carbon dioxide removal. However, the IPCC Special Report on Global Warming of 1.5°C and the IPCC Special Report on Climate Change and Land note that scaling up BECCS will have considerable land-use implications, with potential trade-offs for water use, agriculture and food security, and biodiversity; and effective governance is needed to limit such tradeoffs. Some land-use based carbon dioxide removal (CDR) technologies can also have co-benefits and positive impacts for biodiversity and food security, but implementation at scale will require concerted governance efforts.⁴⁵ There are also emerging discussions on other CDR technologies and their impacts. For example, efforts to increase the carbon uptake of the oceans through ocean fertilization, if they materialize, would also have trade-offs for ocean acidification caused by increasing carbon absorption.

SCALING UP LOW-CARBON TECHNOLOGIES

As technological shifts intensify towards low- or zero-carbon sectors, supply chain risks may increase with increasing demand for certain products and components. A previous and ongoing example is the case of biofuels, where efforts to meet biofuel targets (as alternatives to fossil fuel) have been linked to deforestation driven by increasing demand for land needed for growing biofuel crops. Similar cases may intensify in industrial products – for instance, in sourcing minerals and materials for electric battery technologies. This can create social and environmental risks in countries where minerals are mined, or materials are produced, for the new technologies.

FOSSIL FUEL SUPPLY

Most dimensions of climate policy involve efforts to reduce the demand for fossil fuels. Although a growing number of countries have committed to phase down coal or oil exploration and production, these are uncoordinated and largely unaddressed in NDC

processes. There are also a number of coalitions of governments working together on elements of the fossil fuel phase-out through initiatives such as the Powering Past Coal Alliance and the Friends of Fossil Fuel Subsidy Reform. Mapping out a transition away from burning fossil fuels would also have relevance for both economic diversification and just transition processes, especially in the context of the development of national long-term low GHG emission development strategies.

GREEN INDUSTRIAL POLICIES AND TRADE-RELATED MATTERS

As more countries seek to develop their low-carbon industries, the issue of what counts as fair policy support in trade terms will gain more attention, requiring further international coordination. Issues surrounding subsidies for green industries, or increased green product standards and product mandates, will be increasingly discussed. Plurilateral, or small-club approaches may increase. For instance, a group of six trade-dependent countries (Costa Rica, Fiji, Iceland, New Zealand, Norway, and Switzerland) have begun negotiations toward an Agreement on Climate Change, Trade and Sustainability among themselves, to agree a common approach towards removing tariffs on environmental goods, developing environmental services, eliminating fossil fuel subsidies, and eco-labelling.

Various stages of climate policy developments in different countries have prompted concerns about ‘carbon leakage’, where carbon-intensive industries relocate to jurisdictions with less strict (or no) climate change mitigation policies, and then export these goods to countries with stricter regulations. This is the reason behind the recent considerations of some countries for implementing carbon border adjustments, where, for example, a tax is levied on imported products based on the amount of carbon dioxide associated with their production. For instance, the European Commission is working towards introducing such a policy for some sectors by 2023 as part of its Green Deal package, and the US and Canada have been also signaling an interest in exploring possibilities for carbon border adjustments. However, countries without strict climate change mitigation policies are likely to oppose carbon border adjustments.

9. CLIMATE FINANCE

9.1 What is climate finance?

The Broad definition is: Climate finance aims at reducing emissions, and enhancing sinks of greenhouse gases and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts

This is a broad definition that avoids many of the controversies surrounding climate finance in the global negotiations, such as its:

- Source (public or private sources). “Provision” which comes from the public fund of developed countries and “mobilization” of climate finance which is raised from other sources.
- Type (development aid, private equity, loans, grants, concessional finance).
- Channel (whether it flows through bilateral or multilateral institutions).

- Governance (who decides how it is allocated and used).
- Additionally (whether it is “new”, and over and above development assistance).
- Adequacy (whether it is adequate for developing countries to address climate challenges, including mitigation, adaptation, and loss and damage).
- Predictability (to allow recipients to plan action in advance).
- Amount (including long-term pledges and roadmaps to achieving them).
- Balance (between mitigation and adaptation finance, and also finance for new elements such as loss and damage).

A history context:

UN Resolution 44/228, adopted in December 1989, noted that “the responsibility for containing, reducing and eliminating global environmental damage must be borne by the countries causing such damage, must be in relation to the damage caused and must be in accordance with their respective capabilities and responsibilities”

The Rio Declaration adopted at the UN Conference on Environment and Development (UNCED) in 1992 recognized that “in view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command”

UNFCCC similarly calls for “the widest possible cooperation by all countries and their participation in an effective and appropriate international response to climate change, in accordance with their common but differentiated responsibilities and respective capabilities and the social and economic conditions”.

Financial Commitments in the UNFCCC:

- Article 4 of the UNFCCC includes commitments for developed countries to provide financial resources to developing nations.
- When a direct reference of pay principle is absent in the UNFCCC, these financial resources will not be characterized as “compensation” for damages caused by climate change in the negotiations.

There is however a distinguish between Financial Aids and Climate Finance according to some developing country negotiators who were part of the Paris Agreement negotiations, the term “climate finance” used in Article 9 of the 2015 Paris Agreement has evolved to distinguish the financial resources provided under the UNFCCC from official development assistance (ODA).

Key characteristics for climate finance in the negotiations:

- Climate actions by developing countries rely on financial and other resources provided by developed countries, as agreed under UNFCCC Article 4.7 and reiterated in subsequent decisions such as the Bali Action Plan.

- Climate finance should be “new and additional”, as agreed under UNFCCC Article 4.3, and should not be rebranded ODA.
- Public finance should be the primary source of climate finance, supplemented by private sector finance.
- Climate finance should be provided mainly as grants, followed by concessional loans, as agreed under UNFCCC Article 11.1.
- Developed countries should lead the provision and mobilization of climate finance.
- Climate finance provided for mitigation and for adaptation should be balanced.
- Climate finance should be governed by bodies that have equal representation from developed and developing countries.
- Climate finance should be needs-based, and encourage strong country ownership in its use.

9.2 What is the history of climate finance under the UNFCCC?

Governance of Climate Finance:

- Climate finance governance should involve equal representation from developed and developing countries.
- It should prioritize needs and encourage strong country ownership.

Historical Development of Climate Finance under UNFCCC:

- In 1987, the Brundtland Commission proposed a special environmental fund, leading to the creation of the Global Environment Facility (GEF) in 1990.
- The Second World Climate Conference in 1990 recognized the need for financial resources to support climate actions in developing countries.
- Discussions during the Intergovernmental Negotiating Committee (INC) negotiations focused on governance, obligatory vs. voluntary contributions, grant vs. loan finance, and additionally.
- The Convention text adopted in 1992 emphasized equity and common but differentiated responsibilities.
- Article 4.3 stressed the provision of new and additional financial resources.
- Article 4.7 linked the implementation of commitments by developing countries to financial resources and technology transfer.
- Article 11 established the Financial Mechanism, with governance under the guidance of the Conference of the Parties (COP).
- The GEF served as an interim operating entity, subject to restructuring for universal membership.
- The GEF's governance restructuring included a Council with representation from contributing countries, developing countries, and economies in transition.

- Amendments to the GEF's Instrument occurred in subsequent GEF Assembly meetings.

9.3 Financial mechanisms and funds

Global Environmental Facility:

The Global Environment Facility (GEF) is part of the Convention's Financial Mechanism and operates based on guidance from the Conference of Parties (COP). This guidance covers policies, program priorities, and eligibility criteria for funding. The relationship between the COP and the GEF Council is established through a memorandum of understanding (MOU) outlined in decisions 12/CP.2 and 12/CP.3.

The GEF, along with the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF), serves the Paris Agreement as well, following guidance from the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA), transmitted by the COP. This guidance applies both to decisions made before and after the adoption of the Paris Agreement.

Article 9, paragraph 9, of the Paris Agreement emphasizes the need for efficient access to financial resources, simplified approval procedures, and enhanced readiness support for developing countries, especially the least developed countries (LDCs) and small island developing States (SIDS), in line with their national climate strategies and plans.

Special Climate Change Fund

The SCCF was established to finance activities, programmes and measures in the following areas:

- Adaptation.
- Transfer of technologies.
- Energy, transport, industry, agriculture, forestry, and waste management.
- Activities to assist developing country Parties whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy intensive products to diversify their economies. Annex II Parties, and “other Parties included in Annex I that are in a position to do so”, were invited to contribute to the Fund. It was also agreed in The Hague that the SCCF “shall be operated by an entity entrusted with the operation of the financial mechanism”, under the guidance of COP.

LDC Fund

The LDCF was established to support a work programme for the Least Developed Countries (the LDC Work Programme), including the National Adaptation Programmes of Action

(NAPAs), which identified urgent and priority adaptation needs of LDCs (see Pocket Guide to Adaptation under the COP agreed that the LDCF “shall be operated by an entity entrusted with the operation of the financial mechanism, under the guidance of the COP”.

Adaptation Fund

The Adaptation Fund was established under the Kyoto Protocol to finance concrete adaptation projects and programmes in developing countries that are Parties to the Kyoto Protocol. It was decided that the Adaptation Fund shall be financed from the 2% share of proceeds on the CDM project activities, and other sources of funding. Annex I Parties that intend to ratify the Kyoto Protocol were also invited to provide funding. It was decided in The Hague that the Adaptation Fund shall be operated and managed by an entity entrusted with the operation of the financial mechanism of the Convention, under the guidance of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP).

Green Climate Fund

At COP 16 in Cancun, the Green Climate Fund (GCF) was established as part of the Convention's Financial Mechanism. The GCF is governed by its Board and operates under COP guidance to fund projects and initiatives in developing countries through various funding windows.

The GCF also supports the Paris Agreement, with guidance provided by the Conference of the Parties to the Paris Agreement (CMA) and transmitted by the COP. Existing guidance for entities operating the Convention's Financial Mechanism applies to the GCF as well.

The Paris Agreement emphasizes efficient access to financial resources, simplified approval procedures, and enhanced readiness support for developing countries, particularly the least developed countries (LDCs) and Small Island developing States (SIDS), aligned with their national climate strategies and plans.

COPS that served the Climate Finance:

COP3 - Kyoto Protocol:

- Recognition of the need for a separate instrument under the UNFCCC.
- Establishment of the Ad hoc Group on the Berlin Mandate to negotiate emissions reduction timetables.
- Adoption of the Kyoto Protocol in 1997.
- Key elements in the Kyoto Protocol related to climate finance:
 - Article 11.2(a) emphasizes the provision of full costs for developing countries' national inventories.
 - Article 11.2(b) focuses on the full incremental costs for implementing mitigation and adaptation measures.

- Article 12.8 introduces a "share of proceeds" from Clean Development Mechanism (CDM) activities to cover administrative expenses and assist vulnerable countries with adaptation.

COP4 - Buenos Aires Plan of Action:

- Recognition of the GEF as "an" operating entity of the UNFCCC's Financial Mechanism.
- Agreement for periodic reviews of the Financial Mechanism.
- Funding provisions for adaptation response measures, initial and subsequent national communications.

COP5 - Bonn:

- Decision to provide financial and technical support for capacity building in developing countries.
- Focus on support for Least Developed Countries (LDCs) and Small Island Developing States (SIDS).

COP6 - The Hague and COP6-bis - Bonn:

- Disagreements on GEF funding, types of adaptation activities, and governance.
- Proposal by COP President Jan Pronk for the Adaptation Fund, Convention Fund, Climate Resources Committee, and increased climate funding.
- Proposal rejection and suspension of COP6, leading to COP6-bis.
- Bonn Agreement with concessions from developed countries, including contributions and review commitments.
- Key decisions related to funding modalities and support for adaptation and capacity building.

COP7, MARRAKECH

The finance-related decisions that were agreed to COP6-bis were adopted at COP7 in late 2001. **The Marrakesh Accords formally established the SCCF, LDCF, and Adaptation Fund.**

COP10, BUENOS AIRES

Concerns were raised by vulnerable countries about accessing GEF funds due to co-financing requirements, additional criteria, and limited eligibility for adaptation projects. While they couldn't secure full-cost funding for adaptation, the Least Developed Countries Expert Group (LEG) was tasked with reporting on potential difficulties faced by Least Developed Countries (LDCs) in implementing National Adaptation Programmes of Action (NAPAs).

COP11, MONTREAL

COP11 in 2005 saw discussions on the governance of the Kyoto Protocol's Adaptation Fund, with developing countries opposing the GEF's role as the financial mechanism. Meanwhile, discussions on flexible mechanisms led to calls for a levy on proceeds from Joint Implementation projects and emissions trading to support the Adaptation Fund.

COP12, NAIROBI

The discussions were continued on the Adaptation Fund, resulting in agreements that it should operate under the authority of the CMP:

- provide full adaptation cost funding,
- Eligible countries should have access to the fund in a balanced and equitable manner.
- Funding will be available for national, regional and community level adaptation activities.
- The modalities will ensure facilitative procedures for accessing funds, including short and efficient project development and approval cycles and expedited processing of eligible activities.

The COP called on the GEF to simplify procedures, address co-financing concerns, and prepare reports on financial needs for developing countries.

- A technical paper reviewing the experience of international funds and multilateral financial institutions and other sources of funding that is relevant to address current and future investment and financial needs of developing countries.
- A report, with GEF, on the assessment of the funding necessary to assist developing countries meet their climate commitments.

COP13, BALI

The Bali Action Plan called for the consideration of “public- and private-sector funding and investment, including facilitation of climate-friendly investment choices”. It also called for consideration of, among other things:

- Improved access to adequate, predictable and sustainable financial resources and financial and technical support, and the provision of new and additional resources, including official and concessional funding for developing countries.
- Innovative means of funding to assist developing countries that are particularly vulnerable to the adverse impacts of climate change in meeting the cost of adaptation.
- Financial and technical support for capacity building in the assessment of the costs of adaptation in developing countries, in particular the most vulnerable ones, to

aid in determining their financial needs. An Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA) was established to consider these elements, and complete its work in 2009, in time for COP15.

COP15, COPENHAGEN

The Copenhagen Accord, noted but not adopted at COP15, included the following provisions on climate finance:

- Scaled up, new and additional, predictable and adequate funding as well as improved access for developing countries, to enable and support enhanced action on mitigation, including substantial finance to reduce emissions from deforestation and forest degradation (REDD-plus), adaptation, technology development and transfer, and capacity building.
- The provision of new and additional resources, approaching US\$ 30 billion for the period 2010-2012.
- A goal for developed countries to jointly mobilize US\$ 100 billion a year by 2020, from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources of finance.
- Balanced allocation of funds for adaptation and mitigation. Prioritized funding for adaptation for the most vulnerable developing countries, such as the LDCs, SIDS, and Africa.
- New multilateral funding for adaptation delivered through effective and efficient fund arrangements, with a governance structure providing for equal representation of developed and developing countries.
- A significant portion of such funding will flow through a Copenhagen green climate fund, established as an operating entity of the financial mechanism of the Convention.

COP16, CANCUN

On finance-related elements, Parties:

- Took note of the collective commitment by developed countries to provide new and additional fast-start finance approaching US\$ 30 billion for the period 2010-2012, with a balanced allocation between adaptation and mitigation.
- Parties decided that scaled-up, new and additional, predictable, and adequate funding shall be provided to developing countries.
- Established a Green Climate Fund (GCF), as an operating entity of the financial mechanism of the Convention, and under the guidance of the COP. They also agreed that the GCF will be governed by a Board of 24 members, with an equal number of members from developing and developed country Parties. The World

Bank was appointed interim trustee. A transitional committee was appointed to design further elements of the GCF.

- Recognized that developed countries commit, in the context of meaningful mitigation actions and transparency on implementation, to a goal of mobilizing jointly US\$ 100 billion per year by 2020. These funds may come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources.
- Decided that a significant share of new multilateral funding for adaptation should flow through the GCF.
- Decided to establish a Standing Committee on Finance (SCF), to assist the COP in providing oversight to the financial mechanism, improve the coherence and coordination in the delivery of climate finance; rationalization of the financial mechanism; mobilization of financial resources, and measurement, reporting, and verification of support provided to developed countries.

COP17, DURBAN

At COP17 in 2011, Parties considered the report of the transitional committee established to design the GCF. Discussions focused on the legal status of the GCF; relationship to the COP; the role of private sector financing; establishing the GCF Board; and elaborating a process to establish an interim secretariat to support the Board. The GCF was designated as an operating entity of the UNFCCC's Financial Mechanism, and the Governing Instrument of the GCF was adopted, which officially launched the Fund's operations.

Parties also launched a work programme on Long-Term Finance (LTF), to contribute to ongoing efforts to scale up the mobilization of climate finance after 2012 as agreed in COP16.52 The work of the LTF was to take place in 2012, and include the analysis of options for the mobilization of resources from a wide variety of sources, and the climate-related financing needs of developing countries.

In Durban, an Ad-hoc Working Group on the Durban Platform (ADP) was established, "to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties". The ADP was expected to complete negotiations by 2015, and the outcome was to come into effect from 2020 onwards (Decision 1/CP.17).

COP18, DOHA

At COP18 in 2012, Parties reiterated that a significant share of new multilateral funding for adaptation should flow through the GCF, and requested the GCF Board to balance the allocation of GCF resources between adaptation and mitigation activities (Decision 1/CP.18).

The work of the LTF was extended for another year in Doha. The SCF was encouraged to facilitate the participation of the private sector, financial institutions, and academia in its

annual forum; and to consider ways to strengthen methodologies for reporting climate finance while preparing the first biennial assessment and overview of financial flows. The SCF was also requested, with the GCF Board, to develop arrangements between the COP and the GCF.

COP19, WARSAW

The work of the LTF Work Programme concluded in Warsaw in 2013, resulting in the adoption of Decision 3/CP.19 which:

- Requests developed countries to prepare biennial submissions on their updated strategies and approaches for scaling up climate finance from 2014 to 2020.
- Requests the SCF to consider ongoing technical work on operational definitions of climate finance, including private finance mobilized by public interventions, in its biennial assessment.
- Calls on developed countries to channel a substantial share of public climate funds to adaptation activities.
- Decides to continue the discussions on LTF in annual in session workshops.
- Decides to convene biennial high-level ministerial dialogues on climate finance, starting in 2014 and ending in 2020.

The arrangements between the COP and the GCF were adopted (Decision 5/CP.19). The GCF was requested to submit annual reports to the COP, on the basis of which the COP will issue guidance to the GCF, including on matters related to policies, programme priorities and eligibility criteria.

COP20, LIMA

At COP20 in 2014, the secretariat was requested to: prepare a compilation and synthesis of the biennial submissions from developed countries, to inform the LTF in-session workshops; organize the annual in-session workshops through to 2020; and prepare a summary report of the workshops for annual consideration by the COP and the high-level ministerial dialogue on climate finance.

The SCF was requested to, among other things, further explore ways to enhance its work on the measurement, reporting, and verification (MRV) of support. The first High-level Ministerial Dialogue on Climate Finance also took place during COP20.

COP21, PARIS

A number of controversial issues relating to climate finance came into focus during these discussions. These included:

- The quantum of climate finance to be provided.

- Whether the NDCs should address only mitigation, or also other elements of the ADP mandate, which included finance. Whether only developed countries should be asked to contribute to climate finance, or also other “Parties in a position to do so”.
- Whether there should be an ex ante review of means of implementation.

COP22 AND CMA1, MARRAKECH

The first Conference of the Parties served as the meeting of the Parties to the Paris Agreement (CMA1) in 2016. Elements of the Paris Agreement that needed further work, accordingly, SBSTA was requested to develop modalities for the accounting of financial resources provided and mobilized through public interventions.

CMA1 also decided that the Adaptation Fund “should” serve the Paris Agreement. Meanwhile, the report of the Adaptation Fund Board highlighted that the predictability of the Fund’s financing “is not secure” because of its reliance on voluntary contributions and the “meltdown” of the carbon market.

LTF workshops in 2017 and 2018 focused on experiences and lessons learned from articulating and translating needs into projects and programs, roles of policies and enabling environments for climate finance, and facilitating enhanced access. The second High-Level Ministerial Dialogue on Climate Finance took place in Marrakech.

COP23 AND CMA1-2, BONN

Discussions continued on providing further guidance for the implementation of the Paris Agreement at COP23/CAM 1-2 in 2017. Progress was made on the Adaptation Fund – it was decided that the Fund would serve the Paris Agreement. Parties also agreed to consider in 2019 whether “the Adaptation Fund shall serve the Paris Agreement exclusively”, under the guidance of and accountable to the CMA.

In addition, Parties agreed to launch stocktakes of pre-2020 implementation and ambition at COP24 and COP25, which would consider the provision of support in the pre-2020 period among other things. Moreover, the Facilitative Dialogue mandated by Paris Decision 1/CP.21 to take place in 2018, was launched.

There were disagreements on where issues related to Article 9.5 (on ex ante finance) should be discussed. The issue cut across two agenda items, one under the COP and the other under the APA. It was eventually agreed that the COP agenda item would be discussed under the SBI, and discussions under the APA would continue.

COP24 AND CMA1-3, KATOWICE

The Katowice Climate Package adds detail to the Paris Agreement’s more general provisions as follows:

- Katowice Decision 14/CMA.1 calls for deliberations on the new quantified goal to begin at CMA3 in November 2020; This collective quantified goal on finance is to start from a floor of US\$ 100 billion per year, and discussions must take place “in the context of meaningful mitigation actions and transparency of implementation”, while taking into consideration the needs and priorities of developing countries.
- Decision 4/CP.24, the SCF is requested the following:
 1. “Prepare, every four years, a report on the determination of the needs of developing country Parties related to implementing the Convention and the Paris Agreement”, starting in November 2020.
 2. Map available information related to Article 2.1(c) and Article 9 of the Paris Agreement every four years as part of its biennial assessment and overview of climate finance flows.
- On Article 9.5 (ex ante reporting of climate finance), in Decision 12/CMA.1 it was agreed that:
 1. The biennial communications on ex ante finance will start from 2020, and the secretariat will establish a dedicated online portal.
 2. The secretariat will prepare a compilation and synthesis of the biennial communications from 2021 onwards to inform the global stocktake. The secretariat will also organize biennial in-session workshops from 2021 onwards and prepare a summary report on each workshop. All these documents will be considered at CMA4.
 3. A biennial high-level ministerial dialogue on climate finance will begin in 2021, to be informed by, for instance, the summary reports on the in-session workshops. The CMA President will summarize the deliberations of the ministerial dialogue for consideration by the CMA at its next sessions.
 4. The COP is also invited to consider the compilations and syntheses and the summary reports on the in-session workshops.
- The Annex to Decision 12/CMA.1 lists the types of information to be provided by Parties in their biennial communications, which include:
 1. Projected levels of public finance.
 2. Programmes, including projected levels, channels, and instruments
 3. Policies and priorities including regions and geography, recipient countries, beneficiaries, targeted groups, sectors, and gender responsiveness.
 4. Purposes and types of support (mitigation, adaptation, etc).
 5. An indication of new and additional resources to be provided.
- On climate finance and the global stocktake (Article 9.6), the rulebook lists the sources of input on finance for the stocktake (Decision 19/CMA.1). These will include information on:
 1. Finance flows, at “a collective level”.
 2. Balance and prioritization (Article 9.4).

3. Support provided for technology development and transfer and capacity building (Articles 10.6, 11.3, 13.9).
 4. Financial, technology transfer, and capacity building support needed and received under Articles 9, 10, and 11 (Article 13.6 and 13.10).
 5. The secretariat's compilation and synthesis of the biennial communications on ex ante finance is also a source of input for the global stocktake, according to §7 of Katowice Decision 12/CMA.1.
- On ex post reporting of support provided and mobilized through public interventions (Article 9.7), the modalities, procedures, and guidelines (MPGs) for the provision of this information are elaborated in the rulebook, in the MPGs for transparency of action and support under Article 13 (Decision 18/CMA.1, Annex).
 - Parties, although the information is likely to provide a more details, are allowed to report their financial support at face value although in the case of a partial loan, for example, it may be more relevant to indicate the grant-equivalent value. Nevertheless, the developed countries are also expected to make efforts to enhance the comparability and accuracy of those information.
 - On the institutional arrangements for climate finance (Article 9.8), under Decisions 13/CMA.1 and 1/CMP.14, it was decided that the Adaptation Fund will serve the Paris Agreement with respect to all Paris Agreement matters from 1 January 2019, and the Fund shall no longer serve the Kyoto Protocol.

COP25 AND CMA2, MADRID

Long-term finance was a key issue for COP25 in 2019, and there were number of discussions were held on the followings:

- The G77/China proposed a permanent forum to discuss long-term finance, saying the issue needs regular discussion from a strategic perspective. Developed countries objected to mandating the SCF to assess progress, saying it duplicated the SCF's work on biennial assessments, and also opposed extending the current work programme or creating a new forum.
- In the closing plenary, G77/China said the draft text proposed by the Presidency, which "affirms the importance of climate finance and decides to continue discussion on this matter under the COP". Agreement was not possible as this wording was opposed by developed countries, and it was decided that Rule 16 will apply.
- The African Group wanted the SCF to prepare a synthesis report on the US\$ 100 billion goal, set to begin in November 2020, and AILAC suggested an overview of the achievement of the US\$ 100 billion goal. Both suggestions were rejected by developed countries.
- Developing countries wanted to call on the SCF to make this needs assessment "comprehensive", so it can serve as one of the tools guiding the replenishment of

the operating entities. They also wanted to include loss and damage in the needs assessment. Both suggestions were opposed by developed countries.

- The changes needed for the Adaptation Fund to function as an operating entity of the Financial Mechanism under the Paris Agreement. Some developed countries wanted the membership of the Adaptation Fund Board to be revisited. Currently, a majority of the 16 Board members (about 67%) are from developing countries. Developing countries said the COP24 mandate does not include a revision of the composition of the Board, and only refers to its rules of procedure
- The current language on the composition of the Board refers to two representatives “from Annex I Parties”, and two from “non-Annex I Parties” (referring to Annex I of the UNFCCC). Some developed countries supported draft text that replaced these references to, respectively, “developed countries” and “developing countries” to reflect the grouping of the Paris Agreement rather than the UNFCCC. This was opposed by developing countries.
- Decision 3/CMP.15 which renewed the World Bank’s role as interim trustee of the Adaptation Fund, paragraphs related to Board membership were removed due to the ongoing disagreement. A decision was also taken for the GEF to continue to serve as the Adaptation Fund’s secretariat.

9.4 What is the institutional architecture for climate finance under the UNFCCC?

- **Supreme Decision-Making Body:** The Conference of the Parties (COP) is the highest authority in the UNFCCC, responsible for guiding the Financial Mechanism of the Convention.
- **Financial Mechanism:** The Financial Mechanism provides climate finance resources, primarily in the form of grants or concessional funding, to support climate-related projects and activities.
- **Delegation of Operation:** The COP has the authority to delegate the operation of the Financial Mechanism to one or more international entities.
- **Operating Entities:** The UNFCCC currently has two operating entities: the Global Environment Facility (GEF) and the Green Climate Fund (GCF). These entities are accountable to the COP.
- **Special Funds:** The Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF) are funds managed by the GEF, with a specific focus on financing adaptation efforts in developing countries.
- **Adaptation Fund:** The Adaptation Fund, initially established under the Kyoto Protocol, serves both the UNFCCC and the Paris Agreement, with governance transitioning to the CMA.
- **GEF Council:** The GEF Council, composed of representatives from various countries, oversees the funding and implementation of GEF-financed projects. The GEF operates through implementing agencies.

- **Replenishment Cycles:** The GEF undergoes periodic replenishment cycles where donor countries contribute funds to support climate projects. These cycles help secure financial resources for GEF activities.
- **COP Guidance:** The COP provides guidance to the operating entities, emphasizing the need for expediting project funding, streamlining processes, ensuring transparency, and addressing the financing needs of developing countries.
- **Standing Committee on Finance (SCF):** The SCF is a standing committee established to assist the COP in coordinating and overseeing climate finance. It assesses funding needs, promotes transparency, and facilitates information exchange.
- **Biennial Assessments:** The SCF produces biennial assessments of climate finance flows, providing insights into financial trends and challenges.
- **Annual Forums:** The SCF organizes annual forums to foster communication and information exchange among entities involved in climate finance. These forums focus on specific themes related to climate finance.

So, the institutional architecture for climate finance under the UNFCCC involves various entities, each with specific roles and responsibilities, to mobilize and allocate climate finance resources in a transparent and equitable manner.

9.5 What national challenges do developing countries face with regard to climate finance?

1. Accessing climate finance from international sources is often complicated, involving arduous procedures and long processes. It may require hiring consultants or navigating through multilateral entities, which can be resource-intensive.
2. Meeting the necessary policy, institutional, accountability, and budgetary requirements for accessing climate finance is difficult. Building the capacity to fulfill these requirements demands substantial resources.
3. Overcoming conditions attached to funds, such as co-financing requirements and complex project policies, can be challenging. Different multilateral and bilateral funding agencies often have varying requirements, causing confusion.
4. Sub-national entities, both governmental and non-governmental, encounter difficulties accessing international funding. Although national implementing entities can help, more flexible access modalities are needed to channel funds locally and prioritize local needs.
5. Sometimes, the priorities of international funders do not align with national and local priorities. Differences can range from broad issues like prioritizing mitigation over adaptation to specific approaches within these categories.
6. Balancing the need to integrate climate finance with national funding sources while reporting it separately can be challenging. Improved mainstreaming can enhance government ownership and the scalability of effective approaches.

7. A country's ability to effectively utilize climate finance is influenced by its absorptive capacity. This capacity involves maximizing fund utilization, harmonizing funds with national sources, and updating policies to meet climate targets. However, the nature and earmarking of funds by donors also impact absorptive capacity, as funds not aligned with country needs may not be used effectively.

9.6 What are the future challenges related to climate finance?

The biggest challenge for climate finance at the international level primarily:

1. The scale of resources necessary to address the needs and ambitions of developing countries. Between allocating finances for Adaptation and Mitigation measures, Billions should be raised with no time.
2. The limited time within which resources must be raised, allocated, and used effectively, from the Paris Agreement requires a window to 2050, and IPCC research showing hardships in the near 2030.
3. The capacity to deliver resources at scale, within a rapidly closing window of time.
4. Implementing Article 2.1(c) of the Paris Agreement poses a broader challenge. All financial flows – not only those that currently come under the category of climate finance will have to be made consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Leadership and Understanding are much needed to manage the risks and engage discussion of all the stakeholders and parties (Developed and Developing Countries).

10. CLIMATE TECHNOLOGY

Climate technologies: refer to technologies used to address climate change, both mitigation and adaptation.

The concept of technology includes not only a product, but also the knowledge or information of its use and application – therefore including methods, skills, and techniques.

The term “technology” can include:

- Hardware (physical tools).
- Software (knowledge and skills required to use the technology).
- Orgware (institutions, policies, rules, and legislation).

10.1 What is technology transfer, and why is it important in the climate negotiations?

Technology transfer: is a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders such as governments, private sector entities, financial institutions, non-governmental organizations (NGOs) and research/education institutions.

A key challenge, however, is that the resources for this rapid technological innovation is mainly available in richer, more developed countries This poses a challenge for developing

countries who are poorer, but more vulnerable, and therefore have more need for adaptation technologies; and for developing countries where there is considerable potential for mitigation by employing cleaner technologies, but these technologies are not available or affordable.

Under the global climate negotiations, countries have sought to address this through commitments for “technology transfer” from developed to developing countries.

The IPCC moved the term from “Technology Transfer” to “Technology Development and Transfer” “TDT.

In Cancun Decision 1/CP.16 the term TDT included: R&D “Research and Development”, demonstration, deployment, diffusion, and transfer of technology.

Countries rely on different modes of technology transfer, depending on their stage of industrial development. UNCTAD identifies three stages of industrial development in the context of technology transfer:

- Initiation, when technologies are acquired from other countries through the acquisition of machinery and equipment and reverse engineering. The situation in least developed countries (LDCs) in particular, with many other developing countries, corresponds with this phase.
- Internalization, when local firms can learn through imitation under a flexible Intellectual Property Rights (IPRs) regime.
- Generation, when local firms carry out their own R&D and generate IPRs.

10.2 How have the negotiations on technology evolved under the UNFCCC?

The central role of technology, and of technology transfer, in reducing GHG emissions and addressing climate change impacts.

The first high-level political meeting to consider global action, in Noordwijk, the Netherlands, in November 1989 listed four main objectives for such a convention:

- Monitoring climate change.
- Action to deal with GHGs and the effects of global warming.
- Addressing the financial needs of the developing countries in the access to, and transfer of, technology
- Strengthening sustainable forest management.

A need for Technology Transfer that tackles the Adaptation process and not just mitigation was raising, as well the impediments to accessing technology in general, such as lack of financial resources. Institutions, trained man-power, restrictive trade practices and protection for the IPRs.

UNFCCC 1992:

During the early conference to the convention, Southern governments and civil society called for a global system for the transfer of environment-friendly technology on preferential and noncommercial terms from developed to developing countries. They also called for new institutions to facilitate technology transfer, and an inventory of technology transferable free of costs.

Developed countries, however, supported the transfer of such technology at commercial or market rates. The issue of how IPRs can be safeguarded without hindering access to patented technology was also a concern for them.

The Main Articles to focus on Technology Transfer and its Process under the UNFCCC are:

- Article 4 on commitments, includes the provisions on technology transfer.
- Article 4.3 states that developed countries shall provide “such financial resources, including for the transfer of technology, needed by developing country Parties to meet the agreed full incremental costs implementing measures”
- Article 4.1. The notion of “agreed incremental costs”, Developing countries pointed to its potential to cause confusion and controversy.
- Article 4.5, developed countries pledge to “take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how”
- Article 4.7 clearly recognizes that the extent to which developing countries can implement their commitments will depend on developed countries effectively fulfilling their commitments related to finance and technology transfer
- Article 4.8 further underlines that Parties shall give full consideration to necessary actions, including those related to funding, insurance, and the transfer of technology, to meet the special needs and concerns of developing countries arising from the adverse effects of climate change and/or the impact of the implementation of response measures, **especially on a list of nine categories of countries considered vulnerable:**
 - Small island countries
 - Countries with low lying coastal areas.
 - Countries with arid and semi-arid areas.
 - Forested areas and areas liable to forest decay.
 - Countries with areas prone to natural disasters.
 - Countries with areas liable to drought and desertification.
 - Countries with areas of high urban atmospheric pollution.
 - countries with areas with fragile ecosystems, including mountainous ecosystems;
 - countries whose economies are highly dependent on income generated from the production, processing, and export, and/or on consumption of fossil fuels and associated energy-intensive products; and landlocked and transit countries.
- Article 4.9 further calls on Parties to take full account of the specific needs and special situations of LDCs in their actions with regard to funding and transfer of technology.

1995 BERLIN MANDATE

The first meeting of the COP, this Mandate largely focused on gathering information on technology development and transfer.

Parties mandated the secretariat to prepare an **inventory and assessment** of environmentally sound and economically viable technologies and know-how conducive to mitigating and adapting to climate change. The inventory was to elaborate the terms to the subject. Parties mandated the SBSTA to identify innovative, efficient, and state-of-the-art technologies and know-how, and advice on the ways and means of promoting development and/or transfer of such technologies.

The Mandate urged developed country Parties to communicate their own measures to transfer technology, and to review at each COP their implementation.

1997 KYOTO PROTOCOL

Article 10(c) of the Kyoto Protocol calls on all Parties “to cooperate in the promotion of effective modalities for the development, application, and diffusion of, and take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies, know-how, practices and processes pertinent to climate change, in particular to developing countries”.

The Article calls for the formulation of policies and programmes for the effective transfer of ESTs (Environmentally Sound Technologies) that are **publicly owned or in the public domain**, and the creation of an enabling environment for the private sector, to promote and enhance the transfer of, and access to, environmentally sound technologies. Article 11.2.(b) of the Protocol calls on developed countries to provide financial resources, including for the transfer of technology. The Kyoto Protocol also created the Clean Development Mechanism (CDM, in Article 12).

CDM/ Kyoto Protocol Tech transfer:

During 2006 projects of CDM, ⅓ of these projects were for Technology Transfer purposes.

During 2015, 39% of these projects were serving Technology Transfer.

During 2020, 116 CDM project were registered in LDC (Least Developing Countries), and 34 in SIDS (Small Island and Developing States) out of 7825 projects in whole, this is due:

- The capacity within these countries to develop and implement projects,
- The nature of large-scale mitigation technologies that are available for transfer, which are not suited to the needs of smaller and poorer countries, with already low emissions.

To ensure that these countries accrue technological benefits from the voluntary approaches under Article 6 of the Paris Agreement, the lessons from the experience from CDM will have to be taken into account. This includes:

- Capacity building to develop and implement projects; allowing these countries to use and build on the institutional and human capacity they built for the CDM.

- Building incentives and approaches to encourage the distribution of technologies that fit their particular needs.

1998 BUENOS AIRES PLAN OF ACTION

Developed countries were urged to provide lists of publicly owned ESTs and know-how related to adaptation to, and mitigation of climate change. Developing countries were urged to submit reports outlining their prioritized technology needs. All Parties were asked to stimulate private sector investment and, most importantly, called for a consultative process to consider a list of nineteen specific issues and associated questions.

2001 MARRAKESH ACCORDS

The creation of a Technology Transfer Framework with five key themes and areas for action:

- Technology Needs Assessments (TNAs)
- Technology information
- Enabling environments
- Capacity building
- Mechanisms for technology transfer

The Technology Transfer Framework oversaw the establishment of:

- The launch of a Technology Transfer Information Clearing House (TT:Clear).
- The creation of a network of information centers.
- The drawing up of a list of activities needed for capacity building.

The Marrakesh Accords also established an Expert Group on Technology Transfer (EGTT) with twenty experts, from developing countries, SIDS, developed countries, and relevant international organizations. **Tasked with identifying ways to advance technology transfer activities under the Convention**, the EGTT worked closely with the UN Development Programme (UNDP) **to prepare a Handbook for Conducting Technology Needs Assessments for Climate Change.**

2007 BALI ACTION PLAN

Long-term cooperation, including enhanced action on technology development and transfer, as well as enhanced action on the provision of financial resources and investment to support technology cooperation.

The EGTT undertook assessing the gaps and barriers to the use of, and access to, financing for technology transfer, exploring how technology financing and capacity building could help countries address their needs. Regional workshops were held to train project developers in preparing project proposals for financing. Work on technology financing led to the creation of the Poznan Strategic Programme the following year.

Four sub-themes to the Technology Transfer Framework's "mechanisms for technology transfer" theme:

- Innovative financing.
- International cooperation.
- Endogenous development of technologies.
- Collaborative R&D.

2008 POZNAN STRATEGIC PROGRAMME

In 2008, the Global Environment Facility (GEF) approved a strategic programme on technology transfer in response to Decision 4/CP.13 from Bali, with three funding windows totalling US\$ 50 million for:

- TNAs (Technology Needs Assessment).
- Piloting priority technology projects linked to TNAs.
- Dissemination of GEF experience and successfully demonstrated technologies.

The Poznan Strategic Programme on technology transfer, a plan for the long-term implementation of the PSP was approved in 2010, with US\$ 1 billion **to address five elements**:

- Support for climate technology centers and a climate technology network.
- Piloting priority technology projects to foster innovation and investments.
- Public-private partnerships for technology transfer.
- TNAs.
- GEF as a catalytic supporting institution for technology transfer. The SBI monitors the implementation of the PSP.

Experience with TNAs as of the first generation, were not that successful as funds were allocated to do the assessment due the TNAs at that time didn't include in depth analysis of barriers for technology transfer and diffusion.

The TNA processes maintained their work, but a highlight of 4 points on the challenges and obstacles facing the process are:

- Lack of funds for implementing the TAPs (Technology Action Plans).
- Difficulties in integration into existing national development planning processes.
- Limited technical capacities and knowledge to translate the TNA outcome into bankable technology proposals for implementation.
- The lack of capacity and resources for National Designated Entities (NDEs) to follow up the TNAs.

2009 COPENHAGEN CLIMATE CONFERENCE

During this COP, parties called for establishing many plans and bodies to process the Technology Transfer and its funding, yet the COP ended in a bit of disarray.

The Copenhagen Accord, negotiated by heads of state and government, was not adopted – it was only “noted” because many Parties felt the negotiation process was not sufficiently inclusive. However, the Accord called for the establishment of a **Technology Mechanism**, guided by a country-driven approach and based on national circumstances and priorities. While the proposal from developing countries for a **Multilateral Climate Technology Fund** was not agreed.

The Accord called for the establishment of a **Green Climate Fund (GCF)** to support, among other things, TDT. The Copenhagen Conference also marked the change in terminology under the UNFCCC, as noted earlier, from technology transfer to TDT.

The COP focused on the below:

- **For technologies in the public domain**, the proposal called for the action plan to focus on an international cooperation system to ensure lowest cost options, as well as transferring know-how to use and maintain the technologies and adapt them to local conditions, including endogenous technologies.
- **For patented technologies**, the proposal called for the action plan to ensure that privately owned technologies are available on an affordable basis, including through measures to resolve IPR barriers and compulsory licensing of patented technologies. It called for technologies with shared ownership (government and private) (government and private) to be made available on an affordable basis by facilitating transfer of the government proportion on a reduced or no-cost basis; and technologies that are government-owned to be made available on an affordable basis by facilitating transfer at reduced or no-cost basis. The proposal also called for the establishment of national and regional technology excellence centers, to reinforce North-South, South-South, and triangular cooperation, including joint R&D.
- **IPR sharing arrangements** for joint development of technologies; joint technological or patent pools to disseminate technologies to developing countries at low cost; and limited-time patents and the provision of incentives for patent holders, for differential pricing.
- **Biological resources** (microorganisms, plant and animal species and varieties, and parts) that are used for adaptation and mitigation of climate change would not be patented. This was called by the Philippines.

2010 CANCUN AGREEMENTS

Parties established the Technology Mechanism, to facilitate the implementation of TDT, with two branches: a policy arm, the Technology Executive Committee (TEC); and an implementation arm, the Climate Technology Centre and Network (CTCN). The Mechanism became fully operational in 2012.

Countries ended the EGTT's mandate in 2010 when they established the Technology Mechanism, and requested the TEC to further implement the Marrakesh Technology Transfer Framework.

The role of the Technology Mechanism

The Technology Mechanism has two branches:

- The Technology Executive Committee (TEC), which provided Policy Recommendations to support countries in enhancing their climate technology efforts. and Analyzing technology policy issues
- The Climate Technology Centre and Network (CTCN), provide technological assistance, create access to knowledge on Climate Technology, and foster collaboration among Climate technologies stakeholders.

The TEC and CTCN issue a joint annual report to the COP, in 2017 review found

- Lack of predictions
- Security over financing resources.

Which both affect CTCN ability to deliver services at the expected level.

As did the CTCN's lack of human and organizational resources and the capacity of NDEs.

10.3 How is technology addressed in the Paris agreement and its implementation guidelines?

On 12 December 2015, Parties adopted the landmark **Paris Agreement**, which establishes the **legal foundation of the international climate regime from 2020 onwards**, all Parties are required to submit their climate change plans in the form of NDCs, to reflect what measures they intend to put in place to contribute towards the realization of the global goal of limiting the average temperature rise to well below 2°C compared to the pre-industrial period.

In the Paris Agreement, nations put forward a series of **long-term goals** that would further their efforts to combat climate change. One is the long-term vision to fully realize TDT.

- Article 10.1 in the Paris Agreement identifies as critical for improving resilience to climate change and reducing GHG emissions In order to achieve this vision.
- Article 10.2 Parties agreed to strengthen cooperative action on TDT.
- Article 10.3 Parties also agreed that the Technology Mechanism – including its CTCN and TEC – will serve the Agreement.
- Article 10.4 establishes a Technology Framework that will provide overarching guidance to the Technology Mechanism in promoting and facilitating enhanced action on TDT.
- Article 10.5 Parties recognize the critical role of innovation and state that efforts to accelerate, encourage, and enable innovation will be supported.
- Article 10.6 developing countries will be supported to strengthen cooperative action on TDT at different stages of the technology cycle and that support should aim at achieving a balance between mitigation and adaptation.

10.6 clearly links the technology transfer with the global stocktake which is a process by which Parties shall periodically evaluate their implementation of the Paris Agreement and assess their collective progress toward achieving its purpose and long-term goals (Article 14) – will take into account available information on support for TDT.

2018 KATOWICE CLIMATE CHANGE CONFERENCE

At COP24, Parties adopted the Technology Framework established under the Paris Agreement. The Framework will be implemented by the TEC and CTCN, under the guidance of the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement (CMA). It will operate under the **five guiding principles** of:

- Coherence.
- Inclusiveness.
- Result-oriented approach.
- Transformational approach.
- Transparency.

As such it will:

- Align with the long-term vision for TDT and other provisions of the Paris Agreement, national plans and strategies under the UNFCCC and actions undertaken by relevant institutions in the international climate regime and beyond.
- Be designed and implemented in a manner that facilitates the active participation of all relevant stakeholders and takes into account sustainable development, diversity, the special circumstances of LDCs and SIDS, and the enhancement of indigenous capacities and endogenous technologies.
- Be results-oriented in terms of output, outcome, and impact.
- Address the transformational changes envisioned in the Paris Agreement.
- Be designed and implemented in a manner that enhances the transparency of the results, costs, and process, such as through planning, resource management, and reporting on activities and support.

The Framework will focus on five key themes:

- Accelerating and scaling up technological innovation.
- Facilitating the implementation of collaborative TDT and actions identified in planning tools and processes (such as TNAs).
- Fostering the creation and enhancement of enabling environments and capacity building.
- Enhancing collaboration and stakeholder engagement.
- Enhancing the provision and mobilization of support for TDT.

The review started at CMA4 in 2021 and aims to end by CMA5 in 2022. Its outcome should serve as an input to the global stocktake and be considered when updating the technology framework. On linking the Technology Mechanism and the UNFCCC Financial Mechanism.

10.4 What are the global challenges related to TDT?

Challenges related to Technology Development and Transfer (TDT) in the context of global efforts to combat climate change. Here are the main points from the paragraph:

- **Complex Negotiations:** Negotiating appropriate technology solutions for addressing climate change is complex and time-consuming.

- **Limited Implementation Support:** Even after decisions are made, there is often limited technical and financial support for implementing these technology solutions.
- **Importance of the Technology Mechanism:** The effectiveness of the Technology Mechanism is crucial for global TDT efforts, but its success is hindered by the absence of specific funding for TDT and clear linkages with the Financial Mechanism.
- **Developing Countries' Experiences:** Developing countries have received funds for planning and identifying technology needs but often lack support for implementing plans and addressing needs.
- **Synergies with Financial Mechanism:** While some synergies and linkages with the Financial Mechanism have been established, there is still limited financial and technical support from developed countries.
- **Challenges for Developing Countries:** Developing countries face challenges in defining climate technologies, lack capacity and knowledge to integrate technology needs into their plans, and struggle to develop bankable technology proposals.
- **Necessity for Outreach and Support:** Outreach and support are necessary to improve the interaction between countries and the Technology Mechanism, including awareness raising, capacity building, translation of toolkits, and support in accessing funds from organizations like the GEF and GCF.
- **Barriers Related to Intellectual Property Rights (IPRs):** Many countries identify economic and market barriers as the biggest obstacles to TDT, and IPR-related barriers are also a concern. These include the cost implications of obtaining access to certain technologies, policy, legal, and regulatory barriers, and the lack of expertise in negotiating IPR contracts.
- **Collaborative Solutions for IPRs:** Collaborative efforts involving the UNFCCC, World Intellectual Property Organization, and the World Trade Organization are suggested to address IPR-related barriers, including joint technological or patent pools to disseminate technologies at lower costs.
- **Opposition to IPR Discussions:** Developed countries oppose discussions on IPRs as a barrier to TDT, and this issue remains controversial within UNFCCC discussions and has not gained traction in the World Trade Organization.

The UN Technology Bank for Least Developed Countries (LDCs) was established in 2017 as part of the Sustainable Development Goals (SDGs). Its key objectives include conducting STI reviews and TNAs in LDCs, fostering research collaboration, strengthening IPR and technology-related regulations, facilitating technology transfer, supporting entrepreneurship, and promoting innovation through regional hubs and labs. This bank aims to empower LDCs in technology-related matters to accelerate their development

10.4.1 What national challenges do developing countries face with regard to TDT?

National-level challenges in accessing climate-related technology, as highlighted in three TNA (Technology Needs Assessment) synthesis reports by the UNFCCC secretariat. Key points from these reports include:

First Synthesis Report (2006):

- Barriers to Technology Development and Transfer (TDT) included economic, market, information, policy, technical, and human capacity issues.
- Economic and market barriers encompassed financial constraints, high costs, subsidies, and limited access to credit.
- Information and awareness barriers related to the lack of technical information, technology acquisition information, and awareness among stakeholders.
- Capacity building was emphasized, with a need to build human and institutional capacity.

Second Synthesis Report (2009):

- Economic and market barriers continued to be prominent, including financial constraints, limited investment, and low purchasing power.
- Information and awareness challenges involved a shortage of information on energy efficiency and ecological safety.
- Human and institutional capacity building remained a priority.

Third Synthesis Report (Separate for Mitigation and Adaptation):

- Enablers for addressing economic and market barriers for mitigation technologies included tax exemptions and R&D support.
- Legal and regulatory barriers called for detailed regulations and standards.
- Technical barriers were seen as addressable through demonstration projects and technology databases.

Overall, these reports highlight a range of challenges, including economic, informational, and capacity-related barriers that countries face when accessing and adopting climate-related technologies at the national level.

The role of the private sector in climate-related Technology Development and Transfer (TDT) is significant and can be viewed at both global and domestic levels:

Global Level:

- The global private sector can influence investments in climate-friendly technologies, either supporting or hindering such investments.
- They can advocate for strict enforcement of Intellectual Property Rights (IPRs), potentially limiting access to Environmentally Sound Technologies (ESTs).

- Some industry groups and coalitions, like the US Chamber of Commerce and IDEA, lobby to protect IPRs in climate change negotiations.
- Concerns arise when large agrochemical and seed companies file patents for exclusive rights over plant gene sequences that enhance climate resilience, potentially affecting access and research.
- Some companies, such as Tesla and Toyota, have adopted more open approaches to patents for ESTs, contributing to advancements in clean technology.

Flow of Technology:

- The private sector's Foreign Direct Investment (FDI), commercial lending, equity investments, and joint ventures impact the flow of technology, favoring larger developing countries with stable markets and higher capacity.
- Governments in industrialized countries can direct their companies towards partnerships with smaller enterprises in developing countries through various support mechanisms.

Publicly Funded Technologies:

- Technologies funded by the public sector, including research grants and non-commercial grants to public universities, should be in the public domain, free from IPR protection, to facilitate sharing.

National Level:

Domestically, the private sector plays a crucial role in the adoption of climate-resilient technologies.

Governments in developing countries can incentivize the domestic private sector to invest in climate-friendly technologies and innovation through policy measures.

In essence, the private sector's role in climate-related TDT involves influencing investments, IPRs, technology flow, and domestic adoption of climate-resilient technologies, with both challenges and opportunities for fostering innovation and sustainable development.

10.5 The role of other stakeholders in technology development and transfer (TDT)

Is multifaceted. They influence the success of Environmentally Sound Technologies (ESTs) by ensuring they meet user needs without causing negative social and environmental impacts. Public pressure and customer choice drive the adoption of climate-friendly technologies and impact policy decisions. Stakeholders contribute by raising awareness about climate-friendly technologies, providing information on climate impacts, and promoting locally-driven solutions through "citizen science" and integrating indigenous knowledge. Additionally, they can facilitate technology sharing through crowdsourcing and open-source platforms. Overall, stakeholders play a crucial role in shaping and advancing TDT efforts.

SECTION B: PARIS ARTICLES AND IRAQ'S STOCKTAKING

11. ARTICLE 2 (THE SCOPE OF PARIS AGREEMENT):

This agreement seeks to enhance the execution of the Convention's objectives, with a primary aim of fortifying the worldwide reaction to the peril of climate change within the framework of sustainable development and poverty alleviation endeavors. It establishes the overarching objective of constraining the increase in global average temperature to a level significantly below 2 degrees Celsius compared to pre-industrial levels, with a heightened aspiration to restrict it to 1.5 degrees Celsius. Furthermore, it underscores the significance of adapting to the consequences of climate change and ensuring that financial resources are directed towards endeavors that promote low greenhouse gas emissions and bolster climate-resilient development.

Including by:

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

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

11.1 The timeline for Paris Agreement Scope during COPs:

COP1, Berlin 1995:

- The Berlin Mandate launched a process to negotiate a protocol or other legal instrument with binding emission targets for developed countries for the period beyond 2000.

COP3, Kyoto 1997:

- The Kyoto Protocol was adopted, which set quantified emission limitation and reduction commitments for developed countries for the first commitment period (2008-2012). The Protocol also established three flexible mechanisms to assist countries in meeting their targets: international emissions trading, joint implementation and the clean development mechanism.

COP11 CMP1 Montreal 2005:

- The Montreal Action Plan decided to initiate a dialogue on long-term cooperative action to address climate change by enhancing implementation of the Convention. The Plan also established the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) to consider further commitments for developed countries for the second commitment period (2013-2020).

COP15 CMP5, Copenhagen 2009:

- The Copenhagen Accord recognized the scientific view that the increase in global temperature should be below 2°C and called for an assessment of the implementation of the Accord by 2015, including in relation to the objective of limiting global temperature increase to 1.5°C. The Accord also included pledges by developed and developing countries to reduce their emissions by 2020.

COP16 CMP6 Cancun 2010:

- The Cancun Agreements formalized the emission pledges made in Copenhagen and established a process to review their adequacy and ambition by 2015. The Agreements also created new institutions and mechanisms, such as the Green Climate Fund, the Technology Mechanism and the Adaptation Committee, to support developing countries in their efforts to mitigate and adapt to climate change.

COP17 CMP7, Durban 2011:

- The Durban Platform for Enhanced Action launched a new round of negotiations to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties, to be adopted by 2015 and implemented from 2020. The Platform also decided to extend the AWG-KP's work until 2012 and agreed on a second commitment period for the Kyoto Protocol starting from 2013.

COP18 CMP8, Doha 2012:

- The Doha Amendment to the Kyoto Protocol was adopted, which established new emission targets for developed countries for the second commitment period

(2013-2020) and carried over surplus units from the first commitment period. The Amendment also increased the share of proceeds from the clean development mechanism to assist developing countries in meeting the costs of adaptation.

COP21 CMP11, Paris 2015:

- The Paris Agreement was adopted, which aims to strengthen the global response to the threat of climate change by holding the increase in global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit it to 1.5°C. The Agreement also sets out a global goal on adaptation, a long-term vision on finance, and enhanced transparency and accountability rules. The Agreement entered into force on 4 November 2016.

COP22 CMP12 CMA1, Marrakech 2016:

- The Marrakech Partnership for Global Climate Action was launched, which aims to catalyze and support climate action by non-Party stakeholders, such as cities, regions, businesses and investors, in collaboration with Parties. The Partnership also provides a platform to showcase and track progress of these actions.

COP23 CMP13 CMA1-2, Bonn 2017:

- The Talanoa Dialogue, which was launched during COP23, was an important initiative to assess progress toward the goals of the Paris Agreement, including those of Article 2. It involved a global conversation on efforts to limit global warming and enhance climate ambition

COP24 CMP14 CMA1-2, Katowice 2018:

- The Katowice Climate Package adopted detailed rules and guidelines for implementing the Paris Agreement, covering areas such as mitigation, adaptation, finance, transparency, technology and capacity-building. The Package also recognized.

COP26 CMP16 CMA3, Glasgow 2021:

- COP26 in Glasgow, UK, was a significant COP meeting where countries discussed and made commitments related to Article 2 and the broader goals of the Paris Agreement. Some countries updated their NDCs to reflect more ambitious climate targets.

11.3 COP27 CMP17 CMA4, Sharm El-Sheikh 2022:

- Sharm el-Sheikh Dialogue: Another outcome of COP27 was the organization of the Sharm el-Sheikh dialogue, focusing on Article 2, paragraph 1(c) of the Paris Agreement and its relationship with Article 9 of the Paris Agreement. This dialogue aimed to enhance understanding and action on aligning financial flows with low-

emission and climate-resilient development. It involved various stakeholders, including Parties, observer States, financial institutions, the private sector, civil society organizations, and more. The dialogue generated a summary report summarizing key messages, challenges, opportunities, and recommendations for future action.

Council of the European Union's Priorities:

- **Raising Ambition:** The Council of the European Union, ahead of COP27, emphasized the need to increase ambition and accelerate action in line with the Paris Agreement's Article 2.
- **Climate Finance Commitment:** The Council reaffirmed its commitment to provide at least \$100 billion per year in climate finance to developing countries for the period of 2020-2025. They emphasized the importance of a balanced allocation between adaptation and mitigation efforts.
- **Transparency and Accountability:** The Council also stressed the importance of enhancing transparency, accountability, and the effectiveness of climate finance to ensure it serves its intended purpose.

In one word or another, decisions and advancements regarding Article 2 are continually evolving as our member countries diligently pursue the Paris Agreement's objectives. While the specific outcomes of each COP meeting may differ, our unwavering commitment remains squarely on the core mission of mitigating global warming and effectively addressing climate change, aligning with the guiding principles laid out in Article 2. To access the most current information on COP resolutions and the progress related to Article 2, I strongly encourage referring to the official documents and reports from the COP proceedings.

12. Article 3 (RESPONSE):

Article 3 is a wide-ranging and cross-cutting provision. It builds upon the objective articulated in Article 2 of the Paris Agreement (PA) and introduces a novel device into the climate regime. “Nationally determined contributions” appear as a, if not the, central mechanism for achieving the Agreement’s objectives, and new functional principles such as “progression” are introduced.

12.1 Article 2 VS Article 3:

- **Article 2:** According to Article 2 of the Paris Agreement, the main goal of the agreement is to strengthen the international response to the threat posed by climate change by limiting the rise in global temperature this century to well below 2 degrees Celsius and pursuing efforts to further limit the temperature increase to 1.5 degrees Celsius. It also intends to make financial flows compatible with a path towards low greenhouse gas emissions and climate-resilient development and improve the capacity of nations to cope with the effects of climate change.

- Article 3: Article 3 builds upon these objectives and introduces the concept of "Nationally Determined Contributions" (NDCs). NDCs are the heart of the Paris Agreement and embody efforts by each country to reduce national emissions and adapt to the impacts of climate change. Each country's NDC takes into account its domestic circumstances and capabilities, and the sum of all NDCs will determine whether the world achieves the long-term goals of the Paris Agreement.

12.2 History and Negotiating Context:

COP1 (1995, Berlin, Germany):

- The Berlin Mandate was adopted, initiating a two-year analysis and assessment phase. It explicitly excluded new commitments for developing countries, which is a precursor to the differentiated responsibilities we see in the Paris Agreement.

COP3 (1997, Kyoto, Japan):

- The Kyoto Protocol was established. It had legally binding emission reduction targets, but these were only for developed countries (Annex I). This bifurcation was a major point of contention in subsequent meetings.

COP7 (2001, Marrakech, Morocco):

- The Marrakesh Accords provided rules for the Kyoto Protocol's implementation. It introduced the Clean Development Mechanism (CDM), allowing developed countries to invest in emission reduction projects in developing countries as a way to meet their own targets.

COP11 CMP1 (2005, Montreal, Canada):

- Parties discussed the "post-2012" period, signaling the end of the Kyoto Protocol's first commitment period and the beginning of dialogues on a more inclusive, flexible mechanism.

COP13 CMP3 (2007, Bali, Indonesia):

- The Bali Action Plan proposed "Nationally Appropriate Mitigation Actions" (NAMAs) for developing countries. This was a significant shift towards the nationally determined nature of future commitments.

COP15 CMP5 (2009, Copenhagen, Denmark):

- The Copenhagen Accord introduced the idea of a "pledge and review" system, where countries would submit their climate action plans and have them reviewed internationally. This was an early version of the transparency and ambition cycle we see in the Paris Agreement.

COP16 CMP6 (2010, Cancún, Mexico):

- The Cancun Agreements solidified many elements from the Copenhagen Accord, including the acknowledgment of the 2°C temperature goal. It also formally recognized the emission reduction pledges of numerous countries.

COP17 CMP7 (2011, Durban, South Africa):

- The Durban Platform for Enhanced Action was adopted, aiming for a new treaty by 2015 that would be legally binding and apply to all countries. This was a landmark decision, marking the shift from the bifurcated world of the Kyoto Protocol to the more inclusive approach of the Paris Agreement.

COP19 CMP9 (2013, Warsaw, Poland):

- The Parties' announcement of their Intended Nationally Determined Contributions (INDCs), which added another acronym to the UNFCCC's vocabulary and made its debut at COP 19 in Warsaw, was a crucial step toward the creation of the Paris Agreement. In light of the process leading up to the 2015 Agreement, the COP made the (Decision 1/CP.19 – 2.b) decision.
- In the same Decision, the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP), the UNFCCC's subsidiary body mandated with developing the 2015 Agreement, was requested by COP 20 in Lima to identify "the information that Parties will provide when putting forward their contributions, without prejudice to the legal nature of the contributions."

COP20 CMP10 (2014, Lima, Peru):

- The Lima Call for Climate Action was adopted, refining the concept of NAMAs and introducing the term "Intended Nationally Determined Contributions" (INDCs). Countries were encouraged to submit their INDCs ahead of COP21.

COP21 CMP11 (2015, Paris, France):

- Adoption of the Paris Agreement. Article 3, in its emphasis on nationally determined efforts, represents the culmination of two decades of negotiations, aiming for a balance between national sovereignty and collective responsibility.

COP22 CMP12 CMA1 (2016, Marrakech, Morocco):

- Known as the "Action COP", the focus was on developing rules for implementing the Paris Agreement. The Marrakech Partnership for Global Climate Action was launched to enhance collaboration between governments, cities, businesses, and citizens.

COP23 CMP13 CMA1-2 (2017, Bonn, Germany):

- Led by Fiji, there was a strong emphasis on the vulnerabilities of island nations. The Talanoa Dialogue was introduced, emphasizing inclusive and participatory discussions about ambition, built around three questions: "Where are we? Where do we want to go? How do we get there?"

COP24 CMP14 CMA1-3 (2018, Katowice, Poland):

- Commitments under the Paris Agreement. It provided clarity on the information countries need to include in their NDCs, ensuring transparency and comparability.

COP25 CMP15 CMA2 (2019, Madrid, Spain):

- Discussions centered on Article 6 and its market mechanisms. However, the importance of enhancing NDCs was emphasized, with 2020 being a critical year for countries to submit more ambitious climate plans.

COP26 CMP16 CMA3 (2020, Glasgow, United Kingdom):

- Many countries came forward with enhanced NDCs. Discussions on loss and damage, finance, and the finalization of the Paris Agreement's rulebook were central. The importance of achieving a global balance between emissions and removals was reiterated.

12.3 NDCs VS INDCs:

- INDCs: The Intended Nationally Determined Commitments known as INDCs were made in the run-up to the approval of the Paris Agreement in 2015. These memos laid forth the goals and intended activities that each nation wanted to accomplish in order to combat climate change. Prior to the entry into force of the Paris Agreement, the primary goal of INDCs was to explain the expected climate actions and commitments of nations. They served as a foundation for the COP21 discussions and assisted in evaluating the global community's coordinated efforts to combat climate change. INDCs traditionally contained adaptation strategies, plans for climate-resilient development, and mitigation objectives like lowering greenhouse gas emissions by a particular percentage by a given year.

NDCs: Once the Paris Agreement entered into force, nations were obligated to formally submit their final Nationally Determined Commitments known as NDCs. The INDCs serve as the foundation for the NDCs, which are each country's formal and binding obligations under the Paris Agreement. The NDCs represent each nation's efforts to cut national emissions and prepare for the effects of climate change. They are a key component of the Paris Agreement. They are intended to be improved and modified every five years to reflect rising ambition and advancement in accomplishing the Agreement's long-term objectives. Like INDCs,

NDCs include objectives for mitigation and adaptation, but they also include extra details to enhance accountability and transparency, such as implementation schedules, deadlines, and reporting procedures.¹

13. Article 4 (MITIGATION):

1. In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.
2. Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.
3. Each Party's successive nationally determined contribution will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.
4. Developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets. Developing country Parties should continue enhancing their mitigation efforts and are encouraged to move over time towards economy-wide emission reduction or limitation targets in the light of different national circumstances.
5. Support shall be provided to developing country Parties for the implementation of this Article, in accordance with Articles 9, 10 and 11, recognizing that enhanced support for developing country Parties will allow for higher ambition in their actions.
6. The least developed countries and small island developing States may prepare and communicate strategies, plans and actions for low greenhouse gas emissions development reflecting their special circumstances.
7. Mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans can contribute to mitigation outcomes under this Article.
8. In communicating their nationally determined contributions, all Parties shall provide the information necessary for clarity, transparency and understanding in accordance with decision 1/CP.21 and any relevant decisions of the Conference of the Parties serving as the meeting of the Parties to this Agreement.

¹ [1] UNFCCC, 'Decision 1/CP. 19, Further Advancing the Durban Platform' (31 January 2014) FCCC/CP/2013/10/Add.11 (Warsaw ADP Decision) ¶ 2(b). UNFCCC, 'Decision 1/CP. 19, Further Advancing the Durban Platform' (31 January 2014) FCCC/CP/2013/10/Add.11 (Warsaw ADP Decision) ¶ 2(c).

9. Each Party shall communicate a nationally determined contribution every five years in accordance with decision 1/CP.21 and any relevant decisions of the Conference of the Parties serving as the meeting of the Parties to this Agreement and be informed by the outcomes of the global stocktake referred to in Article 14.
10. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall consider common time frames for nationally determined contributions at its first session.
11. A Party may at any time adjust its existing nationally determined contribution with a view to enhancing its level of ambition, in accordance with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement.
12. Nationally determined contributions communicated by Parties shall be recorded in a public registry maintained by the secretariat.
13. Parties shall account for their nationally determined contributions. In accounting for anthropogenic emissions and removals corresponding to their nationally determined contributions, Parties shall promote environmental integrity, transparency, accuracy, completeness, comparability and consistency, and ensure the avoidance of double counting, in accordance with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement.
14. In the context of their nationally determined contributions, when recognizing and implementing mitigation actions with respect to anthropogenic emissions and removals, Parties should take into account, as appropriate, existing methods and guidance under the Convention, in the light of the provisions of paragraph 13 of this Article.
15. Parties shall take into consideration in the implementation of this Agreement the concerns of Parties with economies most affected by the impacts of response measures, particularly developing country Parties.
16. Parties, including regional economic integration organizations and their member States, that have reached an agreement to act jointly under paragraph 2 of this Article shall notify the secretariat of the terms of that agreement, including the emission level allocated to each Party within the relevant time period, when they communicate their nationally determined contributions. The secretariat shall in turn inform the Parties and signatories to the Convention of the terms of that agreement.
17. Each party to such an agreement shall be responsible for its emission level as set out in the agreement referred to in paragraph 16 of this Article in accordance with paragraphs 13 and 14 of this Article and Articles 13 and 15.
18. If Parties acting jointly do so in the framework of, and together with, a regional economic integration organization which is itself a Party to this Agreement, each member State of that regional economic integration organization individually, and together with the regional economic integration organization, shall be responsible for its emission level as set out in the agreement communicated under paragraph 16 of this Article in accordance with paragraphs 13 and 14 of this Article and Articles 13 and 15.

19. All Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

Article 4 contains the detailed provisions of the Paris Agreement relating to the mitigation of climate change. These provisions are aimed at realizing the global mitigation objective stated in Article 2(1)(a), and they are based on the concept of nationally determined contribution introduced in Article 3. Article 4 is supplemented by Article 5, which contains more specific provisions on sinks and reservoirs of greenhouse gases, and Article 6, on the market based approaches, including international transfer of mitigation outcomes and the non-market approaches. The implementation of Article 4 is supported by Articles 9, 10 and 11, containing provisions on finance, technology and capacity building for mitigation actions, among others. Article 13 enhanced transparency framework, Article 14 global stocktake and Article 15 implementation and compliance mechanism all aim at monitoring and promoting effective climate action, including mitigation action.

Article 4, which includes 19 paragraphs, is the longest article of the Paris Agreement. It defines a collective aim as well as procedural and substantive obligations. Other provisions seek to define essential features of nationally determined contributions, often relying on further decisions of implementation to be adopted by the Conference of the Parties serving at the Meeting of the Parties to the Paris Agreement (CMA).

13.1 Article 4 breakdown:

(para. 1) Collective Aim

Article 2(1)(a) of the Paris Agreement outlines its mitigation goal in terms of two temperature targets (2°C and 1.5°C). Article 4(1) further details the global trajectory for greenhouse gas emissions and sinks, emphasizing:

- Peaking of global greenhouse gas emissions as soon as possible.
- Swift reductions following the peak.
- A balance between human-caused emissions and greenhouse gas removal by the second half of the century.

Article 4(1) offers a direction: increased mitigation is essential. It mentions a nearer goal of "global peaking" but without a clear timeline. Importantly, Article 4(1) is the first treaty provision highlighting the necessity to cease net greenhouse gas emissions in the second half of the century as a global collective goal. The paragraph is clear that achieving a balance between emission and removals (net-zero) in the second half of the century is a global target and not country specific. Moreover, the article acknowledges the fact that peaking will take longer for developing countries since they need to develop. The article is also very clear that the global achievement of balance of emissions and removals should be implemented on the

basis of equity into account and taking into account sustainable development and poverty eradication. Both the mitigation objective in Article 2(1)(a) and its elaboration in Article 4(1) hint at the potential need for negative emissions technologies (NETs), like bioenergy with carbon capture and storage (BECCS). In addition to substantial emission cuts, NETs might be essential to counterbalance ongoing emissions in certain sectors to achieve net-zero GHG emissions. If there are delays in peaking and reducing global emissions, there might be an even more pronounced need for net negative emissions by the latter half of the century to meet the mitigation goals.

(para. 2, para. 9) The Obligation to Communicate NDCs:

In Article 4, the Paris Agreement adopts a "bottom-up approach" where each party decides its contribution to climate change, termed "nationally determined contributions" (NDC). Unlike the Kyoto Protocol which had fixed emission limits, the first sentence of Article 4(2) establishes a procedural obligation for each Party to "prepare, communicate and maintain successive nationally determined contributions that it intends to achieve." This obligation lies at the center of the architecture of Article 4, and of the Paris Agreement more generally. It is supplemented by numerous other provisions of Article 4 regarding the content of this communication.

Article 4(9) mandates that each party communicate an NDC every five years. There are specific timelines for parties to communicate or update their NDCs based on the time frame mentioned in their current NDC. The rules for clarity, transparency, and understanding of NDCs are binding starting with the second NDC. Parties should submit their NDCs 9 to 12 months in advance of the relevant meeting of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) to allow for clarity and understanding. NDCs should also consider and be informed by the outcomes of the global stocktake, which takes place every five years.

(paras. 3 (first clause) and 11) The principle of progression

Article 4(3) introduces the principle of progression, urging Parties to continuously enhance their efforts. When addressing climate change mitigation, this progression may pertain to the ambition of the Nationally Determined Contributions (NDCs).

Article 4(11) allows a Party to adjust its NDC to amplify its ambition at any time, focusing on the ambition aspect of the NDC. Other provisions, like Article 4(4), encourage developing countries to set broader emission targets over time. The progression in NDC features and ambition can be challenging to gauge, especially for developing countries without fixed emission targets.

(paras. 3 (second clause) and ,6, and6

Article 4(3) of the Paris Agreement highlights that each Party's NDC should reflect their utmost ambition considering their unique responsibilities, capabilities, and circumstances.

While the term "will" denotes an expectation and not an obligation, some believe that aiming for the "highest possible ambition" sets a high standard.

Article 4(4) offers non-binding guidance on potential NDC mitigation targets. Developed countries are advised to set economy-wide absolute emission reduction targets, while developing countries are encouraged to move towards economy-wide targets over time. However, many targets, especially from developing countries, are not strict emission reductions but could be reductions from projected scenarios or policy-based actions.

Article 4(5) acknowledges that support shall be provided for developing countries to implement their mitigation targets under their NDCs based on the provisions in articles 9, 10 and 11. Article 9 mandates developed countries to provide financial support and encourages other nations in a position to do so voluntarily to join in for providing support to developing countries for the implementation of mitigation and adaptation actions. Developed countries shall also provide support to developing countries for technology transfer, which includes mitigation technologies as per article 10 and should provide support for capacity building to developing countries, which also includes mitigation. .

Article 4(6) recognizes the unique situations of the least developed countries (LDCs) and Small Island developing States (SIDSs) due to their limited capabilities and potential higher vulnerability to climate change. They are allowed to formulate strategies based on their specific conditions.

(para. 7) Co-benefits

Under the UNFCCC, any policies or actions leading to mitigation outcomes are recognized as mitigation actions, regardless of whether they primarily target climate change mitigation. The enhanced transparency framework implementation decision requires Parties to share details of actions and policies supporting their NDC's achievement, irrespective of their primary intent. For example, policies targeting local air pollution for health reasons can inadvertently lead to mitigation outcomes, as these pollution sources often emit greenhouse gases. Economic diversification in fossil fuel-reliant countries and certain adaptation strategies may also offer mitigation co-benefits.

Article 4(7) acknowledges that co-benefits from adaptation actions or economic diversification can result in mitigation outcomes. This is reiterated in decision 1/CP.21, emphasizing the value of voluntary mitigation actions for adaptation, health, and sustainable development. By emphasizing the co-benefits of adaptation and economic diversification, the provisions spotlight cost-effective mitigation avenues for some Parties. Decision 4/CMA.1 reinforces this by mandating Parties to report mitigation co-benefits within their NDC.

(para. 8) Clarity, transparency and understanding

Article 4(8) mandates Parties, when communicating their NDCs, to provide the information essential for clarity, transparency, and understanding, aligned with decision 1/CP.21 and

pertinent CMA decisions. These three concepts—clarity, transparency, and understanding—are interlinked. Clarity pertains to the NDC's information content, while transparency and understanding involve how readers interpret this information. As the Paris Agreement's structure is bottom-up and lacks a uniform presentation for NDCs, these concepts ensure that contributions are comparable and assessments of their implementation are feasible.

Decision 1/CP.21 outlines some elements Parties might include in their NDCs, such as:

- Quantifiable reference point details (possibly a base year).
- Implementation time frames or periods.
- Scope and coverage.
- Planning processes.
- Methodologies and assumptions for estimating GHG emissions and potential removals.
- Information on the fairness and ambition of the NDC considering national contexts.
- Details on how the NDC aligns with the Convention's objective.

Decision 4/CMA.1, in Annex I, further clarifies the information types related to the seven elements from decision 1/CP.21, granting Parties significant flexibility. Decision 4/CMA.1 strongly advises States to provide this information for their first NDC and mandates it for their second NDC onwards.

(para. 10) NDC Time Frames

Article 4(10) mandates the CMA to evaluate "common time frames" for NDCs. The comparability of initial NDCs was hindered as, while many aimed up to 2030, some had different time frames like 2025.

Decision XX in COP 26 encourages Parties to communicate a time frame of 10 years each time an NDC is communicated. For example, in 2025 a nationally determined contribution with an end date of 2035 and in 2030 a nationally determined contribution with an end date of 2040, and so forth every five years thereafter.

(para. 12) Registry

Article 4(12) decides that NDCs communicated by Parties shall be recorded in a public registry maintained by the Secretariat. Accordingly, Decision 1/CP.21 requested the Subsidiary Body for Implementation "to develop modalities and procedures for the operation and use" of this public registry for consideration and adoption at CMA1. It also requested the Secretariat to make available an interim public registry meanwhile. Decision 5/CMA.1 contains the modalities and procedures for the implementation of Article 4(12). It promises, in particular, an "intuitive, easy-to-use web-based platform." The registry is already active and in operation.

(para. 13-14) Accounting

Article 4(13) mandates Parties to account for their NDCs, emphasizing the principles of environmental integrity, transparency, accuracy, completeness, comparability, consistency, and prevention of double counting, in line with CMA guidance. Article 4(14) extends these principles to accounting for mitigation measure impacts. The AWG-PA was tasked by Decision 1/CP.21 to detail guidance for Article 4(13), which, as per Decision 4/CMA.1 in Annex II, would be binding only from the second NDC. The provisions in Articles 4(13)-(14) are complemented by the enhanced transparency structure under Article 13 and decision 18/CMA.1. The adopted decisions in COP 26 and COP 27 under Article 6 offer further guidance on environmental integrity and preventing double counting through the application of corresponding adjustments.

Transparency, accuracy, comparability, completeness, consistency, and avoiding double-counting have been long-standing requirements for national communications under the UNFCCC. Under Decision 4/CMA.1, completeness means Parties should account for all anthropogenic emission and removal categories corresponding to their NDC and aim to cover all categories. For comparability, accuracy, and avoiding double counting, Parties should utilize methodologies and metrics approved by the Intergovernmental Panel on Climate Change and adopted by the CMA. Methodological consistency between NDC communication and their implementation reports, including greenhouse gas inventories, is essential. Transparency necessitates clear explanations for deviations from non-binding guidelines, especially when omitting certain anthropogenic emission or removal categories.

(para. 15) Impacts of response measures

Article 4(15) mandates Parties to consider the concerns of those most affected by response measures, especially developing countries. This mirrors a UNFCCC provision emphasizing the needs of developing countries heavily reliant on fossil fuels. However, Article 4(15) does not specify the exact actions Parties should take.

Decision 1/CP.21 maintains the forum on the impact of response measures, introduced by the Cancun Agreements under the UNFCCC, to serve the Agreement. This decision led to the adoption of decision 7/CMA.1, outlining the forum's modalities and functions. The forum primarily aims to foster cooperation in understanding the impacts of mitigation actions and strategies to address them. In addition to the forum, Parties agreed to the formation of Katowice Committee of Experts on Impacts of implementation of Response Measures (KCI) which was agreed at COP 25 in Madrid (decision 4/CMA.2). A workplan was adopted for the work to be conducted between 2020 and 2025. According to such workplan, the forum and its KCI are mandated to implement the workplan activities at each session from SB 52 to SB 63. Four topics are the underpinning for the workplan activities: economic diversification and transformation (EDT), just transition of workforce (JT) and the tools and methodologies for assessing the impacts of response measures.

(para. 16-18) Joint NDCs

Article 4(16) allows Parties to act jointly under Article 4(2) (i.e. in communicating their NDCs and taking measures to implement them). An agreement must be reached and communicated to the Secretariat, including on the emission level allocated to each Party. According to Article 4(17), each Party must be responsible for its emission level as set out in this agreement. Under Article 4(18), a regional economic integration organization which is itself a Party to the Paris Agreement (such as the EU) is jointly responsible for its emission level as set out in the agreement along with each of its Member States.

Paragraphs 16-18 do not apply to the communication of long-term low greenhouse gas emission development strategies under Paragraph 19.

(para. 19) The invitation to communicate long-term strategies

Article 4(19) encourages Parties to create and share long-term strategies for low greenhouse gas emissions. While NDCs are medium-term commitments, these strategies provide a long-term vision. Decision 1/CP.21 calls for these strategies to be communicated to the UNFCCC Secretariat for publication on their website.

13.2 The timeline for Mitigation:

COP1, Berlin 1995:

- Known as the Berlin Mandate. This conference did not set quantified emissions limitations or reduction objectives but set the stage for future negotiations.

COP3, Kyoto 1997:

- Resulted in the Kyoto Protocol, which established legally binding emissions reduction targets for developed countries. It set differentiated responsibilities, where developed countries took on binding commitments, while developing countries were encouraged to enhance their mitigation efforts.

COP7, Marrakech 2001:

- The Marrakesh Accords were adopted, detailing the rules for implementing the Kyoto Protocol, covering areas like reporting and monitoring.

COP11 CMP1, Montreal 2005:

- The first Meeting of the Parties to the Kyoto Protocol (CMP) took place. It established the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) to begin discussions on post-2012 commitments.

COP13 CMP3, Bali 2007:

- The Bali Action Plan was introduced, which recognized the need for enhanced action on mitigation, adaptation, technology development, and finance.

COP15 CMP5, Copenhagen 2009:

- While the Copenhagen Accord was not legally binding, it aimed to limit global warming to below 2°C above pre-industrial levels.

COP17 CMP7, Durban 2011:

- The Durban Platform for Enhanced Action was established. It launched a new round of negotiations aimed at creating a legal agreement covering all countries.

COP21 CMP11, Paris 2015:

The landmark Paris Agreement was adopted. It establishes a global action plan to avoid dangerous climate change by limiting global warming to well below 2°C, aiming for 1.5°C.

Article 4 of the Paris Agreement holds the crux of its mitigation ambition:

- **Article 4.1:** Countries aim to reach a global peak in GHG emissions ASAP, with rapid reductions thereafter.
- **Article 4.2:** Developed countries should continue taking the lead by undertaking economy-wide absolute emission reduction targets, while developing countries should continue enhancing their mitigation efforts.
- **Article 4.3 & 4.4:** Each subsequent nationally determined contribution (NDC) will represent a progression, reflecting the highest possible ambition.

Subsequent COPs, including **COP22/CMP12 (Marrakech, 2016)** and **COP24/CMP14 (Katowice, 2018)**, worked on the rulebook and operational details of the Paris Agreement, further refining and enhancing the mechanisms for mitigation.

COP22 CMP12 CMA1 (2016, Marrakech, Morocco):

- Emphasis on the rapid ratification and entry into force of the Paris Agreement.
- Initiation of the "Marrakech Partnership for Global Climate Action" to support efforts by regions, cities, and businesses in line with NDCs.

COP23 CMP13 CMA1-2 (2017, Bonn, Germany):

- Launch of the Talanoa Dialogue, a year-long process to take stock of collective efforts and inform the preparation of NDCs.
- Parties worked on creating a rulebook for the implementation of the Paris Agreement, including guidelines for NDCs.

COP24 CMP14 CMA1-3 (2018, Katowice, Poland):

- Adoption of the Katowice Climate Package, which provides guidelines for the implementation of the Paris Agreement, including transparency, adaptation, and NDCs.
- Agreement on a common time frame for NDCs starting in 2031.

COP25 CMP15 CMA2 (2019, Madrid, Spain):

- Discussions on Article 6 (market and non-market mechanisms) overshadowed other elements, but there was emphasis on the enhancement of NDCs.
- Urgency expressed the need for countries to submit enhanced NDCs in 2020.

COP26 CMP16 CMA3 (2020, Glasgow, United Kingdom):

- Emphasis on finalizing the "rulebook" for the Paris Agreement, with particular attention to Article 6 (though Article 4 remains central to discussions on NDCs).
- Call for more ambitious NDCs in light of the increasing impacts of climate change.
- Urged parties to update their NDCs and requested parties to strengthen their 2030 targets prior to COP 27.
- Call for phase-down of unabated coal power and phase out of inefficient fossil fuels (while providing support to the poorest and most vulnerable)

COP27 CMP17 CMA4 (2022, Sharm El-Sheikh, Egypt):

- **High-level Ministerial Roundtable on Pre-2030 Ambition:** With a collective call to urgently ramp up climate action and support, the roundtable, a new annual event to set the global direction on mitigation ambition and implementation that should be taken before 2030, opened with a report from UN on Climate Change, according to which the world is way off track to stay below the Paris Agreement's temperature goals.

COP28 CMP18 CMA5 (2023, Dubai, UAE):

- The global stocktake of the Paris Agreement (GST) is a process for taking stock of the implementation of the Paris Agreement aimed to assess the world's collective progress towards achieving its long-term goals. The GST facilitates the assessment of global collective progress on mitigation, adaptation and means of implementation. The first GST runs from 2021 to 2023 and will be repeated every 5 years. At these sessions this item related to the ongoing technical phase of the first GST and its political outcome, expected at COP 28.

14. ARTICLE 5 (GHG SINKS AND REDD+)

1. Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1(d), of the Convention, including forests.

2. Parties are encouraged to take action to implement and support, including through results-based payments, the existing framework as set out in related guidance and decisions already agreed under the Convention for: policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries; and alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests, while reaffirming the importance of incentivizing, as appropriate, non-carbon benefits associated with such approaches.

Article 5 of the Paris Agreements asks all Parties to take action to conserve and enhance sinks and reservoirs of greenhouse gases, including forests, making reference to the mechanisms and processes established to this purpose under the Convention and the Kyoto Protocol. Article 5 is therefore commonly regarded as a provision bringing little novelty to the climate regime, and merely consolidating the status quo, by transplanting existing arrangements into the architecture established within the Paris Agreement. This reading of the provision is, however, misleading. Article 5 must in fact be read jointly with Article 4.1 of the Paris Agreement, which states that Parties aim to achieve ‘a balance between emissions by sources and removals by sinks in the second half of this century’. As a result, the land use sector will play a pivotal role in the achievement of the long-term temperature goal enshrined in Article 2.1 of the Paris Agreement. This prominent role of the land sector is reflected in Parties’ Nationally Determined Contributions (NDC) submitted to date, whereby the land sector is expected to contribute to about a quarter of pledged emission reductions globally.

14.1 Sinks, reservoirs and Climate Change

It is estimated that the Land Use Land Use Changes and Forest (LULUCF) sector accounts for about 4 t CO₂ emissions per year (average for the period 2000-2009), representing about 10% of global CO₂ emissions, largely produced by deforestation in developing countries. The LULUCF sector, however, also functions as a global carbon sink, sequestering the equivalent of one third of global CO₂ emissions every year. Maintaining and enhancing the land carbon sink while reducing land-use GHG emissions is therefore key to achieve the ‘balance between emissions by sources and removals by sinks in the second half of this century’, envisioned in the Paris Agreement.

Concerns over the full inclusion of LULUCF emissions in states’ carbon budgets were mainly linked to the intrinsic difficulties to discern what of the emitted or removed carbon can be attributable to human activities or to natural processes. There was, in other words, some concern that LULUCF carbon ‘credits’ related to natural processes could undermine the integrity of a country’s overall accounting of its emissions and removals. For these reasons, developing international rules and methodologies for LULUCF activities has been a long and complex process. The rules for the accounting of carbon debits and credits in the LULUCF

sector have been painstakingly negotiated, with lengthy technical debates. This section gives an account of this debate and of the solutions devised in international climate law and policy, thus providing the backdrop against which Article 5 should be read.

14.2 The UNFCCC and the Kyoto Protocol

The United Nations Framework Convention on Climate Change (UNFCCC) asks its Parties to 'control, reduce or prevent' anthropogenic GHG emissions, including those from agriculture and forestry; to promote the sustainable management, conservation and enhancement of all sinks and reservoirs; and to periodically update and publish inventories reporting national emissions and removals, including from land uses. However, because of the differentiation between developed and developing countries' obligations under the UNFCCC and the 1997 Kyoto Protocol, these groups of Parties have historically been subjected to diversified accounting and reporting obligations, including in the LULUCF sector. These rules have been developed under three separate agenda items, namely: land use, land-use change and forestry (LULUCF); conservation and enhancement of carbon stocks in forests in developing countries (REDD+); and agriculture.

Up until 2020, developed country Parties may use GHG emissions and removals from the LULUCF sector to meet their emissions reduction targets for 2020, but only to a limited extent. Initially accounting was mandatory only for some activities –namely, afforestation, reforestation, deforestation –while others could be accounted for by developed country Parties on a voluntary basis– like forest management, cropland management, grazing land management and revegetation. Over time, updated methods to discount emissions due to natural disturbances in forests, and to account for harvested wood products were introduced, as well as the obligation to account for forest management, and the option to account for wetland drainage and rewetting.

14.3 The Clean Development Mechanism CDM

The Clean Development Mechanism (CDM) and Joint Implementation (JI) were established to enable developed country Parties to the Kyoto Protocol to achieve compliance with their quantified emission limitation and reduction commitments by financing emission reductions in developing country Parties (CDM), or in other developed country Parties (JI). In exchange, they receive certified emissions reductions (CERs) or emission reduction units (ERUs), which can be traded and sold, and used to meet part of their emission reduction targets, as they are fungible with allowances (or emission permits) created pursuant to the Kyoto Protocol.

All LULUCF activities that may be carried out by developed country Parties under the Kyoto Protocol are eligible for JI, whereas only afforestation and reforestation activities may be carried out under the CDM. There were a number of reasons for such limitations. Specific leakage concerns were associated with avoiding deforestation, as keeping track of relocation of the drivers of deforestation while maintaining a focus on single carbon projects was deemed to be impossible.

Additionality concerns were instead at the basis of the exclusion of conservation and forest management activities. It seemed, in other words, difficult to distinguish between activities that were going beyond a business-as-usual scenario.

Reducing Emissions from Deforestation and Forest Degradation in Developing Countries REDD+

'REDD' stands for 'Reducing emissions from deforestation and forest degradation in developing countries. The '+' stands for additional forest-related activities that protect the climate, namely sustainable management of forests and the conservation and enhancement of forest carbon stocks. Under the framework with these REDD+ activities, developing countries can receive results-based payments for emission reductions when they reduce deforestation. This serves as a major incentive for their efforts.

Rules on the conservation and enhancement of carbon stocks in forests in developing countries - commonly referred to with the acronym REDD+ were elaborated under the UNFCCC with the primary aim to support mitigation activities in the countries, where emissions from the forest sector tend to be concentrated. The idea was that, as forests in developing countries provide carbon sequestration, these countries ought to be incentivized to continue to do this, on a voluntary basis. Negotiations on REDD+ were therefore expected to deliver an international system to support forest carbon sequestration in developing countries and a slowdown in deforestation and degradation processes. The finance for these activities was largely expected to come from carbon-markets. Delivering this system, however, has proven difficult.

14.4 The timeline for GHG Sinks and REDD+:

COP1 (1995, Berlin, Germany):

- Recognition of the importance of sinks and reservoirs, particularly forests, in addressing climate change.

COP3 (1997, Kyoto, Japan):

- Adoption of the Kyoto Protocol, which introduced the concept of LULUCF. Annex I countries were allowed to account for emissions and removals from LULUCF activities to meet their targets.

COP6 (2000, The Hague, Netherlands) AND COP6.5 (2001, Bonn, Germany):

- Detailed negotiations on LULUCF rules, leading to the Marrakesh Accords, which established the first set of rules on how countries could count emissions and removals from LULUCF towards their Kyoto targets.

- Adoption of the Marrakesh Accords. Detailed rules for LULUCF under the Kyoto Protocol were agreed upon, including for afforestation, reforestation, and deforestation activities.

COP9 (2003, Milan, Italy):

- Decisions on good practice guidance for LULUCF, emphasizing the importance of accurate and verifiable reporting.

COP11 CMP1 (2005, Montreal, Canada):

- Initiation of the Reducing Emissions from Deforestation and Forest Degradation (REDD) discussions, recognizing the importance of addressing emissions from deforestation in developing countries.

COP13 CMP3, Bali 2007:

- The Bali Action Plan was adopted, which marked the formal start of negotiations on the REDD+ mechanism, emphasizing the importance of forests in climate change mitigation.

COP15 CMP5, Copenhagen 2009:

- The Copenhagen Accord recognized the importance of REDD+ and encouraged developed countries to provide financial support for related actions.

COP16 CMP6, Cancun 2010:

- The Cancun Agreements provided further guidance on REDD+, laying down the foundation for its implementation, including safeguards, and calling for support for developing countries.

COP22 CMP12 CMA1, Marrakech 2016:

- Discussions on the implementation of the Paris Agreement began, including the operational details of Article 5. Countries also highlighted their progress on REDD+ and called for increased support.

COP23 CMP13 CMA1-2, Bonn 2017:

- Parties discussed technical guidelines for implementing Article 5. There was also an emphasis on integrating the land sector, including forests, into the broader climate strategy.

COP24 CMP14 CMA1-3, Katowice 2018:

- The Katowice Climate Package was adopted, providing further guidance on the implementation of the Paris Agreement, including Article 5. The package provided clarity on reporting requirements for the land sector.

COP25 CMP15 CMA2 Madrid 2019:

- Discussions centered on market mechanisms and their potential role in implementing Article 5. Some countries also shared their experiences and progress in the area of REDD+.

COP26 – CMP16 CMA3 Glasgow 2021:

- The Glasgow Leaders' Declaration on Forests and Land Use aimed to halt and reverse deforestation by 2030. Over 100 leaders signed the declaration, representing more than 85% of the world's forests.

14.4.1 COP28 CMP18 CMA5 (2023, Dubai, UAE):

- The sustainability of nature, land use, and oceans are integral to achieving all the Paris Agreement's goals. The recent adoption of the 30x30 biodiversity goal creates an imperative for integrated policy and investment for climate and nature.
- COP28 will focus on delivering climate and nature co-benefits through a range of financing mechanisms and packages, co-designed with local and Indigenous Peoples, to sustainably manage and conserve natural carbon sinks and biodiversity hotspots.
- The day will also seek to accelerate private sector commitments to nature-positive accountability frameworks.
- There are no specific agenda items on article 5 in COP 28. However, agenda items related to article 6 will include discussions related to whether avoidance should be included under article 6.2 activities or not. Also, the same discussion will be included under article 6.4, where the supervisory body will deliver a report to the CMA in this regard.

15. ARTICLE 6 (COOPERATIVE APPROACHES/ VOLUNTARY CARBON MARKETS):

It focuses on facilitating international collaboration among countries to increase their commitment to addressing climate change by enhancing both their efforts to reduce emissions (mitigation) and adapt to the impacts of climate change. This cooperation is voluntary, but participating countries must meet specific criteria.

There are three main approaches to this cooperation:

Article 6.2 establishes a framework for carbon markets using "cooperative approaches." This allows for the exchange of verified emission reductions, known as Internationally Transferred Mitigation Outcomes (ITMOs), between a country reducing emissions (the seller) and another country seeking to use those reductions to meet their climate goals (the buyer). Importantly, the seller country does not count these reductions towards their own climate commitments, making them available for transfer. ITMOs are typically measured in

terms of CO₂ equivalent, with a focus on environmental integrity, rigorous accounting, and sustainable development.

Article 6.4 introduces an international system for emission credits. This system provides emission credits based on the quality of mitigation outcomes achieved. It is governed by an international supervisory body in accordance with the Paris Agreement's guidelines.

Article 6.8 offers a non-market-based form of cooperation. Unlike the previous mechanisms, this approach does not involve the trading of emission reduction credits.

In summary, Article 6 of the Paris Agreement outlines various ways for countries to collaborate internationally to enhance their climate efforts, whether through carbon markets, emission credit systems, or non-market-based approaches, all aimed at advancing global climate goals.

- Parties recognize that some Parties choose to pursue voluntary cooperation in the implementation of their nationally determined contributions to allow for higher ambition in their mitigation and adaptation actions and to promote sustainable development and environmental integrity.
- Parties shall, where engaging on a voluntary basis in cooperative approaches that involve the use of internationally transferred mitigation outcomes towards nationally determined contributions, promote sustainable development and ensure environmental integrity and transparency, including in governance, and shall apply robust accounting to ensure, inter alia, the avoidance of double counting, consistent with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement.
- The use of internationally transferred mitigation outcomes to achieve nationally determined contributions under this Agreement shall be voluntary and authorized by participating Parties.
- A mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development is hereby established under the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Agreement for use by Parties on a voluntary basis. It shall be supervised by a body designated by the Conference of the Parties serving as the meeting of the Parties to this Agreement, and shall aim:
 1. To promote the mitigation of greenhouse gas emissions while fostering sustainable development;
 2. To incentivize and facilitate participation in the mitigation of greenhouse gas emissions by public and private entities authorized by a Party;
 3. To contribute to the reduction of emission levels in the host Party, which will benefit from mitigation activities resulting in emission reductions that can also be used by another Party to fulfill its nationally determined contribution
 4. To deliver an overall mitigation in global emissions.

- Emission reductions resulting from the mechanism referred to in paragraph 4 of this Article shall not be used to demonstrate achievement of the host Party's nationally determined contribution if used by another Party to demonstrate achievement of its nationally determined contribution.
- The Conference of the Parties serving as the meeting of the Parties to this Agreement shall ensure that a share of the proceeds from activities under the mechanism referred to in paragraph 4 of this Article is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.
- The Conference of the Parties serving as the meeting of the Parties to this Agreement shall adopt rules, modalities and procedures for the mechanism referred to in paragraph 4 of this Article at its first session.
- Parties recognize the importance of integrated, holistic and balanced non-market approaches being available to Parties to assist in the implementation of their nationally determined contributions, in the context of sustainable development and poverty eradication, in a coordinated and effective manner, including through, inter alia, mitigation, adaptation, finance, technology transfer and capacity-building, as appropriate. **These approaches shall aim to:**
 1. Promote mitigation and adaptation ambition;
 2. Enhance public and private sector participation in the implementation of nationally determined contributions; and
 3. Enable opportunities for coordination across instruments and relevant institutional arrangements.
- 9. A framework for non-market approaches to sustainable development is hereby defined to promote the non-market approaches referred to in paragraph 8 of this Article.

15.1 The timeline for the Cooperative Approaches, when did the work start?

The negotiations and discussions surrounding Article 6 of the Paris Agreement began well before the agreement itself was finalized. The Paris Agreement was adopted on December 12, 2015, at the 21st Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris, France.

The process leading up to the adoption of the Paris Agreement involved years of negotiations and discussions among UNFCCC member countries. These negotiations included discussions on various aspects of the agreement, including mitigation, adaptation, finance, and mechanisms like Article 6.

Specifically, discussions on market-based mechanisms and international cooperation for emissions reductions, which Article 6 addresses, were part of the broader negotiations leading up to the Paris Agreement. The text of Article 6 was negotiated and refined during the COP21 meeting itself, which took place from November 30 to December 12, 2015. So,

the work on Article 6 and its related provisions began several years before its inclusion in the Paris Agreement and was finalized during the COP21 negotiations in December 2015.

The main topic of Article 6 of the Paris Agreement, which focuses on international cooperation in addressing climate change through market-based mechanisms and non-market approaches, has evolved over the years as follows:

Pre-Paris Agreement Discussions (Pre-2015):

Prior to the adoption of the Paris Agreement in 2015, international discussions on climate change primarily focused on defining the scope of cooperation mechanisms and how countries could collaborate to reduce greenhouse gas emissions. The idea of market-based mechanisms and international transfers of mitigation outcomes was already under consideration.

Inclusion in the Paris Agreement (2015):

The Paris Agreement itself, adopted in December 2015, incorporated Article 6 as a key component. This marked a significant step forward in recognizing the importance of international cooperation in achieving the agreement's climate goals.

COP22 CMP12 CMA1, Marrakech 2016:

After the adoption of the Paris Agreement, negotiations continued at the 22nd Conference of the Parties (COP22) in Marrakech, Morocco, in 2016. Parties discussed and developed further guidance for the implementation of Article 6, including the establishment of governance structures, accounting rules, and safeguards.

COP23 CMP13 CMA1-2, Bonn 2017:

The 23rd Conference of the Parties (COP23) held in Bonn, Germany, in 2017 continued discussions on the rules and modalities for implementing Article 6. Negotiators worked on addressing technical details related to market mechanisms, emission reductions, and transparency.

COP24 CMP14 CMA1-3, Katowice 2018:

The 24th Conference of the Parties (COP24) in Katowice, Poland, in 2018 aimed to finalize the rules for the Paris Agreement's implementation, including those related to Article 6. Parties worked to reach consensus on issues such as accounting methodologies, avoiding double counting of emissions reductions, and ensuring environmental integrity.

Article 6 is one of the least accessible and complex concepts of the global accord. This complexity was a major reason that Article 6 was not agreed and was left unresolved at COP 24 in Katowice. .

COP25 CMP15 CMA2, Madrid 2019:

The 25th Conference of the Parties (COP25) held in Madrid, Spain, in 2019, some progress was made during COP25. Consequently, several important decisions related to Article 6 were deferred to COP26 in Glasgow. These unresolved issues included rules for avoiding double counting of emissions reductions and ensuring environmental integrity within international carbon markets. Overall, COP25 laid the groundwork for further negotiations and decision-making on Article 6 in subsequent COP meetings, with the expectation that these matters would be addressed and resolved in the future. But consensus was not reached on all issues. This resulted in the postponement of key decisions to the following year.

COP26 CMP16 CMA3, Glasgow 2021:

The 26th Conference of the Parties (COP26) in Glasgow, Scotland, in 2021 made substantial progress in finalizing the rules for implementing Article 6. Parties reached agreements on various technical aspects, such as avoiding double counting, and created a framework for international carbon markets.

The Glasgow Climate Pact established key principles for international carbon markets, including environmental integrity, avoiding double counting, and promoting sustainable development. It allowed for the use of Internationally Transferred Mitigation Outcomes (ITMOs) and bilateral cooperation between countries. The pact also paved the way for market mechanisms to facilitate emissions trading, with an international supervisory body overseeing their operation. Importantly, it reaffirmed the importance of directing a portion of the proceeds from these markets to support climate finance of adaptation actions in developing countries. These agreements represent a major step forward in enhancing international cooperation and incentivizing emissions reductions while maintaining transparency and environmental integrity.

Throughout this evolution, the main topic of Article 6 remained centered on establishing mechanisms for international cooperation to enhance climate mitigation and adaptation efforts. The detailed provisions and mechanisms within Article 6 continued to be refined and clarified through negotiations at each COP, with the ultimate goal of creating a robust framework for global climate action and cooperation.

COP27 CMP17 CMA4, Sharm El Sheikh 2022:

During COP 27, many details related to the operationalization of articles 6 were agreed upon. Some details were postponed though to be agreed upon in future COPs.^{15.2 Carbon Markets}

International carbon markets operate by allowing countries that find it challenging to achieve their emissions reduction targets outlined in their national climate plans (referred to as "nationally determined contributions" or NDCs) or wish to pursue more cost-effective emission reductions to purchase emissions reductions from other countries that have already exceeded their pledged emission cuts. This often occurs through the transition to renewable energy sources. When properly structured, this arrangement can be mutually beneficial for all parties involved: both countries meet their climate commitments, the

country that has surpassed its targets receives financial incentives for its extra efforts, funds are directed to the country generating emissions reductions, and collectively, the world moves closer to averting catastrophic climate change.

Article 6 has three operative paragraphs, two of which relate to carbon markets:

Article 6.2 provides an accounting framework for international cooperation, such as linking the emissions-trading schemes of two or more countries (for example, linking the European Union cap-and-trade program with emissions-reduction transfers from Switzerland). It also allows for the international transfer of carbon credits between countries.

Article 6.4 establishes a central UN mechanism to trade credits from emissions reductions generated through specific projects. For example, country A could pay for country B to build a wind farm instead of a coal plant. Emissions are reduced, country B benefits from the clean energy and country A gets credit for the reductions.

Article 6.8 establishes a work program for non-market approaches, such as applying taxes to discourage emissions. For this explainer, we will focus on the carbon markets elements of Article 6.

While Article 6 established these concepts in broad strokes and countries achieved some progress on defining the rules over the years, their final shape remains yet to be agreed. Finalizing these rules is a key agenda item for COP25.

15.1.1 Sharm el-Sheikh Implementation Plan:

- Recognizes that limiting global warming to 1.5 °C requires rapid, deep and sustained reductions in global greenhouse gas emissions of 43 per cent by 2030 relative to the 2019 level;
- Also recognizes that this requires accelerated action in this critical decade, on the basis of equity and the best available scientific knowledge, reflecting common but differentiated responsibilities and respective capabilities, in the light of different national circumstances and in the context of sustainable development and efforts to eradicate poverty;
- Calls upon Parties to accelerate the development, deployment and dissemination of technologies, and the adoption of policies, to transition towards low-emission energy systems, including by rapidly scaling up the deployment of clean power generation and energy efficiency measures, including accelerating efforts towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies, while providing targeted support to the poorest and most vulnerable in line with national circumstances and recognizing the need for support towards a just transition;
- Reiterates its invitation to Parties to consider further actions to reduce by 2030 non carbon dioxide greenhouse gas emissions, including methane;

- Emphasizes the importance of protecting, conserving and restoring nature and ecosystems to achieve the Paris Agreement temperature goal, including through forests and other terrestrial and marine ecosystems acting as sinks and reservoirs of greenhouse gases and by protecting biodiversity, while ensuring social and environmental safeguards;
- Recognizes the importance of maximizing the positive and minimizing the negative economic and social impacts of the implementation of response measures and welcomes the adoption of decisions 20/CP.27, 7/CMP.17 and 23/CMA.4

16. ARTICLE 7 (ADAPTATION):

1. Parties hereby establish the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal referred to in Article 2.
2. Parties recognize that adaptation is a global challenge faced by all with local, subnational, national, regional and international dimensions, and that it is a key component of and makes a contribution to the long-term global response to climate change to protect people, livelihoods and ecosystems, taking into account the urgent and immediate needs of those developing country Parties that are particularly vulnerable to the adverse effects of climate change.
3. The adaptation efforts of developing country Parties shall be recognized, in accordance with the modalities to be adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement at its first session.
4. Parties recognize that the current need for adaptation is significant and that greater levels of mitigation can reduce the need for additional adaptation efforts, and that greater adaptation needs can involve greater adaptation costs.
5. Parties acknowledge that adaptation action should follow a country-driven, Male and Female responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate.
6. Parties recognize the importance of support for and international cooperation on adaptation efforts and the importance of taking into account the needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change.
7. Parties should strengthen their cooperation on enhancing action on adaptation, taking into account the Cancun Adaptation Framework, including with regard to:

8. Sharing information, good practices, experiences and lessons learned, including, as appropriate, as these relate to science, planning, policies and implementation in relation to adaptation actions;
9. Strengthening institutional arrangements, including those under the Convention that serve this Agreement, to support the synthesis of relevant information and knowledge, and the provision of technical support and guidance to Parties;
10. Strengthening scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision-making;
11. Assisting developing country Parties in identifying effective adaptation practices, adaptation needs, priorities, support provided and received for adaptation actions and efforts, and challenges and gaps, in a manner consistent with encouraging good practices; and
12. Improving the effectiveness and durability of adaptation actions.
13. United Nations specialized organizations and agencies are encouraged to support the efforts of Parties to implement the actions referred to in paragraph 7 of this Article, taking into account the provisions of paragraph 5 of this Article.
14. Each Party shall, as appropriate, engage in adaptation planning processes and the implementation of actions, including the development or enhancement of relevant plans, policies and/or contributions, which may include:
 - a. The implementation of adaptation actions, undertakings and/or efforts;
 - b. The process to formulate and implement national adaptation plans;
 - c. The assessment of climate change impacts and vulnerability, with a view to formulating nationally determined prioritized actions, taking into account vulnerable people, places and ecosystems;
 - d. Monitoring and evaluating and learning from adaptation plans, policies, programmes and actions; and
 - e. Building the resilience of socioeconomic and ecological systems, including through economic diversification and sustainable management of natural resources.
15. Each Party should, as appropriate, submit and update periodically an adaptation communication, which may include its priorities, implementation and support needs, plans and actions, without creating any additional burden for developing country Parties.
16. The adaptation communication referred to in paragraph 10 of this Article shall be, as appropriate, submitted and updated periodically, as a component of or in conjunction with other communications or documents, including a national

adaptation plan, a nationally determined contribution as referred to in Article 4, paragraph 2, and/or a national communication.

17. The adaptation communications referred to in paragraph 10 of this Article shall be recorded in a public registry maintained by the secretariat.
18. Continuous and enhanced international support shall be provided to developing country Parties for the implementation of paragraphs 7, 9, 10 and 11 of this Article, in accordance with the provisions of Articles 9, 10 and 11.
19. The global stocktake referred to in Article 14 shall, inter alia:
 - a. Recognize adaptation efforts of developing country Parties;
 - b. Enhance the implementation of adaptation action taking into account the adaptation communication referred to in paragraph 10 of this Article;
 - c. Review the adequacy and effectiveness of adaptation and support provided for adaptation; and
 - d. Review the overall progress made in achieving the global goal on adaptation referred to in paragraph 1 of this Article.

Research on climate change adaptation has been ongoing since the 1990s. The number and variety of subtopics has greatly increased since then. And Adaptation has become an established policy area in the 2010s.

The Global Goal on Adaptation was established under the Paris Agreement. The specific targets and indicators for the Global Goal are in development as of 2023. It will support the long-term adaptation goals of the governments that are parties to the agreement. It also aims to fund support for the most vulnerable countries' adaptation needs in the context of the 1.5/2°C goal. It has three core components. These are reducing vulnerability to climate change, enhancing adaptive capacity, and strengthening resilience.

During 2010, the Adaptation Committee (AC) have been established as the principle body under the convention, and the UN system, this Committee comprehensively addresses Adaptation, to promote enhanced action the subject, raising the profile of Adaptation and shining a light on the ways parties and actors to increase their Adaptation ambition.

The growing urgency to adapt to the impacts of climate change has prompted significant growth in the number of institutions, bodies, mechanisms, and other instruments under the UNFCCC process that support Parties in advancing adaptation action.

16.1 What are the working bodies for Adaptation?

The UNFCCC has set up constituted bodies and workstreams relevant to progressing adaptation responses and enhancing societal and environmental resilience.

1. The Least Developing Countries Expert Group:

The Least Developed Countries Expert Group (LEG) was established in 2001, and is currently mandated to provide technical guidance and support to the LDCs on the process to formulate and implement national adaptation plans (NAPs), the preparation and implementation of the national adaptation programmes of action (NAPAs) and the implementation of the LDC work programme. The LEG is also mandated to provide technical guidance and advice on accessing funding from the Green Climate Fund (GCF) for the process to formulate and implement NAPs, in collaboration with the GCF secretariat. Furthermore, the LEG is mandated to engage a wide range of organizations in implementing its work programme. The LEG meets twice a year to develop and review progress on the implementation of its work programme.

2. The Least Developed Countries Fund (LDCF):

It was established to support a work programme to assist Least Developed Country Parties (LDCs) carry out, inter alia, the preparation and implementation of national adaptation programmes of action (NAPAs). The Global Environment Facility (GEF), as an operating entity of the Financial Mechanism of the Convention, has been entrusted to operate this Fund through decision 27/CP.7.

3. Adaptation Committee:

As part of the Cancun Adaptation Framework, Parties established the Adaptation Committee (AC) to promote the implementation of enhanced action on adaptation in a coherent manner under the Convention and the Paris Agreement.

4. Facilitative Working Group (FWG) of the Local Communities and Indigenous Peoples Platform (LCIPP)

Facilitative Working Group (FWG) of the Local Communities and Indigenous Peoples Platform (LCIPP) is a constituted body that was established at COP 24 in Katowice, December 2018.

The body was established to further operationalize the LCIPP and facilitate the implementation of its three functions related to knowledge, capacity for engagement, and climate change policies and actions (see decision 2/CP.23, paragraph 6 for more detail on the functions). In so doing, the FWG collaborates with other bodies under and outside the Convention, as appropriate, to enhance the coherence of the actions of the Platform under the Convention. The UNFCCC secretariat supports and facilitates the work of the body.

5. Adaptation Communications (Adcoms):

Adaptation Communications (Adcoms) were established by Article 7, paragraphs 10 and 11, of the Paris Agreement. Each Party should submit and update periodically an adaptation communication, which may include information on its priorities, implementation and support needs, plans and actions. AdComs aim to strengthen adaptation action and support for

developing countries, provide input to the global stocktake, and enhance learning and understanding of adaptation needs and actions.

Adaptation Communications and Implementations:

A. NAPA:

The United Nations Framework Convention on Climate Change (UNFCCC) established the national adaptation Programme of Action (NAPA) process as a way to facilitate adaptation in least developed countries (LDCs), during 2001.

NAPAs was mainly to address urgent and immediate needs of the LDCs, The NAPA experienced number of challenges with processes where national planning relies on global funding. Despite the focus on “country driven” identification of priorities, national priorities could have shifted if and when funds for implementation become available.

B. NAP:

The United Nations Framework Convention on Climate Change (UNFCCC) established the national adaptation plan (NAP) process as a way to facilitate adaptation planning in least developed countries (LDCs) and other developing countries.

NAPs can enable countries to assess their vulnerabilities, mainstream climate change risks, and address adaptation. The COP also acknowledged that, because of their lower level of development, climate change risks magnify development challenges for LDCs. It recognized the need to address adaptation planning in the broader context of sustainable development planning.

6. The Adaptation Knowledge Portal:

It is an online resource of the UNFCCC Knowledge-to-Action Hub for Climate Adaptation and Resilience (also called the Nairobi work programme (NWP)). The Adaptation Knowledge Portal provides free and open access to adaptation knowledge resources. The portal provides information on the NWP's network of over 400 leading and diverse partner organizations, as well as engagement opportunities.

The Adaptation Knowledge Portal builds on the contributions of policy makers, practitioners and researchers to offer informed and credible adaptation knowledge and learning.

What have countries agreed to do?

All Parties to the Paris Agreement committed to strengthening the global response to climate change by increasing the ability of all to adapt and build resilience, and reduce vulnerability.

16.2 The timeline for Adaptation:

COP1 – Berlin 1995: Berlin Mandate on Mitigation and approached on adaptation:

The Berlin Mandate agreed on three stages approach to Adaptation:

- Stage I: Identification of particularly vulnerable areas and appropriate policy options.
- Stage II: Implementation of measures to prepare for adaptation.
- Stage III: Implementation of measures to facilitate adaptation, including insurance.

Financing in that time targeted Stage 1, and agreed to define later the financing of the other stages.

COP7 – Marrakech 2001: Moving Planning and Pilot Implementations – LDC support (NAPAs, LEG, LDCF, SCCF, and Adaptation Fund):

The Marrakesh Ministerial Declaration: The need for joint work between the Rio 3 conventions (UNFCCC, CBD, UNCCD) should continue to be explored through various channels, in order to achieve sustainable development and work on poverty, land degradation, access to water and food and human health remain at the centre of global attention. And as the Declaration mainly focused on the Capacity Building and the scope of needed work, especially with the Developing Countries, Capacity building for implementation of adaptation measures was highlighted as an area to further work .

- The Least Developed Countries Expert Group LEG was established in 2001, and is currently mandated to provide technical guidance and support to the Least Developing Countries LDCs on the process to formulate and implement national adaptation plans NAPAs. The LEG is also mandated to provide technical guidance and advice on accessing funding from the Green Climate Fund (GCF) for the process to formulate and implement NAPAs, in collaboration with the GCF secretariat. Furthermore, the LEG is mandated to engage a wide range of organizations in implementing its work programme.00
- The preparation and implementation of the national adaptation programmes of action NAPAs which is a workstream under the UNFCCC to support LDCs with the identification and implementation of urgent adaptation needs.
- And the implementation of the LDC work programme.

COP11 – CMP1 Montreal 2005: Nairobi Work Programme:

- Agreed on provisions to operationalize the LDCF to support the implementation of NAPAs, providing guidance with regards to priority areas, and provisions on full-cost funding and a co-financing scale (Decision 3/CP.11).
- Nairobi Work Programme (NWP) was established in Montreal 2011 under the SBSTA, and finalized the year next, to engage non-parties stakeholders and gather share information and support adaptation planning and implementation, The

Adaptation Knowledge Portal was launched under the NWP to provide a range of tools and resources on adaptation.

COP13 – CMP3 Bali 2007: Scaling up Implementations Bali Action Plan:

- The Adaptation Fund was established to help implement NAPA's and support enhanced action on adaptation in all developing countries.
- Also this COP worked on building blocks for future climate regime between shared vision, mitigation, adaptation, technology, and financial resources.

COP16 – CMP6 Cancun 2010: Moving towards Comprehensive Adaptation Cancun Adaptation Framework:

- Adaptation Committee was established.
- Cancun Adaptation Framework.

And it invited Parties to strengthen and, where necessary, establish regional adaptation centres and networks.

- NAP process was introduced under the Cancun Adaptation Frame Work in 2010 as a continuous, progressive, and iterative process to identify medium- and long-term adaptation needs; and develop and implement strategies and programmes to address those needs.
- Work Programme was established to address Loss and Damage.
- Request for the Developed Countries to fund and support Developing Countries.

COP17 – CMP7 Durban 2011: Moving towards New Agreement to combat Climate Change:

- future treaty were to be defined by 2015 and become effective in 2020.[16] The agreement, referred to as the "Durban Platform for Enhanced Action", was notable in that for the first time it included developing countries such as China and India, as well as the US which had refused to ratify the Kyoto Protocol.
- The terms of the Durban Platform were ultimately met following the successful negotiation of the Paris Agreement at the 2015 United Nations Climate Change Conference in Paris, France.
- Green fund, the conference led to agreement on a management framework for a future Green Climate Fund. The fund is to distribute US\$100bn per year to help poor countries adapt to climate impacts.

COP19 – CMP9 Warsaw 2013: Addressing Warsaw International Mechanism:

Addressing loss and damage associated with impacts of climate change, including extreme events and slow onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change.

COP21 – CMP11 Paris 2015: Paving the way for increased ambition PA:

- Global Stocktake which revisits the national goals for each party to update and enhance them every five years beginning 2023.
- Global goal on adaptation: The Paris Agreement aims to strengthen the global climate change response by increasing the ability of all to adapt to adverse impacts of climate change and foster climate resilience. **the goal is:**
 1. To enhance adaptive capacity and resilience,
 2. To reduce vulnerability, with a view to contributing to sustainable development,
 3. And ensuring an adequate adaptation response in the context of the goal of holding average global warming well below 2 degrees C and pursuing efforts to hold it below 1.5 degrees C.
- Transparency framework: The Agreement established this frame to improve the understanding of climate change and the transparency of actions. In this context, Parties should provide information related to climate change impacts and adaptation.

COP24 – CMP14/CMA1-3 Katowice 2018: Setting the rules of implementation finalizing PA guide lines:

- Facilitative Working Group (FWG) of the Local Communities and Indigenous Peoples Platform (LCIPP) is a constituted body that was established at COP 24 in Katowice, December 2018.
- The Polish presidency declared a **Forests for Climate policy** highlighting the important role of forests in solving climate problems
- Many contributions was made to the adaptation fund (Germany, Europe was pledged to increase the support as well, World Bank made big contributions as well).
- It was agreed the purpose of Adaptation Communications to:
 1. Increase visibility and profile of adaptation, and balance it with mitigation.
 2. Empower action and support for developing countries.
 3. Provide input for Global Stocktake.
 4. Enhance learning and understanding about adaptation needs and actions.
- BTRs Biennial Transparency Reports was agreed on, to deliver monitoring as well climate impacts and adaptation.

COP26 – CMP16/CMA3 Glasgow 2021:

At COP26, countries adopted the Glasgow Climate Pact, which calls for a doubling of finance to support developing countries in adapting to the impacts of climate change and building resilience. Glasgow also established a work programme to define a global goal on adaptation, which will identify collective needs and solutions to the climate crisis already affecting many countries. During:

- Parties agreed to end deforestation by 2030, improving on a similar 2014 agreement. Signatories of the 2014 agreement, the New York Declaration on Forests, pledged to half deforestation by 2020 and end it by 2030, however in the 2014-2020 period deforestation increased.
- Urban climate adaptation, especially in low-income countries.
- Socioeconomic transformation in Agriculture to adapt and implement sustainable and smart agriculture.

16.2.1 What happened in COP27 – CMP17 CMA4 Sharm EL Sheikh 2022?

- The conference led to the first loss and damage fund being created, this was an immense milestone to achieve.
- Parties expectant of the Global stocktake Outcome to highlight the scale of adaptation efforts required, identify ways to enhance adaptation and monitoring and evaluation systems and to avoid maladaptation.
- Parties raised the need of a clear methodology on how to assess the gaps in the implementation of adaptation in Global stocktake, especially with the GGA delivering post the first Global stocktake outcomes, equally this issue was raised in the forward looking approach of the coming Global stocktake, with some Parties called for clear global targets that can inform the next round of NDCs in 2025. Additionally, some Parties expect that the Global stocktake Outcome should contribute to reviewing the overall progress made in achieving the global goal on adaptation.
- Regarding adaptation finance, Parties cited the AR6 and referenced the gap between climate finance for mitigation and that for adaptation, as well as the significant barriers to accessing different multilateral, regional and bilateral financing. They underscored that it was impossible to achieve the goals of the Paris Agreement without addressing this unprecedented financial gap in adaptation.

In Mobilizing Adaptation Outcomes: Achieving adaptation outcomes requires mobilizing partners and initiatives across the ecosystem towards these shared targets. Below the momentum behind these targets, as well as the actors and partners working towards outcomes. Sharm-El-Sheikh **Adaptation Agenda with Global 2030 Adaptation Outcome Targets:**

1. Food and Agriculture Systems Climate change poses significant risks to food and agriculture systems across the full value chain, suggested actions were discussed.
2. Water & Nature Systems Nature and water - and the communities that depend on them - are highly exposed and vulnerable to climate shocks.
3. Human Settlement Systems Human Settlements encompass places, spaces and networks made for humans, by humans, and to be used for human activity.

4. Coastal & Ocean Systems a vibrant, equitable and sustainable ocean economy is essential to the inclusive wellbeing of people around the world.
5. Infrastructure Systems Infrastructure systems - in particular energy and transport systems - are critical to human livelihoods, health and resilience to climate change.
6. Cross-cutting enablers: Planning and Finance Planning and finance play a critical role in closing the gaps on risk awareness and understanding, help improve decisions and allocate the resources necessary for implementing, accelerating, and realizing climate adaptation.

Achieving these adaptation outcomes will require substantial policy action and mobilization of funds.

16.2.2 What will happen in COP28 – CMP18 CMA5 Dubai 2023: Evaluation progress and increasing ambition?

- The United Nations will publish the first two-year assessment of global progress to slow down climate change **Global Stocktake**. The overview was established during COP26 in Glasgow and is scheduled to be repeated every five years.
- Parties highlighted (in COP27) the need to finalize a credible, robust, and implementable GGA framework, which includes countries priorities and needs, strong linking with provisions on Finance to support adaptation commitments, some parties suggested this frame to include science based indicators, targets, metrics and explore synergies between different adaptation activates.
- The High-Level Champions and the UNFCCC secretariat will be soon announcing the Marrakech Partnership and the Global Climate Action program for COP 28, which will be part of this full two-week thematic program.
- The COP28 Presidency has called for urgent action to strengthen global adaptation action across all levels to mitigate vulnerability and enhance resilience for communities, ecosystems, and economic sectors.
- In the speech of H.E. Sultan AlJaber the president of COP28, “COP28 will focus on four pillars” one of which is to focus on adaptation to protect the lives and livelihood.
- Governments at COP28 are due to adopt a framework for achieving the Paris Agreement’s global goal on adaptation. The GGA is intended to focus countries’ efforts to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change, but no clear definition of the goal is given in the Paris Agreement and little progress has been made to define it since. It is hoped that the new framework will both define the goal and offer ways to measure progress towards its achievement. This clarity should enable governments and relevant organizations to pursue and measure adaptation progress with greater focus, comparability and precision, including as part of the second GST.

- In the run-up to COP28, food systems and agriculture are receiving increasing diplomatic attention. The COP28 Food Systems and Agriculture Agenda was launched by the COP28 presidency and the UN Food Systems Coordination Hub in July. It calls on countries to align national food systems and agricultural policies with nationally determined contributions (NDCs) and national adaptation plans (NAPs), and to include targets for food system decarbonization into these and their national biodiversity strategies and action plans (NBSAPs).

17. ARTICLE 8 (LOSS AND DAMAGE)

1. Parties recognize the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage.
2. The Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts shall be subject to the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Agreement and may be enhanced and strengthened, as determined by the Conference of the Parties serving as the meeting of the Parties to this Agreement.
3. Parties should enhance understanding, action and support, including through the Warsaw International Mechanism, as appropriate, on a cooperative and facilitative basis with respect to loss and damage associated with the adverse effects of climate change.
4. Accordingly, areas of cooperation and facilitation to enhance understanding, action and support may include:
 - a. Early warning systems;
 - b. Emergency preparedness;
 - c. Slow onset events;
 - d. Events that may involve irreversible and permanent loss and damage;
 - e. Comprehensive risk assessment and management;
 - f. Risk insurance facilities, climate risk pooling and other insurance solutions;
 - g. Non-economic losses; and
 - h. Resilience of communities, livelihoods and ecosystems.
5. The Warsaw International Mechanism shall collaborate with existing bodies and expert groups under the Agreement, as well as relevant organizations and expert bodies outside the Agreement.

What is Loss and Damage?

Loss and damage normally refers to the destructive impacts of climate change that cannot be or have not been avoided by what is known as 'mitigation' (reducing greenhouse gas emissions) or 'adaptation' (adjusting to and building resilience against current and future

climate change impacts). This can refer to the loss of heritage sites, the loss of forests and the general loss of ecosystems.

The term 'Loss and Damage' is commonly used in reference to international climate negotiations on the topic and its surrounding politics. It also refers to plans and policies focused on addressing loss and damage.

Loss and damage is often divided into economic loss and damage, which includes harms to livelihoods and property, and non-economic loss and damage, which includes loss of life and losses to biodiversity and cultural heritage.

\$1 trillion projected economic cost of loss and damage by 2050. Also, The economies of the V20 – a coalition of the world's most climate-vulnerable countries – have lost an estimated \$525 billion in the last 20 years due to the impacts of climate change. These costs make it harder for these states to recover, prepare for future events or reduce their current greenhouse gas emissions.

Loss and damage encompasses destruction caused by extreme weather events, which are becoming more frequent and severe due to climate change, as well as harms arising from slow-onset events, such as the melting of glaciers.

Many countries that suffer severe loss and damage – such as the least developed countries and the small island states – are least responsible for global carbon emissions both currently and historically.

In the past, developed countries have been wary of discussing Loss and Damage finance largely because they have feared they may become legally obligated to provide vast sums in compensation to climate-vulnerable states.

Large emerging economies account for an increasing share of global greenhouse gas emissions. These countries support calls for loss and damage finance in the climate talks but are increasingly coming under pressure to contribute funding themselves, given their growing emissions and increasing economic strength.

17.1 Important mechanisms for Loss and Damage:

- **Warsaw International Mechanism (WIM) for Loss and Damage:**

The COP established the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (Loss and Damage Mechanism), to address loss and damage associated with impacts of climate change, including extreme events and slow onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change at COP19 (November 2013) in Warsaw, Poland.

The implementation of the functions of the Loss and Damage Mechanism will be guided by the Executive Committee under the guidance of the COP.

Functions of the Loss and Damage Mechanism The Loss and Damage Mechanism fulfills the role under the Convention of promoting implementation of approaches to address loss and damage associated with the adverse effects of climate change.

- **Loss and Damage Fund:**

The establishment of a Loss and Damage Fund was, for many, the highlight of the United Nations Climate Conference (COP 27) and the culmination of decades of pressure from climate-vulnerable developing countries. The fund aims to provide financial assistance to nations most vulnerable and impacted by the effects of climate change.

17.2 The timeline for Loss and Damage:

COP3, Kyoto 1997:

After lengthy disputes, the Kyoto Protocol is established at COP3 and commits developed countries to cutting their emissions, on the basis that they are better equipped to do so and also historically responsible for climate change.

The protocol is mainly focused on mitigation, although it also launches the Adaptation Fund to finance adaptation projects in developing countries. There is also a mention of “insurance” as a potential mechanism for minimizing the “adverse effects of climate change”.

COP7, Marrakech 2001:

At CoP7, parties reached an agreement on “The Marrakesh Accords” that is a set of agreements reached at the 7th Conference of the Parties (COP7) to the United Nations Framework Convention on Climate Change, held in 2001, on the rules of meeting the targets set out in the Kyoto Protocol. The separate Marrakech Declaration of 15 April 1994, manifesting the Uruguay Round trade agreements and establishing the World Trade Organization, was also concluded and signed in Marrakech, Morocco.

COP10, Buenos Aires 2004:

Informally dubbed an “adaptation COP”, COP10 in Buenos Aires, Argentina, results in more notable outcomes to help developing countries in particular to prepare for climate impacts, as the scientific evidence for such impacts had begun to mount.

The resulting Buenos Aires programme of work on adaptation and response measures is broadly welcomed, but it is bittersweet. Language in Article 4.8 of the UNFCCC means that the issue of adaptation has become wrapped up with so-called “response measures” – meaning compensation for oil-producing countries as demand falls for their products.

COP11 CMP1, Montreal 2005:

COP11 in Montreal, Canada, sets the ball rolling for future action on adaptation and loss and damage with a “dialogue on long-term cooperative action” – which paves the way for the Bali action plan two years later. One component of this is “addressing action on adaptation”.

Meanwhile, Bangladesh, on behalf of the least developed countries (LDCs), calls for compensation for damages caused by climate change, in a foreshadowing of later conversations around loss and damage.

COP13 CMP3, Bali 2007:

COP13 on the Indonesian island of Bali marks the first time in the history of UN talks that “loss and damage” makes it into a negotiated text.

The conference as a whole focuses on discussing a successor agreement to the Kyoto Protocol. Among the priorities listed in the resulting Bali Action Plan is a decision to provide “enhanced action on adaptation”, establishing adaptation as a separate “pillar” of negotiations, independent from mitigation.

This includes not only strategies to help countries reduce climate risk, such as insurance, but, more explicitly, “means to address loss and damage”.

COP14 CMP4, Poznań 2008:

With adaptation now being discussed at a high level in the UN process, COP14 in Poznań, Poland, sees (Alliance of Small Island States) AOSIS make another significant loss-and-damage intervention.

The group proposes a new mechanism to provide insurance schemes, risk management and compensation to vulnerable countries, to address the “progressive negative impacts of climate change”, such as sea-level rise.

COP15 CMP15, Copenhagen 2009:

In submissions suggesting text for the outcome of COP15 in Copenhagen, Denmark, the African Group joins AOSIS in calling for an “international mechanism to address the unavoidable loss and damage”.

India, Brazil, Bangladesh, Costa Rica and Panama also submit text concerning loss and damage, showing that this is no longer merely a small-island issue.

However, despite hopes of a new plan to succeed Kyoto, Copenhagen ultimately ends in disarray amid clashes between some of the major emitters and developing nations. References to a loss-and-damage mechanism are removed from the resulting text.

COP16 CMP6, Cancún 2010:

Parties agree on a two-year work programme on loss and damage. The text includes discussions of risk reduction, rehabilitation and insurance, but not compensation.

More broadly, COP16 sees a significant increase in adaptation action, with agreement on a Cancún Adaptation Framework. This includes elements that would later find their way into loss-and-damage decisions, including mentions of “early warning systems” and insurance.

COP17 CMP7, Durban 2011:

Despite the developed-versus-developing split that has emerged on the issue, the Group of 77 and China (G77), which represents the interests of developing country parties in the UN climate process, cannot agree on what they want from the work programme at COP17 in Durban, South Africa.

Nevertheless, sub-groups within the G77, notably AOSIS and the African Group, support each other in calls for a “mechanism” within the UN process to address loss and damage. Ultimately, the final text that emerges includes a reference to such a mechanism.

COP18 CMP8, Doha 2012:

Breakthrough comes at COP18, with the resulting Doha decision marking the first time that loss and damage is formally established as part of the architecture of the Convention, highlighting the “fundamental role of the Convention in addressing loss and damage”.

COP19 CMP9, Warsaw 2013:

The Warsaw International Mechanism on Loss and Damage (WIM) was established at COP19 in Poland, fulfilling the previous year’s pledge.

This mechanism includes functions to boost loss-and-damage understanding, strengthen collaborations and enhance “action and support”. However, the decision only “requests” that developed countries provide financial assistance.

COP21 CMP11, Paris 2015:

At the Paris Agreement – loss and damage appears in the text as the “third pillar” of climate action, alongside cutting emissions and adapting to climate change.

COP22 CMP12 CMA Marrakech 2016:

It included the first review of the Warsaw International Mechanism (WIM), which, having been established three years earlier at COP19, has now been brought under the Paris Agreement.

COP24 CMP14 CMA1-3 Katowice 2018:

CoP24 brought about the “rulebook” that will be used to implement the Paris Agreement. Developing countries see some success as they manage to push for the recognition of loss and damage in the rules.

First, loss and damage is added as a component of the “global stocktake”, which tracks progress towards Paris Agreement goals. Second, it is also included in the outcome on “transparency”, stating that parties “may provide, as appropriate”, information about loss and damage when reporting on climate metrics.

COP25 CMP15 CMA2 Madrid 2019:

Calls for loss-and-damage finance persist at COP25 in Madrid, Spain, as the second review of the WIM gets underway.

A final important outcome is the launch of the Santiago Network, named after the capital of Chile, which holds the COP presidency. This body is proposed to help provide technical support directly to developing countries. Debates over getting it up and running will continue in the following years.

COP26 CMP16 CMA3 Glasgow 2021:

CoP26 sees loss and damage develop into a significant issue. Much of the excitement around the topic comes as the G77 once again unite in an ultimately unsuccessful bid to establish a finance facility for loss and damage.

17.2.1 COP27 CMP17 CMA4, Sharm el-Sheikh 2022:

In Sharm El Sheikh, Egypt, an agreement on the Loss and damage Fund was reached and for the first time a milestone as this (Loss and Damage Fund) was established, under which rich countries could compensate poor countries for damage caused by climate change.

For the fund to be effective, the root cause of climate change must be tackled – and that involves reducing emissions. Unless emissions are drastically reduced, more and more countries will face the devastating effects of climate change. The world urgently needs to find more resources for mitigation, adaptation and loss and damage so that climate change will not erode humanity's chances to deliver on the Sustainable Development Goals.

17.2.2 COP28 CMP18 CMA5 Expectations, Dubai 2023:

Many Parties highlighted the importance of operationalizing the loss and damage funding arrangements and funds at COP 28. While some Parties were of the view that funding for the loss and damage fund needs to be designated as an operating entity under the Financial Mechanism of the Convention that ensures new, additional and predictable public funding, other Parties suggested that the fund should be part of a more comprehensive arrangement that includes funds, institutions and processes within and outside the UNFCCC framework.

Parties recognized the need to select the host organization for the Santiago Network, constitute the advisory body and operationalize the secretariat in 2023.

18. ARTICLE 9 (CLIMATE FINANCE):

1. Developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention.
2. Other Parties are encouraged to provide or continue to provide such support voluntarily.
3. As part of a global effort, developed country Parties should continue to take the lead in mobilizing climate finance from a wide variety of sources, instruments and channels, noting the significant role of public funds, through a variety of actions, including supporting country-driven strategies, and taking into account the needs and priorities of developing country Parties. Such mobilization of climate finance should represent a progression beyond previous efforts.
4. The provision of scaled-up financial resources should aim to achieve a balance between adaptation and mitigation, taking into account country-driven strategies, and the priorities and needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change and have significant capacity constraints, such as the least developed countries and small island developing States, considering the need for public and grant-based resources for adaptation.
5. Developed country Parties shall biennially communicate indicative quantitative and qualitative information related to paragraphs 1 and 3 of this Article, as applicable, including, as available, projected levels of public financial resources to be provided to developing country Parties. Other Parties providing resources are encouraged to communicate biennially such information on a voluntary basis.
6. The global stocktake referred to in Article 14 shall take into account the relevant information provided by developed country Parties and/or Agreement bodies on efforts related to climate finance.
7. Developed country Parties shall provide transparent and consistent information on support for developing country Parties provided and mobilized through public interventions biennially in accordance with the modalities, procedures and guidelines to be adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement, at its first session, as stipulated in Article 13, paragraph 13. Other Parties are encouraged to do so.
8. The Financial Mechanism of the Convention, including its operating entities, shall serve as the financial mechanism of this Agreement.
9. The institutions serving this Agreement, including the operating entities of the Financial Mechanism of the Convention, shall aim to ensure efficient access to financial resources through simplified approval procedures and enhanced readiness support for developing country Parties, in particular for the least

developed countries and Small Island developing States, in the context of their national climate strategies and plans.

18.1 General Overview

As a way to increase the level of ambition for the implementation of mitigation and adaptation actions in developing countries, the Paris Agreement introduces a broader understanding of climate finance, which historically had been limited to public financial flows from developed to developing country parties. In this regard, Article 9 is in line with Article 2.1(c) that sets 'making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development' as the third objective of the Agreement. In addition, obligations for the provision and the mobilization of climate finance were divided into different provisions within Article 9 and are treated in a differentiated manner.

Article 9 is supplemented by the quantified and firm financial commitment established by paragraph 53 of the accompanying Decision 1/CP.21. The Paris Agreement and Decision 1/CP.21 build on the institutions that have been set up under the Convention by previous decisions of the Conference of the Parties (COP) since 1994. Therefore, the Financial Mechanism of the Convention (FM) including its operating entities will serve the Agreement.

Finally, in order to inform and to assess climate finance, the Paris Agreement establishes a regime of communications on climate finance with ex ante and ex post components, and includes climate finance and support in the global stocktake. The obligations on communication for developed country parties and encouragements for other parties in Article 9 are supplemented by provisions in Articles 13 and 14, which together build the broader climate finance information regime.

1. Provision and mobilization (Article 9.1–9.3)

Article 9.1

The text that was finally agreed as Article 9.1 establishes a solid obligation for developed country parties to provide financial resources to developing countries. It is worth noting that the phrase 'in continuation of their existing obligations under the Convention' may be interpreted as a restatement of the obligation of developed country parties to provide financial resources to developing country parties, as stipulated in Article 4.3 of the Convention. In other words, it could be argued that Article 9.1 is not creating a new obligation for any party

Article 9.2

Article 9.2 complements Article 9.1 by stating that '[o]ther Parties are encouraged to provide or continue to provide such support voluntarily'. The resulting text neither carries a legal obligation nor qualifies other parties based on their willingness and/or capacity to provide

public financial resources, but rather establishes a non-binding soft indication of a desired action.

Article 9.3

Paragraph 3 is probably the most significant paragraph in Article 9. It acknowledges the broadening pool of public actors called to mobilize climate finance ‘from a wide variety of sources, instruments, and channels’. It also refers to a ‘variety of actions’ to mobilize financial resources, which hints to the fact that mobilization is not only financial resources per se but also public policies and strategies to shift public investments and/or leverage private investments. This concept of the variety of actions was introduced before Paris by the European Union (EU) when referring to the pyramid of action, which aimed to identify different kinds of actions from different countries, depending on their level of capacity.

2. Subject of finance and prioritization (Article 9.4)

Article 9.4

The concept of ‘balance between adaptation and mitigation’ is not a quantifiable figure, and as such it will be rather difficult to measure its achievement and compliance. Balance might mean different things for different parties, and might be achieved in each developing country party differently depending on their needs.

However, Article 9.4 recognizes that the financial resources provided for mitigation currently surpass by far those for adaptation. It also restates a reality that is very much present today as it was present twenty years ago when the Convention was drafted, namely that the need for adaptation is more pronounced and urgent in developing country parties particularly vulnerable to the adverse effects of climate change.

3. Information and assessment (Article 9.5–9.7)

Ex ante communication (Article 9.5)

For the first time an international climate agreement establishes an obligation for parties to communicate information on projected climate finance, or what is called ex ante communication, both quantitatively and qualitatively. So far, Article 9.5 only sets this obligation for developed country parties and leaves it up to the discretion of other parties to also communicate information. Just to be clear, this is an obligation to communicate information and not an obligation to establish individual financial targets.

Global stocktake (Article 9.6)

Article 9.6 needs to be read in conjunction with Article 14, particularly given the fact that there are no further specifications to Article 9.6 in the finance-related paragraphs of Decision 1/CP.21. However, paragraph 99 requests the Ad Hoc Working Group on the Paris Agreement (APA) to ‘identify the sources of input for the global stocktake’ for CMA 1, which paragraph

99(a)(iii) specifies would include 'information on ... the mobilization and provision of support'. In addition, Article 7.14(c) commissions the global stocktake to 'review the adequacy and effectiveness of adaptation and support provided for adaptation'.

Transparency of support (Article 9.7)

Article 9.7 combined with Article 13 addresses the ex post reporting obligations on support to developing country parties, both provided and mobilized through public interventions. The obligation established by this Article only applies directly to developed country parties. However, mirroring what was established in Article 9.2 and 9.3, other parties, different to developed country parties, that have provided and/or mobilized support are encouraged to provide information on that support. Article 13.9 confirms this, as it sets out the obligation for developed country parties ('shall') and the softer obligation for other parties providing support ('should') to provide information.

Institutions: Financial Mechanism, Adaptation Fund and Standing Committee on Finance (Article 9.8)

Article 9.8 and the accompanying paragraphs in Decision 1/CP.21 establish the institutional architecture that will support the CMA, and provide a pragmatic solution by mandating that the FM also serves the Paris Agreement. The accompanying paragraphs to this article in Decision 1/CP.21 provide additional clarity in terms of which institutions in addition to the operating entities of the Financial Mechanism will also serve the Agreement, namely the LDCF, the SCCF, and the SCF.

Access to climate finance (Article 9.9)

Article 9.9 mandates the operating entities of the FM to tailor their procedures, support efforts, and coordination mechanisms in such a way that those countries with problems in accessing available funding and getting projects approved do not get disadvantaged vis-à-vis other developing country parties better prepared and ready to access the same pool of resources. Decision 1/CP.21 paragraph 64 urges other institutions serving the Paris Agreement to do so as well.

18.2 The timeline for Climate Finance:

COP1, Berlin, 1995:

- Called for developed country Parties to provide financial resources and transfer technologies to developing country Parties to assist them in implementing the Convention. It also established the Ad Hoc Group on Financial Resources and the Transfer of Technology (AGF) to negotiate a protocol to the Convention on these issues.

- Requested the Executive Secretary to prepare a report on the financial implications of the implementation of the Convention for developing country Parties.

COP2, Geneva 1996:

- Established the Berlin Mandate, The Berlin Mandate included a provision on the financial mechanism, which called for developed countries to provide financial assistance to developing countries to help them implement the Convention.
- Reaffirmed the decision taken at COP1 on the financial resources and the transfer of technology.
- Provided guidance to the GEF on the implementation of its role as the financial mechanism of the UNFCCC.
- Requested the Executive Secretary to prepare a revised report on the financial implications of the implementation of the Convention for developing country Parties.

COP3, Kyoto 1997:

- Adopted the Kyoto Protocol, the Kyoto Protocol also includes a number of provisions on finance, including:
 1. Developed countries are to provide financial resources to developing countries to assist them in implementing the Kyoto Protocol.
 2. The financial resources are to be provided through a variety of sources, including the Global Environment Facility (GEF) and bilateral and multilateral channels.
 3. The financial resources are to be provided in a transparent and accountable manner.
- Provided guidance on the implementation of the financial mechanism of the Kyoto Protocol. It also established the Clean Development Mechanism (CDM) and the Joint Implementation (JI) mechanisms, which are two market-based mechanisms that allow developed countries to meet their Kyoto Protocol commitments by investing in emissions reduction projects in developing countries.

COP4, Buenos Aires 1998:

The parties in COP 4 adopted a number of decisions related to finance:

- Provided guidance to the Global Environment Facility (GEF) on the implementation of its role as the financial mechanism of the Kyoto Protocol, and called for the GEF to provide financial resources to developing countries in a transparent and accountable manner.

- Established a review process for the financial mechanism of the Kyoto Protocol. The review is to take place every four years, and is to assess the effectiveness of the financial mechanism in meeting the needs of developing countries.
- Called for developed countries to provide financial resources to developing countries to assist them in implementing the Kyoto Protocol, and for the financial resources to be provided in a balanced way between adaptation and mitigation.

COP5, Bonn 1999:

The parties in COP 5 adopted a number of decisions related to finance:

- Financial and technical support for capacity-building for countries with economies in transition for implementing the Convention and to prepare for participation in activities under Articles 5, 6, 7 and 17 of the Kyoto Protocol should be provided through bilateral and multilateral channels and the private sector, as appropriate;
- Provides guidance on the provision of financial and technical support for non-Annex I national communications.

COP6, The Hague 2000:

- Created the adaptation fund as a new fund and created a Convention fund as a new window, both under the GEF.
- Agreed to increase resources for climate change funding, through other channels. They agree that the sum total should reach the level of one billion US\$ on an annual basis, as soon as possible.
- Decided to establish a Climate Resources Committee at COP7, to give policy advice to existing financing channels and institutions such as the GEF, Regional Development banks, the World Bank, UNDP and other multilateral institutions.

COP7, Marrakech 2001:

- Established the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF), as two supplementary funds to the Global Environment Facility (GEF).

COP8, New Delhi 2002:

Decided that the Global Environment Facility, as an operating entity of the financial mechanism, should:

- Provide financial resources at an appropriate level to cover the requirements of the guidelines annexed to decision 17/CP.8, in an expedited manner.
- Continue to provide funding to Parties that have initiated the process of preparing second national communications.

- Provide financial resources relating to transfer of technologies to non-Annex I Parties, in particular the least developed country Parties and the small island developing States among them.

COP9, Milan 2003:

- Provided guidance on the operation of the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF), which are two supplementary funds to the GEF.
- Called for the SCCF and the LDCF to provide financial resources to developing countries in a balanced way between adaptation and mitigation.

COP12 CMP2, Nairobi 2006:

- Requested the Global Environment Facility to give due priority to adaptation activities in accordance with the guidance provided by the Conference of the Parties, and to continue its promotion of energy efficiency projects;

COP14 CMP4, Poznań 2008:

- Reviewed the financial mechanism of the Convention, which includes the Global Environment Facility (GEF) and the Special Climate Change Fund (SCCF). The decision calls for the GEF to continue to serve as the financial mechanism of the Convention, and for the SCCF to be strengthened and scaled up.
- Called for developed countries to provide adequate and predictable financial resources and investment to developing countries to support their climate mitigation and adaptation actions. The decision also calls for the establishment of new and innovative financing mechanisms.

COP15 CMP5, Copenhagen 2009:

- Adopted the Copenhagen Accord, which included a number of provisions on finance, including
- Developed countries providing new and additional resources, including forestry and investment, towards the urgent implementation of climate change actions in developing countries.
- Developed countries undertaking a goal of mobilizing jointly \$100 billion a year by 2020 to address the needs of developing countries.
- Establishing a Green Climate Fund to provide support to developing countries for climate change mitigation and adaptation.

COP16 CMP6, Cancún 2010:

Adopted the Cancun Agreements, which included a number of provisions on finance, including:

- The establishment of the Green Climate Fund (GCF) as the operating entity of the financial mechanism of the Convention.
- The establishment of a Standing Committee on Finance to monitor the implementation of the financial commitments of the Convention.
- The establishment of a Technology Mechanism to promote technology development and transfer to support climate change mitigation and adaptation.
- The provision of financial resources to developing countries to support their climate change mitigation and adaptation actions, including through the GCF, the Global Environment Facility (GEF), and the Special Climate Change Fund (SCCF).

COP17 CMP7, Durban 2011:

- Established the Durban Platform for Enhanced Action, which is a negotiating process that was tasked with developing a new climate agreement to replace the Kyoto Protocol. The decision also included a number of provisions on finance, including:
 1. A commitment by developed countries to provide predictable and adequate financial resources to developing countries to support their climate change mitigation and adaptation actions.
 2. A call for the Standing Committee on Finance to develop a process for reviewing the adequacy and effectiveness of the financial resources being provided to developing countries.
- Designated the Green Climate Fund as the operating entity of the financial mechanism of the Convention. The decision also established the Board of the Green Climate Fund and provided guidance on the fund's operations.

COP18 CMP8, Doha 2012:

Established the Doha Climate Gateway, which was a two-year work plan to advance the negotiations on the new climate agreement that was eventually adopted in Paris in 2015. The decision also included a number of provisions on finance, including:

- A commitment by developed countries to continue to provide financial resources to developing countries to support their climate change mitigation and adaptation actions.
- A call for the Green Climate Fund to be fully capitalized by the end of 2013.
- A call for the Standing Committee on Finance to develop a process for reviewing the adequacy and effectiveness of the financial resources being provided to developing countries.

COP19 CMP9, Warsaw 2013:

- Established the Warsaw international mechanism for loss and damage associated with climate change impacts. The mechanism is intended to provide financial support to developing countries to address the losses and damages that they are experiencing as a result of climate change.
- Called for developed countries to scale up their long-term climate finance to developing countries. The decision also called for the Green Climate Fund to play a leading role in the mobilization and delivery of long-term climate finance.

COP20 CMP10, Lima 2014:

- Requested the Executive Committee of the Warsaw international mechanism to develop a workplan on, among other things, the identification of sources of finance for the mechanism.
- Provided guidance to the Green Climate Fund on a number of issues, including its investment policy and its approach to accreditation of implementing entities.

COP21 CMP11, Paris 2015:

Adopted the Paris agreement, and the parties in this regard have taken a number of decisions related to finance:

- Decided that, in the implementation of the Agreement, financial resources provided to developing country Parties should enhance the implementation of their policies, strategies, regulations and action plans and their climate change actions with respect to both mitigation and adaptation to contribute to the achievement of the purpose of the Agreement as defined in its Article 2;
- Decided that the Standing Committee on Finance shall serve the Agreement in line with its functions and responsibilities established under the Conference of the Parties;
- A goal of mobilizing jointly \$100 billion per year by 2020 and beyond from a wide variety of sources, instruments, and channels, including public, private, bilateral, multilateral, and alternative sources of finance, to support climate action in developing countries (Long-term climate finance).

COP22 CMP12 CMA1, Marrakech 2016:

- Adopted the terms of reference of the Standing Committee on Finance (SCF) under the Paris Agreement. The SCF is responsible for monitoring and reviewing the adequacy and effectiveness of the financial resources provided to developing countries to support their climate change mitigation and adaptation actions.
- Called for developed countries to scale up their climate finance to developing countries, with a view to achieving the goal of mobilizing jointly \$100 billion per year by 2020 and beyond. The decision also called for the private sector to play a greater role in mobilizing climate finance.

- Launched a process to review the long-term climate finance goal of \$100 billion per year by 2020 and beyond. The review is expected to be completed in 2023.

COP23 CMP13 CMA1–2, Bonn 2017:

- Provided guidance to the Standing Committee on Finance (SCF) on its work under the Paris Agreement. The guidance included, among other things, a call for the SCF to develop a framework for reviewing the adequacy and effectiveness of the financial resources provided to developing countries.
- Invited the Standing Committee on Finance to host a dialogue on the implementation of its commitment to integrate gender considerations into its work, emphasizing the relevance of gender-responsive access to finance in the implementation of climate action.

COP24 CMP14 CMA1–3, Katowice 2018

- Requested the Standing Committee on Finance to map, every four years, as part of its biennial assessment and overview of climate finance flows, the available information relevant to Article 2, paragraph 1(c), of the Paris Agreement, including its reference to Article 9 thereof;

In addition, during the COP 24 the High-level ministerial dialogue on climate finance underscored the urgent need to scale up the mobilization of climate finance, including through greater engagement of the private sector, to increase finance for adaptation, and to align financial flows with the objectives of the Paris Agreement and the United Nations Sustainable Development Goals;

COP25 CMP15 CMA2, Madrid, 2019

- The Chile/Madrid Time for Action decision was adopted, it called for urgent action on climate change including scale up climate finance to developing countries and to mobilize more private sector finance for climate action.
- Issues left unresolved included discussions on Article 6, common time frames, long-term finance, and transparency issues for the Paris Agreement, report of the Adaptation Committee, and the report of the Consultative Group of Experts.

COP26 CMP16 CMA3, Glasgow 2021:

- Launch of the Glasgow Financial Alliance for Net Zero (GFANZ), a coalition of over 450 financial institutions committed to aligning their portfolios with net zero emissions by 2050. GFANZ has the potential to mobilize trillions of dollars in private sector finance for climate action.
- Called upon multilateral development banks, other financial institutions and the private sector to enhance finance mobilization in order to deliver the scale of resources needed to achieve climate plans, particularly for adaptation, and

encourages Parties to continue to explore innovative approaches and instruments for mobilizing finance for adaptation from private sources;

- Emphasized the need to mobilize climate finance from all sources to reach the level needed to achieve the goals of the Paris Agreement, including significantly increasing support for developing country Parties, beyond USD 100 billion per year.

18.2.1 What Happened in COP 27 CMP 17 CMA 4, Sharm El Sheikh 2022?

- Established new funding arrangements for assisting developing countries that are particularly vulnerable to the adverse effects of climate change, in responding to loss and damage, including with a focus on addressing loss and damage by providing and assisting in mobilizing new and additional resources, and that these new arrangements complement and include sources, funds, processes and initiatives under and outside the Convention and the Paris Agreement;
- Called on developed countries to scale up their long-term climate finance to developing countries, with a view to doubling the share of adaptation in global climate finance flows by 2025. The decision also called for the GCF to play a leading role in the mobilization and delivery of long-term climate finance.
- Highlighting that about USD 4 trillion per year needs to be invested in clean energy technologies by 2030 to be able to reach net zero emissions by 2050,⁸ and that, furthermore, a global transformation to a low-carbon economy is expected to require an investment of at least USD 4– 6 trillion per year.
- Called for developed countries to scale up their long-term climate finance to developing countries, with a view to doubling the share of adaptation in global climate finance flows by 2025.
- Called for the private sector to play a greater role in mobilizing climate finance, including by aligning their investments with net-zero emissions and by providing financial products and services that support climate-resilient and low-carbon development.

19. ARTICLE 10 (TECHNOLOGY AND DEVELOPMENT TRANSFER):

1. Parties share a long-term vision on the importance of fully realizing technology development and transfer in order to improve resilience to climate change and to reduce greenhouse gas emissions.
2. Parties, noting the importance of technology for the implementation of mitigation and adaptation actions under this Agreement and recognizing existing technology deployment and dissemination efforts, shall strengthen cooperative action on technology development and transfer.
3. The Technology Mechanism established under the Convention shall serve this Agreement.

4. A technology framework is hereby established to provide overarching guidance to the work of the Technology Mechanism in promoting and facilitating enhanced action on technology development and transfer in order to support the implementation of this Agreement, in pursuit of the long-term vision referred to in paragraph 1 of this Article.
5. Accelerating, encouraging and enabling innovation is critical for an effective, long term global response to climate change and promoting economic growth and sustainable development. Such effort shall be, as appropriate, supported, including by the Technology Mechanism and, through financial means, by the Financial Mechanism of the Convention, for collaborative approaches to research and development, and facilitating access to technology, in particular for early stages of the technology cycle, to developing country Parties.
6. Support, including financial support, shall be provided to developing country Parties for the implementation of this Article, including for strengthening cooperative action on technology development and transfer at different stages of the technology cycle, with a view to achieving a balance between support for mitigation and adaptation. The global stocktake referred to in Article 14 shall take into account available information on efforts related to support on technology development and transfer for developing country Parties.

Developing and transferring technologies to support national action on climate change has been an essential element from the beginning of the UNFCCC process. In 1992, when countries established the Convention, they included specific provisions on technology with the aim of achieving the ultimate objective of the Convention.

Rapid technological innovation and deployment is essential to stabilise GHG concentrations and reduce vulnerability to climate change. It will be impossible to achieve the Paris Agreement's 1.5°C aspiration or 2°C goal without new, disruptive, and innovative technology, according to the Intergovernmental Panel on Climate Change (IPCC).

A key challenge is that the resources for this rapid technological innovation is mainly available in richer, more developed countries. This poses a challenge for developing countries who are poorer, but more vulnerable, and therefore have more need for adaptation technologies; and for developing countries where there is considerable potential for mitigation by employing cleaner technologies, but these technologies are not available or affordable.

Under the global climate negotiations, countries have sought to address this through commitments for “technology transfer” from developed to developing countries.

19.1 What are the working Institutions and Mechanisms for Technology Transfer?

The UNFCCC has set up constituted bodies, Institutions, Mechanisms and workstreams relevant to progressing Technology Transfer are:

1. Technology Executive Committee (TEC):

The TEC is the Technology Mechanism's policy arm and analyses policy issues and provides recommendations to support countries in enhancing climate technology efforts. The TEC is an executive committee consisting of 20 technology experts representing both developing and developed countries. The TEC meets multiple times a year and holds climate technology events that support efforts to address key technology policy issues.

2. Climate Technology Centre and Network (CTCN):

The CTCN is the mechanism's implementation arm and it supports countries to enhance the implementation of climate technology projects and programmes. It has three core services:

- Providing technical assistance to developing countries,
- Creating access to knowledge on climate technologies,
- Fostering collaboration among climate technology stakeholders.

The CTCN is hosted by the United Nations Environmental Programme, in collaboration with the United Nations Industrial Development Organization, and is supported by 11 partner institutions with expertise in climate technologies. The Centre facilitates a network of national, regional, sectorial and international technology centers, networks, organizations and private sector entities.

3. Technology Framework:

Article 10, paragraph 4, of the Paris Agreement established the Technology Framework. The framework will provide overarching guidance to the work of the Technology Mechanism in promoting and facilitating enhanced action on technology development and transfer in order to support the implementation of this Agreement, in pursuit of the long-term vision on technology development and transfer referred to in Article 10, paragraph 1. Under the SBSTA countries are currently working to elaborate the details of the framework.

4. Technology needs assessments (TNAs):

Understanding our climate technology needs is the starting point for effective action on climate change. By understanding these needs we can determine how to reduce greenhouse gas emissions and adapt to the adverse impacts of climate change. To determine their climate technology priorities, countries undertake technology needs assessments (TNAs). A TNA supports national sustainable development, builds national capacity and facilitates the implementation of prioritized climate technologies. Since 2001, more than 85 developing countries have undertaken TNAs to identify their technology needs for mitigation and adaptation. Since 2010, as part of their TNAs, developing countries have also developed technology action plans (TAPs), which are concrete action plans for the implementation of their prioritized technology needs. The GEF provides support for developing countries to undertake TNAs through its Poznan Strategic Program on Technology Transfer.

5. The Working Group on Transfer of Technology (WTO):

The Working Group on Transfer of Technology was established by the Ministers in Doha and aims to examine the relationship between trade and the transfer of technology from developed to developing countries, and ways to increase the flow of technology to developing countries. The WTO to increase flows of technology to developing countries.

What have countries agreed to do?

All Parties to the Paris Agreement committed to strengthening the Technology Transfer:

19.2 The timeline for Technology Transfer:

COP1 – Berlin 1995:

Berlin Mandate largely focused on gathering information on technology development and transfer (TDT). During:

- Parties asked for the formation on Inventory and Assessment of Environmentally sound and economically viable Technologies and know how conducive to mitigation and adaptation to climate change.

COP3 – Kyoto 1997:

During: Negotiation process of the development and transfer of technologies under the Convention:

- Article 4, paragraph 1(c), of the Convention stipulates that all parties shall “promote and cooperate in the development, application and diffusion, including transfer of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors”. Furthermore, Parties included in Annex I to the Convention shall (Article 4, paragraph 2(e)(i), of the Convention) “coordinate as appropriate with other such Parties, relevant economic and administrative instruments developed to achieve the objective of the Convention”.
- Regarding technology transfer, Article 4, paragraph 5, of the Convention stipulates that “The developed country Parties and other developed Parties included in Annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other

Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies.”

- Similar provision are found in Article 10(c) of the Kyoto Protocol: all Parties shall cooperate in the promotion of effective modalities for the development, application and diffusion of, and take all practical steps to promote, facilitate and finance as appropriate, the transfer of, or access to, environmentally sound technologies, practices and processes pertinent to climate change, in particular to developing countries.

COP7 - Marrakesh 2001:

- Parties reached agreement on the implementation of a technology transfer framework.
- The Expert Group on Technology Transfer (EGTT) was established with the aim to enhance the implementation of this framework and to advance the technology transfer activities under the Convention.

COP8 - New Delhi 2002:

- Delhi Ministerial Declaration, called for efforts by developed countries to transfer technology and minimize the impact of climate change on developing countries.

COP9 – Milan 2003:

The parties agreed to use the Adaptation Fund established at COP7 in 2001 primarily in supporting developing countries to better adapt to climate change. The fund would also be used for capacity-building through technology transfer.

COP14 – Poznan 2008:

- Delegates made progress on discussing how to effectively transfer environment-friendly technology to developing countries and concurred that the need to reduce deforestation has reached a level of urgency.
- Poznan Strategic Programme on technology transfer, and calls on GEF to fund TNAs, pilot activities in the TNAs, and share information on lessons learned and best practices.

COP15 – CMP 5 Copenhagen 2009:

- Developing countries proposed the creation of a Technology Mechanism, comprising an Executive Body and a Multilateral Climate Technology Fund, funded by contributions from developed countries.

- The proposal called for the Executive Body to support research, development, and transfer and diffusion of technologies, through a technology action plan. For technologies in the public domain.
- The proposal called for the action plan to focus on an international cooperation system to ensure lowest cost options, as well as transferring know-how to use and maintain the technologies and
- For patented technologies, the proposal called for the action plan to ensure that privately owned technologies are available on an affordable basis, including through measures to resolve IPR barriers and compulsory licensing of patented technologies.
- It called for technologies with shared ownership (government and private) to be made available on an affordable basis by facilitating transfer of the government proportion on a reduced or no-cost basis; and technologies that are government-owned to be made available on an affordable basis by facilitating transfer at reduced or no-cost basis.
- The proposal also called for the establishment of national and regional technology excellence centers, to reinforce North-South, South-South, and triangular cooperation, including joint R&D.

But the COP ended in disarray.

COP16 – CMP6 Cancun 2010: Technology Mechanism Highlight

- Established the Technology Mechanism with the objective of accelerating and enhancing climate technology development and transfer. It consists of two complementary bodies that work together, – the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN). The mechanism also serves the Paris Agreement.
- The outcome of the summit was an agreement adopted by the states' parties that called for the US\$100 billion per annum "Green Climate Fund", and a "Climate Technology Centre" and network. However the funding of the Green Climate Fund was not agreed upon.

COP21 – CMP11 Paris 2015:

- Adopting the technology framework under Article 10, paragraph 4, of the Paris Agreement.
- Decides that the Technology Executive Committee and the Climate Technology Centre and Network, shall implement the technology framework in close collaboration under the guidance of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement.
- Requests the Technology Executive Committee and the Climate Technology Centre and Network:

A. To incorporate the guidance contained in the technology framework into their respective workplan and programme of work, which should also include methods for the monitoring and evaluation of their activities;

B. To include information in their joint annual report for 2019 on how they incorporated the guidance contained in the technology framework into their respective workplan and programme of work, as referred to in paragraph 3(a) above;

- Requests the Technology Executive Committee and the Climate Technology Centre and Network to report on the progress of their work and challenges and lessons learned in implementing the technology framework in their joint annual reports. Advance unedited version
- Reiterates the importance of the support, including financial support, that shall be provided to developing country Parties for strengthening cooperative action on technology development and transfer at different stages of the technology cycle and agrees that the technology framework can facilitate the strengthening of such support.

Decides that the outcome of and/or recommendations resulting from the periodic assessment shall be considered when updating the technology framework.

This was adopted in **COP24 – CMP14 CMA1-3 Katowice 2018**.

19.2.1 What Happened in COP27 – CMP17 CMA4 Sharm El Sheikh 2022?

- Launched a new five-year work programme at COP27 today to promote climate technology solutions in developing countries. 2023–2027, which will facilitate the transformational change needed to achieve the goals of the Convention and the Paris Agreement.
- Highlighted the importance of cooperation on technology development and transfer and innovation in implementing the joint work programme activities.
- Welcomed the forward-looking conclusions of the Subsidiary Body for Implementation to continue consideration of the Poznan strategic programme on technology transfer at its sixty-first session (November 2024) with the aim of supporting the implementation of relevant activities, such as those identified and prioritized in developing countries' nationally determined contributions, national adaptation plans, technology needs assessments and technology action plans, and long-term strategies.
- The Sharm el-Sheikh implementation plan includes references to boosting “low emission” energy, as well as renewables. The text also supports the plans of many fossil fuel-producing countries to use fledgling carbon capture technology to curb emissions rather than scaling back production.

19.2.3 What will happen in COP28 – CMP18/CMA5 Dubai 2023?

Forum attendees will look at targeted solutions for accelerating technology transfer in all sectors.

20. ARTICLE 11 (CAPACITY BUILDING)

1. Capacity-building under this Agreement should enhance the capacity and ability of developing country Parties, in particular countries with the least capacity, such as the least developed countries, and those that are particularly vulnerable to the adverse effects of climate change, such as small island developing States, to take effective climate change action, including, inter alia, to implement adaptation and mitigation actions, and should facilitate technology development, dissemination and deployment, access to climate finance, relevant aspects of education, training and public awareness, and the transparent, timely and accurate communication of information.
2. Capacity-building should be country-driven, based on and responsive to national needs, and foster country ownership of Parties, in particular, for developing country Parties, including at the national, subnational and local levels. Capacity-building should be guided by lessons learned, including those from capacity-building activities under the Convention, and should be an effective, iterative process that is participatory, cross-cutting and gender-responsive.
3. All Parties should cooperate to enhance the capacity of developing country Parties to implement this Agreement. Developed country Parties should enhance support for capacity building actions in developing country Parties.
4. All Parties enhancing the capacity of developing country Parties to implement this Agreement, including through regional, bilateral and multilateral approaches, shall regularly communicate on these actions or measures on capacity-building. Developing country Parties should regularly communicate progress made on implementing capacity-building plans, policies, actions or measures to implement this Agreement.
5. Capacity-building activities shall be enhanced through appropriate institutional arrangements to support the implementation of this Agreement, including the appropriate institutional arrangements established under the Convention that serve this Agreement. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall, at its first session, consider and adopt a decision on the initial institutional arrangements for capacity building.
6. Capacity-building has a key role in the process of combating climate change, it has tackled many topics and issues in the articles of the convention and its treaties, such as adapting to climate change, providing financial and technical resources, transferring technology, ensuring research, education and training, and improving national communications. Furthermore it had special role in education, training and public awareness, Article 6 of the Convention calls on governments to educate,

empower and engage all stakeholders and major groups on policies relating to climate change – a call that is echoed in the Kyoto Protocol (Article 10(e)).

20.1 What are the working Institutions and Mechanisms for Capacity Building?

1. The Durban Forum on capacity-building:

The Forum focuses on improving the monitoring and review of the effectiveness of capacity-building within the intergovernmental climate change process. The Forum also provides inputs to the work of the Paris Committee on Capacity-building. Thus, the themes of the Forum are aligned with the focus area of the PCCB.

2. Capacity-building Portal:

The portal is a range of tools, projects, courses, and other resources to enhance the capacity and ability of developing countries to respond to the challenges posed by climate change at national, regional and local levels. Established by the UNFCCC.

3. Paris Committee on Capacity-building (PCCB):

This Committee seeks contributions and support from capacity-building actors and stakeholders around the globe to its activities in three areas:

- Enhancing coherence and coordination of capacity-building;
- Addressing capacity-building gaps and needs;
- Awareness-raising, knowledge- and information-sharing and stakeholder.

4. Capacity-building Initiative for Transparency (CBIT):

This initiative was established to strengthen the institutional and technical capacities of developing countries. Furthermore to provide quick-access support to countries and to boost their capacity to enhance the transparency of action as well as the transparency of support received. It was established shortly after the adoption of the Paris Agreement.

20.2 The timeline for Capacity Building:

COP1 – Berlin 1995:

- UNFCCC adopted article 6 which focuses on Education, Training and Awareness towards climate change, and called for building the capacities of parties to deliver the outcomes needed.

COP3 – Kyoto 1997:

- Kyoto Protocol was adopted, including Article 10 (e) which calls on all parties to cooperate in Education, Training and strengthening the capacity building nationally and internationally, and to work on transferring these capacities.

COP7 – Marrakech 2001:

- The Marrakesh Accord was adopted, including Capacity Building Framework for developing countries, and prioritizing 15 areas to tackle through.
- Decides that this framework should guide capacity-building activities related to the implementation of the Convention and effective participation in the Kyoto Protocol process, Capacity building in the Developing Countries, and Capacity building in the Countries of Economy in transition.
- Requested the Global Environment Facility, as an operating entity of the financial mechanism, to report on its progress in support of the implementation of Capacity Building framework in its reports to the Conference of the Parties.

COP17 - CMP7 Durban 2011:

- The establishment of the Durban Forum on Capacity building in response to the needs and gaps identified both in the second review of the Capacity-building Framework and annual discussions under the SBI.

COP18 - CMP8 Doha 2012:

- The Capacity-building Portal was launched by the UNFCCC secretariat through the Ministerial dialogue.
- Adopted the Doha work programme on Article 6 of the Convention and requested the SBI to organize an annual in-session Dialogue on Article 6 of the Convention for Parties, constituted bodies and other stakeholders to share their experiences and exchange ideas, good practices and lessons learned regarding the implementation.

COP21 - CMP11 Paris 2015:

- The Paris Agreement Article 11: Which defines capacity-building related goals, guiding principles and procedural obligations for all Parties. It calls on developed country Parties to enhance support to capacity-building in developing countries, and on developing country Parties to regularly communicate progress on implementing capacity-building plans, policies, actions or measures.
- The Agreement also calls for country-driven capacity-building that is based on recipient countries' needs and ownership.
- Training, public awareness, public participation and public access to information, and asks Parties to cooperate in taking appropriate measures.

- Establishing the Paris Committee on Capacity-Building (PCCB) as a new constituted body, which aims to address capacity need and gaps, both current and emerging, and to further enhance capacity-building efforts.
- The COP21 requested the establishment of the Capacity-building Initiative for Transparency (CBIT) in order to build institutional and technical capacity and to support developing country Parties in meeting the enhanced transparency requirements of the Paris Agreement. The GEF supports the operation of the CBIT.

COP25 - CMP15 CMA2, Madrid 2019:

- The CMA decided for the PCCB to serve the Agreement, in line with its mandate and terms of reference established under the COP.

20.2.1 What happened in COP27 – CMP17 CMA4 Sharm El Sheikh 2022?

- Several Parties highlighted the importance of addressing finance, technology transfer and capacity-building as crucial cross-cutting enablers for implementation, and raising ambition in mitigation and adaptation, during the talks on finance and support.
- Capacity building within the Global Stocktake process was highlighted especially targeting Non-Parties Stakeholders to maximize their contribution to climate action.
- The 4th Capacity-building Hub took place in COP27 Sharm El-Sheikh, Egypt. The event sought to showcase efforts made towards greater climate actions through the lens of capacity-building.

20.2.2 What will happen in COP28 - CMP18 CMA5 Dubai 2023?

The fifth edition of the Hub seeks to create a platform where the importance of capacity-building with regards to the Paris Agreement and its progress is highlighted as well as showcase and accelerate climate change action that has the capacity to yield long-lasting impacts.

The 5th Capacity-building Hub calls for interested individuals and entities involved in climate action across all sectors and regions to showcase the:

- Experience and achievements in building and retaining capacity at different levels to support the enhancement of nationally determined contributions and climate action in 2023;
 - Lessons learned and knowledge gained in identifying capacity-building gaps and needs, and solutions for addressing those gaps and needs;
 - Opportunities for introducing innovation and scaling up actions by collaborating with other actors and combining climate efforts at the national level;
 - Ideas for capacity-building actions that are aligned with low-carbon and climate-resilient development strategies.
- Governments at COP28 are due to adopt a framework for achieving the Paris Agreement's global goal on adaptation. The GGA is intended to focus countries'

efforts to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change.

- During the G20 Leaders' Summit in September 2023, where G20 members agreed to 'pursue and encourage efforts to triple renewable energy capacity globally'.
- During the initiative of Youth Climate Champion will lead an engagement of youth include working with local and global stakeholders to provide capacity-building opportunities for youth, as well as mechanisms to fund youth innovations in the field?
- COP28 Presidency has joined efforts with Online Learning Platforms to design, open and access courses on Climate Literacy, Capacity Building and Education to mark the participation of youth and activists in the developing capacities and be educated and empowered.
- PCCB focus areas on Adaptation and NAPs, and implementations of NAPs during 2023, and COP28.

21. ARTICLE 12 (CLIMATE EDUCATION)

Parties shall cooperate in taking measures, as appropriate, to enhance climate change education, training, public awareness, public participation and public access to information, recognizing the importance of these steps with respect to enhancing actions under this Agreement.

Education and training are integral in enabling citizens' contributions to local and global efforts to meet the climate change challenge. Increased knowledge and learning about the causes and impacts of climate change affect everyday lives. People become more aware of their role as consumers and are empowered to make ethically informed decisions. Communities can contribute to a solution-oriented public dialogue, while engaging local decision-makers in taking meaningful action and shaping climate policy.

21.1 What are the working Institutions and Mechanisms for Climate Education?

1. Global Action Programme (GAP):

Accelerating progress towards a sustainable future The Global Action Programme aims "to generate and scale up action in all levels and areas of education and learning to accelerate progress towards sustainable development". It focuses on five priorities, considered key leverage points to advance the ESD agenda including climate change education. These five Action Areas are: advancing policy support for mainstreaming ESD into both education and sustainable development policies; transforming learning and training environments through whole-institution approaches; building capacities of teachers, educators and trainers; empowering and mobilizing youth; accelerating sustainable solutions at local level in communities.

2. United Nations Alliance on Action for Climate Empowerment:

In response to the increasing impact of climate change on development and security issues, a growing number of United Nations organizations are working closely with governments to help build green and climate-resilient societies. Assembled to launch the Alliance with a view to promote meaningful climate change education.

3. Education for sustainable development (ESD):

ESD is a UNESCO's education sector response to the urgent and dramatic challenges the planet faces. The collective activities of human beings have altered the earth's ecosystems so that our very survival seems in danger because of changes more difficult to reverse every day. Acting as a global advocate and aiming to strengthen capacities of governments to provide quality Climate Change Education (CCE), UNESCO produces and shares knowledge, provides policy guidance and technical support to its Member States and implements projects on the ground. UNESCO encourages innovative approaches and enhances non-formal education programmes through media, networking and partnerships.

21.2 The timeline for Climate Education:

COP18 - CMP 8 Doha 2012:

- Launch the United Nations Alliance on Action for Climate Empowerment with a view to promote meaningful, result-oriented and effective international cooperation in support of action on climate change education, training, public awareness, public participation and access to information.

COP20 – CMP10 Lima 2014:

- The Lima Ministerial Declaration on Education and Awareness-raising, adopted at COP20, calls for including climate change in school curricula and development plans.

COP21 – CMP11 Paris 2015:

- Showcasing good practices and lessons learned on climate change education:
- Event was to motivate exchange of knowledge among Governments, IGOs, civil society, academia and youth. Furthermore, the event aimed to highlight partnerships and opportunities for scaling up climate change education and to identify innovative ways of enhancing climate action with a focus on formal education.
- The UN Alliance side event showcased innovative ways to promote non-formal education with a special focus on alternative approaches for climate change learning, such as music, social media and video games.
- Berlin Declaration on ESD (2021) called for 'climate action as a core curriculum.

COP22 – CMP12 CMA1 Marrakesh 2016:

High-Level Event: Education - A Key Driver to Scale-Up Climate Action. This brought together environment and education ministers and international organizations to discuss how education can enhance the implementation of the climate agenda and the Intended Nationally Determined Contributions. Good practices were showcased and future actions were highlighted with special attention to South-South and North-South cooperation as well as Africa's specific priorities.

- Practical discussions about the role of education within climate change responses. Global Education Monitoring Report, was first released to monitor and evaluate the progress and work on Climate Education and empowerment.

COP26 – CMP16 CMA3 Glasgow 2021:

During:

- Ministerial Statements on Education for Sustainable Development (ESD), for the first time Ministers of Education and Environment came together today at COP26 to pledge to integrate climate change and sustainable development into learning in an event co-organized by the UK Presidency, Government of Italy, UNESCO and youth partners MockCOP and Youth4Climate.
- Under the Glasgow work programme on Action for Climate Empowerment:
 1. Reaffirming the importance of all six elements of Action for Climate Empowerment – education, training, public awareness, public participation, public access to information and international cooperation on climate change – to achieving the objective of the Convention and the purpose and goals of the Paris Agreement.
 2. Recognizing that Action for Climate Empowerment plays a key role in promoting the changes in lifestyles, attitudes and behaviours needed to foster low-emission, climate resilient and sustainable development.
 3. Reaffirming the key role that a broad range of stakeholders, such as national, regional and local governments, educational and cultural institutions, museums, the private sector, intergovernmental organizations, non-governmental organizations, international organizations, decision makers, scientists, the media, teachers, youth, women and indigenous peoples, play in ensuring Action for Climate Empowerment.
 4. Acknowledging the growing interest and engagement of youth in climate action and the critical role of youth as agents of change, and calling for further enhancement of youth participation in climate change processes and in unleashing the potential of Action for Climate Empowerment.

21.2.1 What Happened in COP27 – CMP17 CMA4 Sharm El Sheikh 2022?

- COP27 was a unique opportunity to mobilize commitments and action to transform education to tackle climate change. One of UNESCO's main objectives will be to accelerate the integration and implementation of climate change education as part of its work on Education for sustainable development (ESD) by presenting UNESCO's newest publication: "Youth demand quality climate education", which draws upon a series of surveys and consultations with young people from 166 countries to document their needs and demands on climate change education. Following its launch at the UN Transforming Education Summit, UNESCO reiterate the call for key stakeholders to commit to the **Greening Education Partnership and its 4 action areas**:
 - Greening schools.
 - Greening learning.
 - Greening capacity & readiness.
 - Greening communities.
- COP27 countries agreed to a new global Action Plan on Action for Climate Empowerment, or ACE. ACE is the term used to describe a broad area of work set out in the United Nations Framework Convention on Climate Change (1992) and the Paris Agreement (2015) which includes education alongside five other elements: Training, Public Awareness, Public Participation, Public Access to Information, and International Cooperation.

21.2.2 What will happen in COP28 – CMP18 CMA5 Dubai 2023?

- UNESCO and UNFCCC are launching a series of conversations on climate change education for social transformation from May to December 2023.
- Mainstreaming youth participation and voice in the COP process while mobilizing substantive youth policy inputs and outcomes.
- December 8 is dedicated to 'Youth, Children, Education and Skills.' The day will spotlight the need to empower children and youth with clear, defined, and accessible opportunities to be a part of climate solutions proposed at every level.
- COP28 Presidency has joined efforts with Online Learning Platforms to design, open and access courses on Climate Literacy Capacity Building and Education to mark the participation of youth and activists in the developing capacities and be educated and empowered.

22. ARTICLE 13 (TRANSPARENCY)

1. In order to build mutual trust and confidence and to promote effective implementation, an enhanced transparency framework for action and support, with built-in flexibility which takes into account Parties' different capacities and builds upon collective experience is hereby established.

2. The transparency framework shall provide flexibility in the implementation of the provisions of this Article to those developing country Parties that need it in the light of their capacities. The modalities, procedures and guidelines referred to in paragraph 13 of this Article shall reflect such flexibility.
3. The transparency framework shall build on and enhance the transparency arrangements under the Convention, recognizing the special circumstances of the least developed countries and small island developing States, and be implemented in a facilitative, non-intrusive, non-punitive manner, respectful of national sovereignty, and avoid placing undue burden on Parties.
4. The transparency arrangements under the Convention, including national communications, biennial reports and biennial update reports, international assessment and review and international consultation and analysis, shall form part of the experience drawn upon for the development of the modalities, procedures and guidelines under paragraph 13 of this Article.
5. The purpose of the framework for transparency of action is to provide a clear understanding of climate change action in the light of the objective of the Convention as set out in its Article 2, including clarity and tracking of progress towards achieving Parties' individual nationally determined contributions under Article 4, and Parties' adaptation actions under Article 7, including good practices, priorities, needs and gaps, to inform the global stocktake under Article 14.
6. The purpose of the framework for transparency of support is to provide clarity on support provided and received by relevant individual Parties in the context of climate change actions under Articles 4, 7, 9, 10 and 11, and, to the extent possible, to provide a full overview of aggregate financial support provided, to inform the global stocktake under Article 14.
7. Each Party shall regularly provide the following information:
 - (a) A national inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases, prepared using good practice methodologies accepted by the Intergovernmental Panel on Climate Change and agreed upon by the Conference of the Parties serving as the meeting of the Parties to this Agreement; and
 - (b) Information necessary to track progress made in implementing and achieving its nationally determined contribution under Article 4.
8. Each Party should also provide information related to climate change impacts and adaptation under Article 7, as appropriate.
9. Developed country Parties shall, and other Parties that provide support should, provide information on financial, technology transfer and capacity-building support provided to developing country Parties under Articles 9, 10 and 11.

10. Developing country Parties should provide information on financial, technology transfer and capacity-building support needed and received under Articles 9, 10 and 11.
11. Information submitted by each Party under paragraphs 7 and 9 of this Article shall undergo a technical expert review, in accordance with decision 1/CP.21. For those developing country Parties that need it in the light of their capacities, the review process shall include assistance in identifying capacity-building needs. In addition, each Party shall participate in a facilitative, multilateral consideration of progress with respect to efforts under Article 9, and its respective implementation and achievement of its nationally determined contribution.
12. The technical expert review under this paragraph shall consist of a consideration of the Party's support provided, as relevant, and its implementation and achievement of its nationally determined contribution. The review shall also identify areas of improvement for the Party, and include a review of the consistency of the information with the modalities, procedures and guidelines referred to in paragraph 13 of this Article, taking into account the flexibility accorded to the Party under paragraph 2 of this Article. The review shall pay particular attention to the respective national capabilities and circumstances of developing country Parties.
13. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall, at its first session, building on experience from the arrangements related to transparency under the Convention, and elaborating on the provisions in this Article, adopt common modalities, procedures and guidelines, as appropriate, for the transparency of action and support.
14. Support shall be provided to developing countries for the implementation of this Article.
15. Support shall also be provided for the building of transparency-related capacity of developing country Parties on a continuous basis.

22.1 General Overview

The requirements under Article 13 on transparency are vital for building international trust and confidence that action is taking place and assessing how to facilitate further action and support for these actions. The Paris Agreement lays out general principles for the transparency framework and a direction of travel for: (a) enhancing the way countries share information on progress made to mitigate, adapt, provide or receive finance, advance technology development and transfer, and strengthen capacity-building; and (b) the process for the subsequent review and consideration of such information. However, the detailed modalities, procedures, and guidelines for the enhanced transparency framework remain to be developed.

1. General considerations, enhancement, and flexibility (Article 13.1–13.4)

Article 13.1

Article 13.1 reminds the international community why ‘an enhanced transparency framework’ is necessary: ‘to build mutual trust and confidence and to promote effective implementation’. The term ‘enhanced’ transparency framework encompasses the notion that this framework is to represent an overall improvement vis-à-vis the existing one, enhances transparency for all parties, and continues to improve over time. Parties’ legally binding commitments are stronger than former decisions under the Convention, especially for developing countries.

Article 13.1 also clarifies that the scope of the transparency framework is not just mitigation-focused, as under the Kyoto Protocol. Rather the scope is comprehensive with balanced consideration of mitigation, adaptation, and support provided and/or received. In addition, Article 13.1 brings in the notion of ‘built in flexibility’, which, as the Article notes, ‘takes into account Parties’ different capacities’.

Article 13.2

This notion of flexibility is strengthened in Article 13.2. The Paris Agreement, in particular Article 13.2, acknowledges different stages of development and capabilities among countries and accords a degree of flexibility for developing countries that need it in light of their capabilities. The provision of Article 13.2 makes it clear that the MPG to be developed under the Ad Hoc Working Group on the Paris Agreement (APA) must reflect such flexibility.

Further, Flexibility could also be considered with regard to the type of review process undertaken. For example, this could include the consideration of undertaking the review of a group of countries instead of individual ones; and/or using desk, centralized, or in-country reviews, based on the size and emission potential of the country and its former performance.

Article. 13.3

Article 13.3 gives clear guidance as to how the transparency framework will be implemented, namely in a facilitative, non-intrusive, non-punitive manner, respectful of national sovereignty, and avoiding placing undue burden on parties. It also provides that the transparency framework shall build on and enhance the transparency arrangements under the Convention. In doing so, it recognizes the special circumstances of the LDCs and SIDS

Article. 13.4

Article 13.4 reinforces Article 13.3 by emphasizing that transparency arrangements under the Convention, including specific elements thereof, shall form part of the experience to be drawn upon in the development of the MPGs under Article 13.13. However, it should also be noted that in giving further guidance to the development of modalities, the COP decided,

through Decision 1/CP.21, that the MPGs shall eventually supersede the MRV system established by the Cancún Agreements.

2. Purpose of the transparency framework (Article 13.5 and 13.6)

Article 13.5 and 13.6 set out the purpose of the framework for transparency for action and support, respectively, and make a key connection between the transparency framework and the global stocktake.

Article 13.5

Article 13.5 makes important links to Article 2, the purpose of the Agreement, the thematic areas of mitigation and adaptation as well as to Article 14, highlighting the important role that transparency plays in the Paris Agreement. It provides that the purpose of the framework for transparency for action is to provide clear understanding of climate change action in light of the objective of the Convention (UNFCCC Article 2), including clarity and tracking of progress towards achieving parties' individual nationally determined contributions (NDCs) and adaptation actions, to inform the global stocktake

Article 13.6

Article 13.6 links the clarity of support provided and received to the context of climate actions under the Agreement's provisions on mitigation, adaptation, finance, technology, and capacity-building. It sets out the aim of providing ('to the extent possible') a full overview of aggregate financial support provided and connects it to informing the global stocktake.

3. Reporting requirements (Article 13.7–13.10)

Article 13.7

According to Article 13.7, parties are required to provide a national inventory report of anthropogenic emissions by sources and removals by sinks. The national inventory reports will be based on agreed international standards such as good practice methodologies adopted by the IPCC for national GHG inventories and agreed upon by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA). Parties are also required to report information required to track progress made in implementing and achieving their NDCs.

Article 13.8

Article 13.8 provides that parties should report information on adaptation and climate change impacts, as appropriate. No specific standards for facilitating the monitoring and evaluation of adaptation efforts are included in Article 13.8. However, in Decision 1/CP.21,

parties are asked to report information 'on adaptation action and planning including, if appropriate, their national adaptation plans, with a view to collectively exchanging information and sharing lessons learned'.

Article 13.9

Article 13.9 requires developed country parties ('**shall**'), and expects other parties that provide support ('**should**') to provide information on financial, technology transfer and capacity-building support provided to developing country parties under Articles 9, 10, and 11. This requirement or expectation is developed further in the thematic provisions, with Article 9, in particular, providing that developed countries parties shall, and other parties are encouraged to, report every two years on support provided and mobilized through public interventions

Article 13.10

According to Article 13(10) of the Paris Agreement, developing countries 'should' report on financial, technology and capacity-building support needed and received. Detailed guidance in the MPGs mirrors that related to support provided in that developing countries are also required to report on the relevant national circumstances and institutional arrangements. In addition, they should report on country-driven priorities and strategies, as well as aspects of NDCs that need support.

It is worth to be noted that reporting on support provided by developing countries is a binding ('shall') obligation under Article 13(9), whereas developing countries merely 'should' report on support needed and received under Article 13(10).

4. Verification (Article 13.11 and 13.12)

Article 13.11 and 13.12 commit all parties to have their submitted national reports reviewed regularly. The outcome covers progress on achieving NDCs, improving data quality and assessing support provided or received.

Article 13.11

Article 13.11 provides that information submitted under Article 13.7 and 13.9 shall undergo a technical expert review and that each party shall participate in a facilitative multilateral consideration of progress.

Article 13.12

Article 13.12 sets out some parameters for the technical expert review, although the details have yet to be defined. Decision 1/CP.21 paragraph 92(e) suggests that such review will be undertaken every two years and suggests a two-phased approach (assessment/analysis phase, followed by a review/consultation phase) as is the case under the IAR and ICA.

5. Future development and elaboration of the provision(s) (Article 13.13)

Article 13.13 provides that CMA 1 shall, building on experiences from the transparency arrangements under the Convention and elaborating the provisions in this Article, adopt MPGs. The APA has been mandated to make recommendations with regard to MPGs for the transparency framework to CMA 1, through the COP.

6. Capacity-building for MRV (Article 13.14 and 13.15)

Article 13.14

Article 13.14 provides assurance that the existing funding model for national communications and BURs, which happens through the Global Environment Facility (GEF), will continue during the post 2020 period; while leaving open the option of additional sources of funding. The article specifies that support shall be provided to developing countries for implementation of transparency.

Article 13.4 reinforces Article 13.3 by emphasizing that transparency arrangements under the Convention, including specific elements thereof, shall form part of the experience to be drawn upon in the development of the MPGs under Article 13.13.

Article 13.15

Article 13.15 requires support for the building of the transparency-related capacity of developing countries on a continuous basis. The article contains a new notion that of providing support for building transparency-related capacity in developing countries on an on-going basis. This provides an opportunity for developing countries to receive funding that will ensure that they build up their technical, human and institutional capacity to undertake transparency actions, over time.

22.2 General Negotiating History

- Under the United Nations Framework Convention on Climate Change (UNFCCC or Convention), parties established several processes fostering transparency and accountability of countries' actions to fight climate change.
- Under the Kyoto Protocol, parties adopted a sophisticated set of guidelines for Annex I Parties on accounting, monitoring and review. These milestones are described below, especially in the context of how they led countries along a journey towards the transparency provisions in the Paris Agreement.
- At COP 13, in 2007, parties adopted Decision 1/CP.13, commonly referred to as the Bali Action Plan.¹⁰ Through this decision, parties agreed on a process under the Ad Hoc Working Group for Long-term Cooperative Action under the Convention (AWG-LCA)¹¹ for strengthening measurement, reporting, and verification (MRV) measures for both developed and developing country parties, which laid the foundation for a more comprehensive international MRV

framework, in particular for developing country parties. Building on the political understandings arising from COP 15 in 2009, COP 16 (2010) and COP 17 (2011), took important steps to improve the system of reporting for all countries and enhance verification

- At COP 17, in 2011, a comprehensive and enhanced set of guidelines for the reporting and verification of developed and developing countries' actions and support provided or received was adopted as part of the agreed outcome of the Bali Action Plan. At the same COP, parties also launched work on what became the Paris Agreement.
- In the following years, The Paris Agreement calls for the development of a transparency framework, supported by a set of modalities, procedures, and guidelines (MPG) that will be applicable to all countries, with built-in flexibility for countries who need it in view of their circumstances and capabilities.

22.3 The timeline for Transparency:

COP1, Berlin 1995:

- The UNFCCC was adopted. However, transparency was not explicitly mentioned in the UNFCCC, but it was understood to be an important element of the agreement. UNFCCC contained number of provisions relevant to transparency such as
 - Article 4.1(a), which requires Parties to report on their greenhouse gas emissions inventories.
 - Article 12.1, which requires Parties to communicate information on their national climate change policies and measures.
 - Article 12.5, which requires Parties to make public information related to their implementation of the UNFCCC.
- The Berlin Mandate was adopted, which launched a two-year process of negotiations on a comprehensive climate change agreement. The Berlin Mandate included a number of provisions that were relevant to transparency, such as a call for Parties to improve the reporting of their climate actions.

COP2, Geneva 1996:

- The UNFCCC Reporting Guidelines on National Communications and the UNFCCC Reporting Guidelines on Greenhouse Gas Inventories provided detailed guidance on how Parties should report on their climate actions, and the Compliance Committee was tasked with ensuring that Parties complied with their transparency obligations.

COP3, Kyoto 1997:

- The Kyoto Protocol to the United Nations Framework Convention on Climate Change was adopted, negotiators agreed on a set of transparency rules that would

apply to all Parties to the Kyoto Protocol. These rules required Parties to report on their greenhouse gas emissions on an annual basis, using a common methodology. Parties were also required to submit detailed information on their national climate change programs and policies.

- The transparency rules agreed at COP3 were a significant breakthrough. They established a clear and consistent framework for Parties to report on their climate change actions, and they helped to build trust and confidence between countries.

COP4, Buenos Aires 1998:

- Decided that those Parties included in Annex I to the Convention by decision 4/CP.3 which have not submitted a first national communication should do so no later than six months after the entry into force of the amendment to Annex I.
- Information contained in second national communications was generally of a higher quality than in the first national communications, thus providing a better basis for evaluating the scope and achievements of national climate change mitigation strategies.
- Developed guidelines for reporting on greenhouse gas emissions from land use, land-use change, and forestry. Such emissions can be a significant source of greenhouse gas emissions for some countries.

COP5, Bonn 1999:

- Adopted guidelines for reporting on greenhouse gas emissions from aviation and maritime transport. These sectors are a significant source of greenhouse gas emissions.
- Developed guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I, Recognizing that anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol should be reported in a transparent, consistent, comparable, complete and accurate way.

COP6, The Hague 2000:

- Negotiators had agreed on a number of decisions that strengthened the transparency system, including decisions to develop guidelines for reporting on greenhouse gas emissions from industrial processes and product use, to establish a new process for the review of Parties' national communications, and to develop guidelines for reporting on financial and technological support provided to developing countries.

COP7, Marrakech 2001:

- Under the decision of “Good practices” in policies and measures among Parties included in Annex I to the Convention, the parties decided contribute to the improvement of transparency through:
 1. enhance transparency in reporting on policies and measures in the national communications of Annex I Parties through, as appropriate, criteria and quantitative parameters, and consider issues of methodology, attribution, and national circumstances;
 2. Facilitate information sharing on ways Annex I Parties have striven to implement policies and measures in such a way as to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on developing country Parties, taking into account information related to these issues provided by Parties not included in Annex I to the Convention (non-Annex I Parties);
 3. Assist Parties and the Conference of the Parties in identifying further options for cooperation between Annex I Parties and other interested Parties to enhance the individual and combined effectiveness of their policies and measures;

COP13 CMP3, Bali 2007:

- The Bali Action Plan was adopted, which launched a new round of negotiations on a comprehensive climate change agreement. The Bali Action Plan included a number of transparency provisions, such as a call for Parties to enhance their transparency efforts.

COP 16/CMP 6, Cancún, Mexico, 2010

- The Cancun Agreements were adopted, which included a number of transparency provisions, such as a call for Parties to improve the reporting of their climate actions.

COP19 CMP9, Warsaw 2013:

- The Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts was established, which included a number of transparency provisions, such as a call for Parties to enhance the transparency of their support for adaptation and loss and damage.

COP21 CMP11, Paris 2015:

- The Paris Agreement was adopted, which established the ETF. The Paris Agreement also included a number of other transparency provisions, such as a call for Parties to make their NDCs transparent

COP22 CMP12 CMA1, Marrakech 2016:

- The modalities, procedures, and guidelines (MPGs) for the ETF were adopted. The MPGs provide detailed guidance on how Parties should report on their climate actions.

COP23 CMP13 CMA1–2, Bonn 2017:

- The Katowice Climate Package was adopted, which included a number of decisions that strengthened the ETF, such as by establishing a technical expert review process for Parties' biennial transparency reports (BTRs).

COP24 CMP14 CMA1–3, Katowice 2018:

- A number of decisions were adopted that further elaborated on the ETF, such as by providing guidance on how Parties should report on their greenhouse gas emissions inventories, and on how to support developing countries in implementing the ETF.

COP25 CMP15 CMA2, Madrid 2019:

- A number of decisions were adopted that further strengthened the ETF, such as by establishing a new transparency process for developed countries' support to developing countries, and by providing guidance on how to enhance the technical expert review process.

COP26 CMP16 CMA3, Glasgow 2021:

- A number of decisions were adopted that further strengthened the ETF, such as by establishing a new transparency framework for non-state actors, and by providing guidance on how to enhance the transparency of climate finance.

22.3.1 What happened in COP27 CMP17 CMA4, Sharm El Sheikh 2022?

- A number of decisions were adopted that further strengthened the ETF, such as by establishing a new transparency process for Parties' adaptation actions, and by providing guidance on how to enhance the transparency of climate technology transfer.

23. ARTICLE 14 (GLOBAL STOCKTAKE)

1. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall periodically take stock of the implementation of this Agreement to assess the collective progress towards achieving the purpose of this Agreement and its long-term goals (referred to as the “global stocktake”). It shall do so in a comprehensive and facilitative manner, considering mitigation, adaptation and the means of implementation and support, and in the light of equity and the best available science.

2. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall undertake its first global stocktake in 2023 and every five years thereafter unless otherwise decided by the Conference of the Parties serving as the meeting of the Parties to this Agreement.
3. The outcome of the global stocktake shall inform Parties in updating and enhancing, in a nationally determined manner, their actions and support in accordance with the relevant provisions of this Agreement, as well as in enhancing international cooperation for climate action.

The global stocktake is a critical turning point when it comes to efforts to address climate change – it's a moment to take a long, hard look at the state of our planet and chart a better course for the future. Decision 19/CMA.1 notes that the global stocktake “will be a Party-driven process conducted in a transparent manner and with the participation of non-Party stakeholders” (para. 10), it enables countries and other stakeholders to see where they're collectively making progress toward meeting the goals of the Paris Agreement – and where they're not. It's like taking inventory. It means looking at everything related to where the world stands on climate action and support, identifying the gaps, and working together to agree on solutions and pathways (to 2030 and beyond).

Additionally, the Global Stocktake is meant to address loss and damage, helping assess the actions and support needed to respond to climate impacts that go beyond what communities and ecosystems can adapt to. It also considers the unintended social and economic consequences that may arise from climate action and implementation, known as response measures. In addition, the Global Stocktake is intended to emphasize the importance of promoting equity and leveraging the best available science to inform strategies for tackling the climate crisis.

23.1 What are the working Institutions and Mechanisms for Global Stocktake?

1. Global Stocktake information portal

This online resource has been developed pursuant to decision 19/CMA.1, paragraph 21, to facilitate online availability of all global stocktake inputs, by thematic area. It also compiles the most up-to-date inputs from the sources identified in paragraph 37 as per paragraph 22 of the same decision.

Submissions are subject to the UNFCCC terms of use and can be made via the submission portal by Parties and organizations with observer status. Non-Party stakeholders without observer status can make submissions by email to specific calls for input. Please refer to the submission guidelines for more information on how to make a submission.

In addition to the information provided in the global stocktake information portal below, other relevant sources of information for the global stocktake are listed in the related information section.

23.2 What has happened so far in the Global Stocktake process?

- In its initial data collection phase, which ended in March 2023, the Global Stocktake collected inputs from the UNFCCC Secretariat, its constituted bodies and the IPCC to ensure balanced and comprehensive information across all thematic areas. Parties to the Paris Agreement, international organizations and non-Party stakeholders (such as members of civil society) also had the opportunity to submit relevant information via a public information portal.
- The second phase, technical assessment, convened Parties, experts and non-Party stakeholders to evaluate the information gathered in Phase 1, identified important technical insights and made way for the final political phase of the Global Stocktake. It involved a series of three dialogues that commenced in June 2022 and concluded at the 2023 intersessional meetings in Bonn, Germany. A summary report was developed after each dialogue.
- The third phase will take place in COP28 as below.

23.3 The timeline for Global Stocktake:

COP21 – CMP11 Paris 2015:

- The agreement establishes a "global stocktake" which revisits the national goals to "update and enhance" them every five years beginning 2023.

COP 23 - CMP 13 CMA1–2, Bonn 2017:

- The Fijian Presidency announced its approach to the Talanoa Dialogue – known formerly as the Facilitative Dialogue. The Talanoa Dialogue is an inclusive and participatory process designed to allow countries to assess the progress made so far toward achieving the long-term of the Paris Agreement, and to help them increase the ambition of their Nationally Determined Contributions by 2020. The Talanoa Dialogue is a precursor to the global stocktakes that will take place every five years, beginning in 2023.

COP24 –CMP14 CMA1-3 Katowice 2018:

- Countries agreed that the Global Stocktake would address climate progress in three key areas:
 - Mitigation: Evaluating global efforts to reduce greenhouse gas emissions and keep global temperature rise below 2 degrees C (3.6 degrees F) and ideally 1.5 degrees C (2.7 degrees F), and identifying opportunities for additional emissions cuts.
 - Adaptation: Measuring progress in countries' abilities to enhance their resilience and reduce vulnerability to climate impacts.

- Means of implementation, including finance, technology transfer and capacity building: Assessing progress on aligning financial flows with emissions-reduction goals and climate-resilient development, and providing support to developing nations to address the climate crisis.

COP26 –CMP16 CMA3 Glasgow 2021:

- COP26 signaled the start of an important stock taking process to assess Parties' progress against the Paris goals on implementation over the next two years. This would culminate in 2023 at the Global Stocktake held in COP28.

23.3.1 What happened in COP27 – CMP17 CMA4 Sharm El Sheikh 2022?

During, a series of responses and outcomes where tackled:

Mitigation:

- Parties want the GST outcome to provide clear actions and solutions for achieving the 1.5°C target, with a focus on emissions in 2035 and 2040.
- There's a debate on whether all countries or developed countries should take the lead in emission reductions.
- Parties seek guidance on transitioning from fossil fuels to renewables, near-term action announcements, and support for enhanced mitigation.
- The GST should help update Long-Term Strategies and encourage scaled investment for mitigation.

Adaptation:

- Parties expect the GST to highlight the need for adaptation efforts, improve monitoring, and avoid maladaptation.
- They want clear methods to assess adaptation gaps, global targets for NDCs in 2025, and a review of progress on adaptation goals.
- Some Parties propose specific recommendations for loss and damage actions, including risk assessment, early warning systems, and funding arrangements.

Finance and Support:

- Parties call for guidance on resource mobilization in line with climate goals, defining finance flows, and reforms for development banks.
- They emphasize the importance of the New Collective Quantified Goal (NCQG) and mobilizing unprecedented financial flows for ambitious actions.

- Parties support efforts to phase out subsidies inconsistent with Paris Agreement goals.
- Finance, technology transfer, and capacity-building are seen as essential for achieving ambition in mitigation and adaptation.

Equity and Science:

- Parties stress the importance of equity and common but differentiated responsibilities (CBDR-RC) in guiding GST work.
- They want equity to drive ambition and a focus on human rights, gender, and intergenerational justice.
- The GST should rely on the best available science, with recommendations to address research gaps in the global climate system.

Balance, Inclusivity, and Transparency:

- Parties emphasize the need for a balanced, ambitious, and inclusive GST outcome that covers all thematic areas of the Paris Agreement.
- They want political messages that support progress and implementation, following a global, transparent, and consensus-based approach.

Needed steps to address more clearly:

- Exploring synergies where the GST could leverage on discussions from all related processes and that the GST outcomes be carried forward post-COP28, through the relevant work programmes that already exist. This could be done through highlighting the state of current efforts, gaps identified in the technical assessment and the recommendations to bridge the identified gaps and as well as the opportunities available for doing so.
- strengthen the implementation of other international agreements that aim at reducing vulnerability as well as pursuing low-carbon and sustainable development, for example the Sustainable Development Goals, the Sendai Framework for Disaster Risk Reduction, the other Rio Conventions, as well as the International Maritime Organization, International Civil Aviation Organization and the United Nations Convention on the Law of the Sea.

23.3.2 What will happen in COP28 – CMP18 CMA5 Dubai 2023?

Evaluating the world's progress on slashing greenhouse gas emissions, building resilience to climate impacts, and securing finance and support to address the climate crisis, during:

- The third and final phase of the Global Stocktake, consideration of outputs, will take place at COP28 in Dubai. This stage is critical, as it will determine how

countries respond politically to the gaps and opportunities identified in the technical phase.

- During Phase 3, country delegates will discuss the Stocktake's technical findings, identify opportunities and challenges, and assess measures and best practices for climate action and international cooperation. Following these discussions, countries will collectively produce a summary of key political messages, which can then be referenced in COP28's final decision. This final decision would formalize the guidance and commitments all countries adopt in developing their future climate actions and support.
- By the end of COP28, countries must agree on how they will leverage the Stocktake's findings to keep the global goal of limiting temperature rise to 1.5 degrees C alive and address the impacts of climate change.
- COP28 should also finalize crucial work on several long-awaited deliverables, including deciding on a global goal on adaptation, the details of the loss and damage finance facility, a global goal on finance, closing the massive emissions gap and accelerating both clean energy and a just transition, as well as work in many other areas.

24. ARTICLE 15 (COMPLIANCE)

1. A mechanism to facilitate implementation of and promote compliance with the provisions of this Agreement is hereby established.
2. The mechanism referred to in paragraph 1 of this Article shall consist of a committee that shall be expert-based and facilitative in nature and function in a manner that is transparent, non-adversarial and non-punitive. The committee shall pay particular attention to the respective national capabilities and circumstances of Parties.
3. The committee shall operate under the modalities and procedures adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement at its first session and report annually to the Conference of the Parties serving as the meeting of the Parties to this Agreement.

24.1 General Overview

Article 15 is based on a managerial model of compliance that facilitates national implementation of the substantive obligations under the agreement. A well-designed facilitative, implementation-focused Article 15 mechanism may assist in addressing many of these capacity issues, including by facilitating institutional, policy and legislative arrangements at the national level to track and incentivize implementation.

In addition, Article 15 provides a dual function of compliance and implementation by all parties of their obligations under the Paris Agreement.

- 'Compliance' involves the observance by countries of their international commitments.
- 'Implementation' focuses on how governments implement their international obligations at a domestic level, where those international obligations are not self-executing ones.

Negotiating History

An important challenge confronting governments and the international community has been how best to implement and comply with commitments under MEAs. Accordingly, a discrete theory of compliance under MEAs has evolved under which efforts focus on preventing non-compliance, facilitating compliance, and managing compliance.

Under the United Nations Framework Convention on Climate Change (UNFCCC), Article 13 required the Conference of the Parties (COP) to 'consider the establishment of a multilateral consultative process ... for the resolution of questions regarding the implementation of the Convention' at its first meeting. Although parties developed a draft multilateral consultative process (MCP), it was never adopted by the COP, largely because of a disagreement on the composition of the committee.

In contrast, the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP), at its first session, pursuant to Article 18 of the Kyoto Protocol, successfully established a compliance mechanism. The mechanism consists of a compliance committee that functions through a plenary and two branches, one facilitative and one aimed at enforcement.

Given this history and the significant differences between the Kyoto Protocol and the Paris Agreement in terms of design, scope, and the nature of obligations, a number of central choices had to be made by parties. These choices can be broadly characterized as follows:

- The purpose of the mechanism and its scope
- The institutional arrangements of the mechanism and
- How to reflect differentiation between parties in accordance with the principle of common but differentiated responsibilities and respective capabilities (CBDRRC)

Progress was made during ADP 2–8 in Geneva, with a further refinement of options down to three and elaboration of some of the key decisions to be made within each of these options. The discussions in Geneva centered on one of the central choices parties faced in the design of a new mechanism under the Paris Agreement, which was how to reflect differentiation in the design of the mechanism. Throughout the negotiations, many parties felt that it was premature to even discuss the arrangements for facilitating implementation and compliance without having clarity of the nature of the obligations under the Paris Agreement. The final draft for the Paris Outcome proposed by the President at 21:00 on 10 December still had 'and promoted compliance with' in square brackets.

24.1.1 Overall scope, purpose, and functions of the mechanism (Article 15.1)

Article 15.1 of the Paris Agreement establishes a new mechanism 'to facilitate implementation of and promote compliance with the provisions of this Agreement'. This provides guidance on two important matters: **the scope** and **purpose of the mechanism**. The scope of the mechanism is not necessarily constrained to any particular provision or provisions of the Agreement. The purpose of the mechanism is 'to facilitate implementation' and 'promote compliance'. In addition, Article 15.1 will guide how the mechanism is developed, but there is much scope for the parties to elaborate on and decide how these matters will be operationalized through the modalities for the committee.

Institutional structure and central characteristics of the mechanism (Article 15.2)

Article 15.2 provides that the mechanism shall consist of a committee that 'shall be expert-based and facilitative in nature' and function 'in a manner that is transparent, non-adversarial and non-punitive'. Article 15 does not establish any differentiated category of parties or application of specific measures, essentially creating a universal mechanism. However, guidance is provided by Article 15.2, which states that the committee is to 'pay particular attention to the respective national capabilities and circumstances of Parties'.

In addition, Article 15.2 provides that the mechanism shall function 'in a manner that is transparent, non-adversarial and non-punitive'. These concepts will guide the development of the procedures that the committee will apply. In particular, adherence to due process will be important to ensure the work of the committee is transparent, balanced, and fair

Future development and elaboration (Article 15.3)

Article 15.3 requires the committee to operate under the modalities and procedures adopted by the CMA at its first session. The COP assigned responsibility for the development of these modalities and procedures to the Ad Hoc Working Group on the Paris Agreement (APA)

Such modalities and procedures will need to address the precise scope of the committee's work, possible triggers for action, its independence from the CMA, the capacity in which individual members serve, how to ensure due process and what measures can be taken.

24.2 The timeline of Compliance:

COP1, Berlin 1995:

- The UNFCCC includes a number of provisions that are relevant to compliance, such as: Article 4.1(a), which requires Parties to report on their greenhouse gas emissions inventories, Article 12.1, which requires Parties to communicate information on their national climate change policies and measures, and Article 12.5, which requires Parties to make public information related to their implementation of the UNFCCC.

COP3, Kyoto 1997:

- The Kyoto Protocol established binding emissions reduction targets for developed countries and included a number of compliance mechanisms, such as the Compliance Committee. The Compliance Committee was tasked with ensuring that Parties complied with their obligations under the Kyoto Protocol, including their emissions reduction targets.

COP6, The Hague 2000:

- Adopted the Hague Declaration, which called for the strengthening of the compliance framework under the Kyoto Protocol.

COP7, Marrakech 2001:

- Adopted the Marrakesh Declaration, which reaffirmed the commitment of Parties to the Kyoto Protocol and its compliance framework. The Declaration also called for the strengthening of the compliance framework and for Parties to provide the Compliance Committee with the resources it needs to carry out its work.

COP8, New Delhi 2002:

- Adopted the New Delhi Declaration, which called for the further strengthening of the compliance framework under the Kyoto Protocol. In addition, the New Delhi Work Programme on Article 10 provided a roadmap for the implementation of Article 10 of the Kyoto Protocol, it called for Parties to establish and implement national systems for the estimation of anthropogenic emissions by sources and removal by sinks of all greenhouse gases not controlled by the Montreal Protocol.

COP9, Milan 2003:

- Adopted the Milan Declaration, which reiterated the importance of compliance with the Kyoto Protocol.

COP10, Buenos Aires 2004:

- Adopted the Buenos Aires Programme of Work on Compliance, which was a two-year program designed to improve the compliance system under the Kyoto Protocol. The Programme of Work included a number of activities, such as developing a compliance manual and training Parties on the compliance system

COP13, Bali 2007:

- The Bali Action Plan was a roadmap for the negotiations on the new international agreement. The Plan called for the new agreement to include a compliance mechanism that is effective, fair, and transparent.

COP21 CMP11, Paris 2015:

- The Paris Agreement also includes a number of compliance provisions, such as the Paris Agreement Implementation and Compliance Committee (PAICC). The PAICC is responsible for facilitating implementation of and promoting compliance with the provisions of the Paris Agreement. However, the compliance mechanisms under the Paris Agreement are still under development.

COP22 CMP12 CMA1, Marrakech 2016:

- The modalities, procedures, and guidelines (MPGs) for the compliance mechanism were adopted. The MPGs provide detailed guidance on how the compliance mechanism should operate.

COP23 CMP13 CMA1–2, Bonn 2017:

- The Paris Agreement Implementation and Compliance Committee (PAICC) was established. The PAICC is the body responsible for operating the compliance mechanism.

COP24 CMP14 CMA1–3, Katowice, Poland, 2018:

- A number of decisions were adopted that further elaborated on the compliance mechanism, such as by providing guidance on how the PAICC should operate and on how to ensure that the compliance mechanism is fair and transparent.

COP25 CMP15 CMA2, Madrid 2019:

- A number of decisions were adopted that further strengthened the compliance mechanism, such as by establishing a new process for addressing cases of non-compliance by developed countries.

COP26 CMP16 CMA3, Glasgow 2021:

- A number of decisions were adopted that further strengthened the compliance mechanism, such as by establishing a new process for addressing cases of non-compliance by developing countries and by providing guidance on how to enhance the transparency of the compliance mechanism.

24.2.1 What happened in COP27 CMP17 CMA4, Sharm El Sheikh 2022?

- A number of decisions were adopted that further strengthened the compliance mechanism, such as by establishing a new process for addressing cases of non-compliance by non-state actors and by providing guidance on how to enhance the effectiveness of the compliance mechanism.

SECTION C: IMPORTANT FILES AND POLICY BRIEFS

25. IRAQ'S NDC AND PROGRESS





List of contents

- Introduction about NDC
- Adaptation measures
- Mitigation measures
- Monitoring
- Iraq contribution
- List of Iraq obligation to improve climate change
- Recent activities to implement NDC

IRAQ HIGHLY VALUABLE IN CLIMATE CHANGE



WATER SCARCITY

The agricultural sector is one of the most water consuming sectors in Iraq (about 25 billion cubic meters/year), as the water consumption rate in this sector ranges between 85-90%, due to the use of open and old irrigation channels, poor management of water resources and dilapidated infrastructure, and the use of Ancient irrigation techniques (surface irrigation) for some crops such as rice and traditional farming patterns. The quantities of irrigation water exceeded the specified water quotas, which, over time, led to a rise in water levels, waterlogging and salinization of the soil. .



THE ESTIMATES OF THE WORLD BANK FOR THE YEAR 2011 INDICATED A SIGNIFICANT SHORTAGE AND SCARCITY OF WATER SOURCES FOR IRAQ COMPARED TO THE ACTUAL NEED DURING THE PERIOD FROM 2000 TO 2009, WHILE IT IS EXPECTED THAT THIS PERCENTAGE REACHES 37% DURING THE PERIOD FROM 2020 TO 2030, WHICH WILL INCREASE TO REACH 51% DURING THE PERIOD FROM 2040 TO 2050, AND THIS EXPLAINS THE REASON FOR THE GREAT COLLAPSE IN THE AGRICULTURAL SECTOR,

IRAQ HIGHLY VALUABLE IN CLIMATE CHANGE



COMBINED CRISIS

IT WAGED ON IRAQ CAUSED MASSIVE DAMAGE TO INFRASTRUCTURE AND PROPERTY, WHICH IS ESTIMATED TO BE ABOUT 46 BILLION DOLLARS INVESTMENTS TO REPAIR THEM, WHICH AFFECTED THE NATIONAL ACTIONS IN FACING THE RISKS OF CLIMATE CHANGE

COVID-19 CRISIS

THE OUTBREAK OF THE COVID-19 PANDEMIC THAT THE COUNTRY FACED. LIKE THE REST OF THE WORLD, SINCE THE BEGINNING OF 2020 UNTIL NOW, IT HAS GREATLY AFFECTED THE HEALTH SECTOR, WHICH IS ALREADY SUFFERING FROM FRAGILITY, WEAKNESS AND INSUFFICIENT STAFF

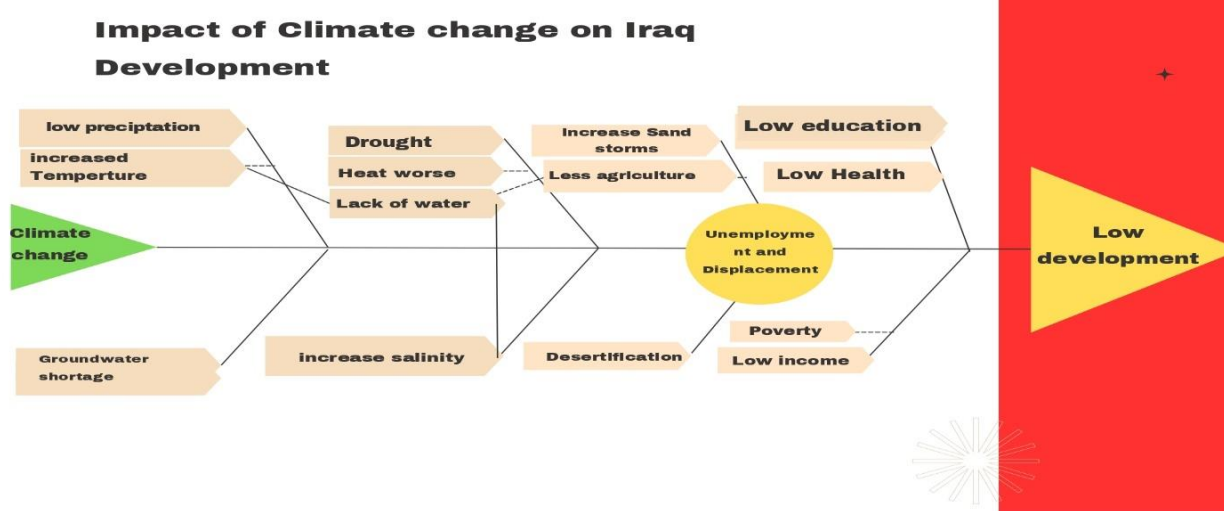
IT'S ALL ABOUT THE NDC

National conditions and capabilities:

Iraq is considered one of the vulnerable countries to the effects of global warming and climate change in its multiple dimensions

Nationally determined contributions of Iraq

This document is a voluntary national contribution and a vision that represents Iraq's supreme policy in dealing with the issue of climate change, on a national and international levels. This document comes in response to the Paris Agreement, which was approved at the twenty-first conference of the Parties to the Framework Convention on Climate Change (UNFCCC).



ADAPTATION MEASURES



Water Resources Sector

Agriculture sector

Health sector

Natural ecosystem sand forests

Coastal areas and sea level rise

Sanitation and Waste Sector

**Climate, recurring and slow-onset events and risks from climate
change**

energy sectors

Tourism and world heritage (natural and cultural)

ADAPTATION MEASURES



WATER RESOURCES SECTOR

The overall goal is to increase the resilience of the water resources sector in the country by adopting an integrated approach that addresses future water demand and reduces the potential deficit by introducing alternative and non-conventional sources, improving infrastructure and supply efficiency, and preserving water sources from pollution as part of sustainability.



AGRICULTURE SECTOR

Goal: Enhance agricultural resilience to climate change, safeguard food security, reduce soil degradation, boost revenues, promote economic diversification, reduce poverty, and support rural women using modern technologies for sustainable development.



HEALTH SECTOR

The goal is to increase the health sector's resilience to climate change by providing comprehensive support to health institutions and infrastructure to improve national response, rehabilitate health fragile communities, and build resilience and adaptation, which will help achieve sustainable development goals.



NATURAL ECOSYSTEMS AND FORESTS

Expanding ecosystems' resilience to climate change and implementing nature-based climate solutions to protect fragile, rare, and endangered areas are the main goals.

ADAPTATION MEASURES



COASTAL AREAS AND SEA LEVEL RISE

The overall goal: Develop strategies to protect the marine environment, its biodiversity, and coastal areas to reduce its erosion, increase its resilience to sea level rise, increase its ability to absorb carbon, preserve the related natural environments, and address the risks and threats to marine life and infrastructure.



SANITATION AND WASTE SECTOR

The overall goal: to support the integrated management of waste and to promote and improve its management and recycling to produce energy from solid waste, preserve the environment, improve the quality of treated water, and reduce energy consumption as part of achieving sustainable development goals.



CLIMATE, RECURRING AND SLOW-ONSET EVENTS AND RISKS FROM CLIMATE CHANGE

The overall goal: The country aims to increase the predictive capacity of government institutions' infrastructure and improve preparedness by reducing exposure to climate risks and increasing the resilience of sectors affected by the negative impacts of climate change.



ENERGY SECTOR

The overall goal: Increasing the resilience of the energy sector in the face of climate change through support for adaptation programs and working simultaneously with mitigation axes to enhance the national response in addressing climate changes and increasing the percentage of the population benefiting from electricity and transportation services

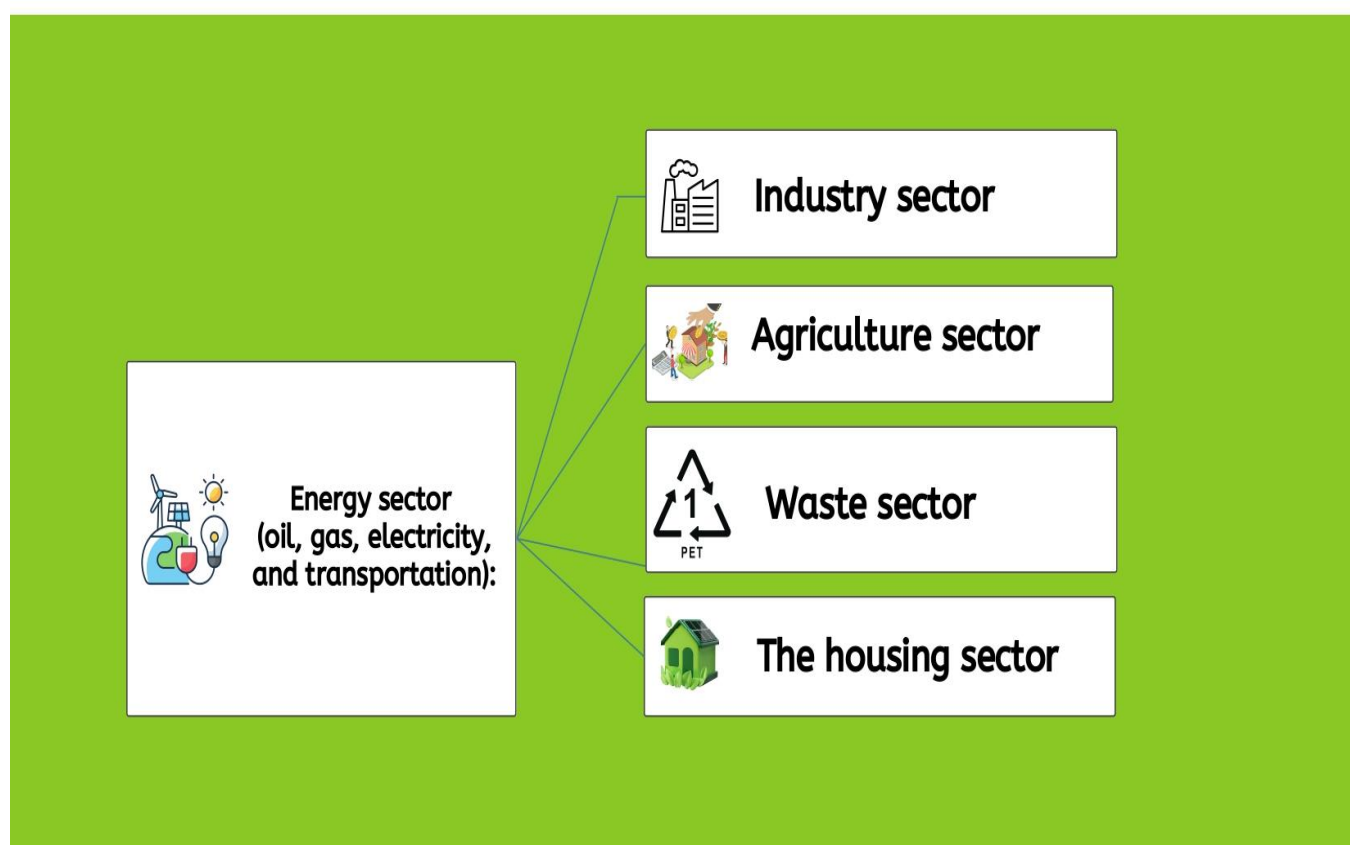


TOURISM AND WORLD HERITAGE (NATURAL AND CULTURAL)

The overall goal: To increase the resilience of the tourism and world heritage sector and encourage it as one of the most important sources of diversification of the country's economy resources, to protect archaeological sites, world heritage and indigenous peoples from the threats of climate change, and to encourage sustainable eco tourism

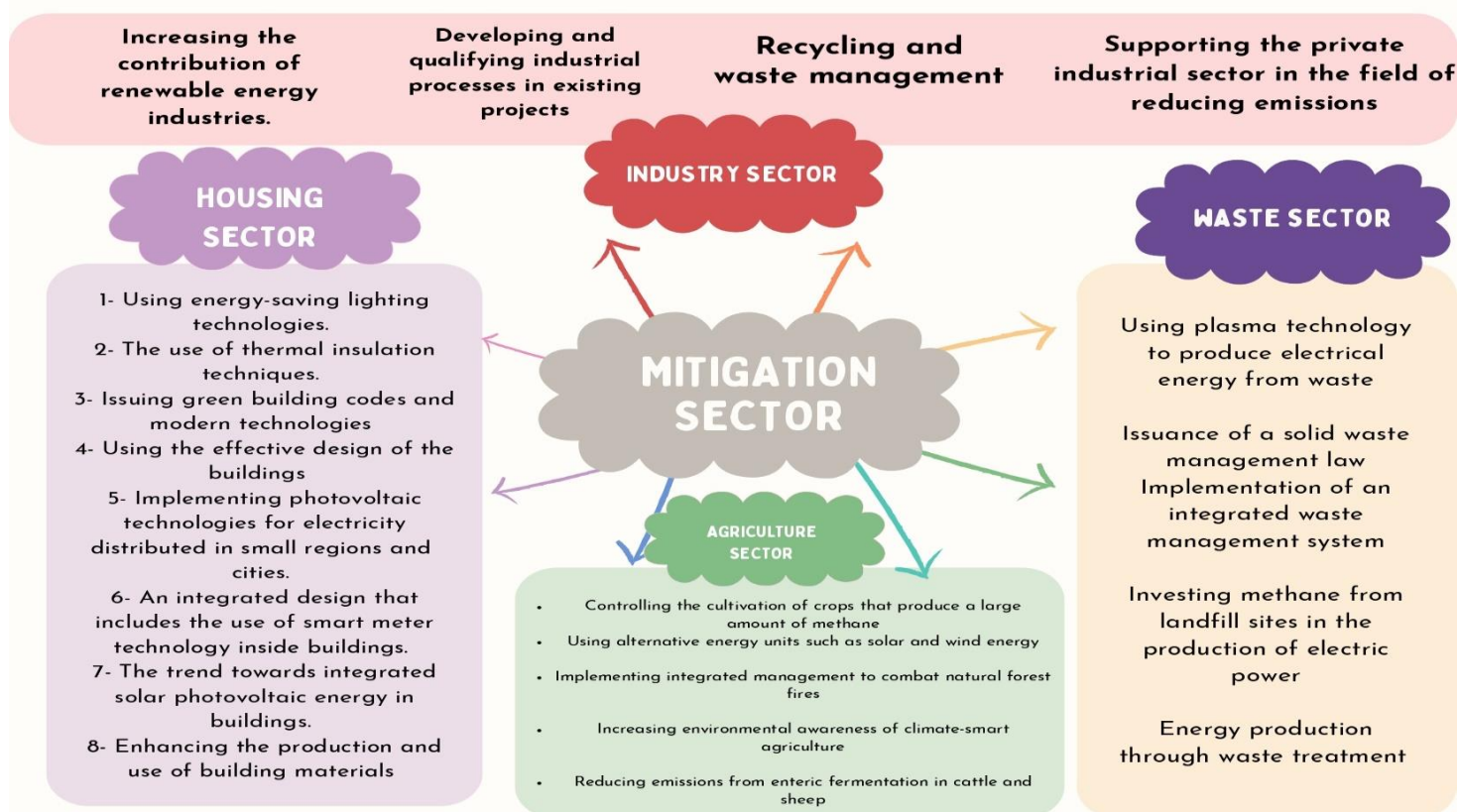
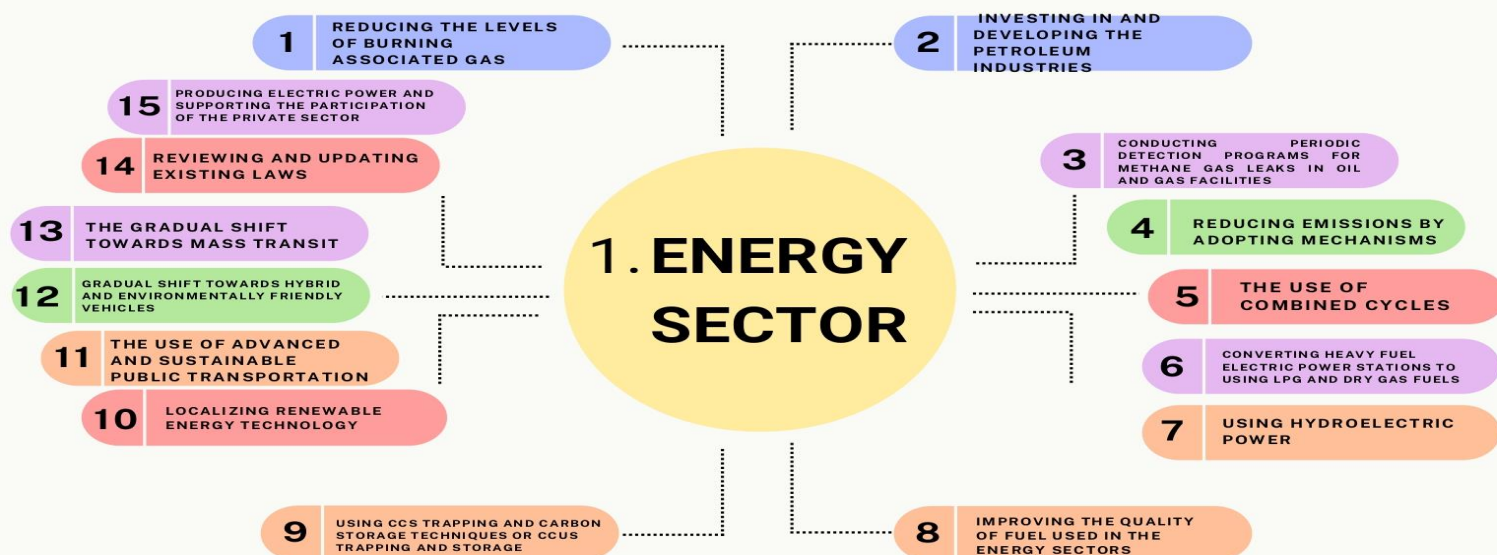
Mitigation measures and co-benefits

The national sectors are working on to reduce emissions



MITIGATION MEASURES IN ENERGY SECTOR

THE PATHS THAT THE NATIONAL SECTOR IN IRAQ WORKING TO REDUCE EMISSIONS



MONITORING, REPORTING AND VERIFICATION

Iraq realizes that these systems it will improve the transparency framework in the following:

1

1. NATIONAL INVENTORY OF GREENHOUSE GASES AND THEIR REPORTING FOR EACH EMITTING ACTIVITY.

2

2. Incentivizing oil and gas companies operating in Iraq to report methane emissions within known transparent frameworks, such as the Oil, Gas and Methane Partnership Framework (OGMP).

3. COLLABORATE IN CAMPAIGNS TO DIRECTLY MEASURE THE LOCATIONS AND AMOUNTS OF METHANE EMITTED BY OIL AND GAS FACILITIES AND USE SATELLITE DATA TO ESTABLISH A BASELINE OF EMISSIONS.

3

4

4. ASSESSMENT OF PROGRESS IN THE IMPLEMENTATION OF THE NATIONALLY DETERMINED CONTRIBUTION

5. IDENTIFYING AND EVALUATING THE ADVERSE EFFECTS OF CLIMATE CHANGE ON FRAGILE SECTORS.

5

6

6. DESCRIBE THE CO-BENEFITS BETWEEN MITIGATION AND ADAPTATION 7. THE EFFECT OF IMPLEMENTING RESPONSE MEASURES ON THE NATIONAL ECONOMY.

8. ASSESSING NATIONAL NEEDS AND THE TYPE OF CLIMATE TECHNOLOGY THAT CONTRIBUTES TO ACHIEVING SUSTAINABLE DEVELOPMENT GOALS.

7

8

9. DETERMINE THE TYPE OF CAPACITY THAT NEEDS TO BE BUILT TO ENSURE FEASIBLE NATIONAL MITIGATION MEASURES IN CREATING GREEN JOBS.

UNDP

MONITORING, REPORTING AND VERIFICATION

Iraq realizes that these systems it will improve the transparency framework in the following:

10

10. Determining the type of financing and investment that guarantees the implementation of the national contribution in accordance with the country's national policy.

11. LOCALIZE TECHNOLOGIES AND SOFTWARE THAT ALLOW DESIGN PREDICTIVE MODELS FOR MITIGATION AND ADAPTATION

11

12. DESCRIBE THE FEATURES OF VERIFYING THE MEASURES TAKEN TO MITIGATE AND ADAPT TO THE EFFECTS OF CLIMATE CHANGE

12

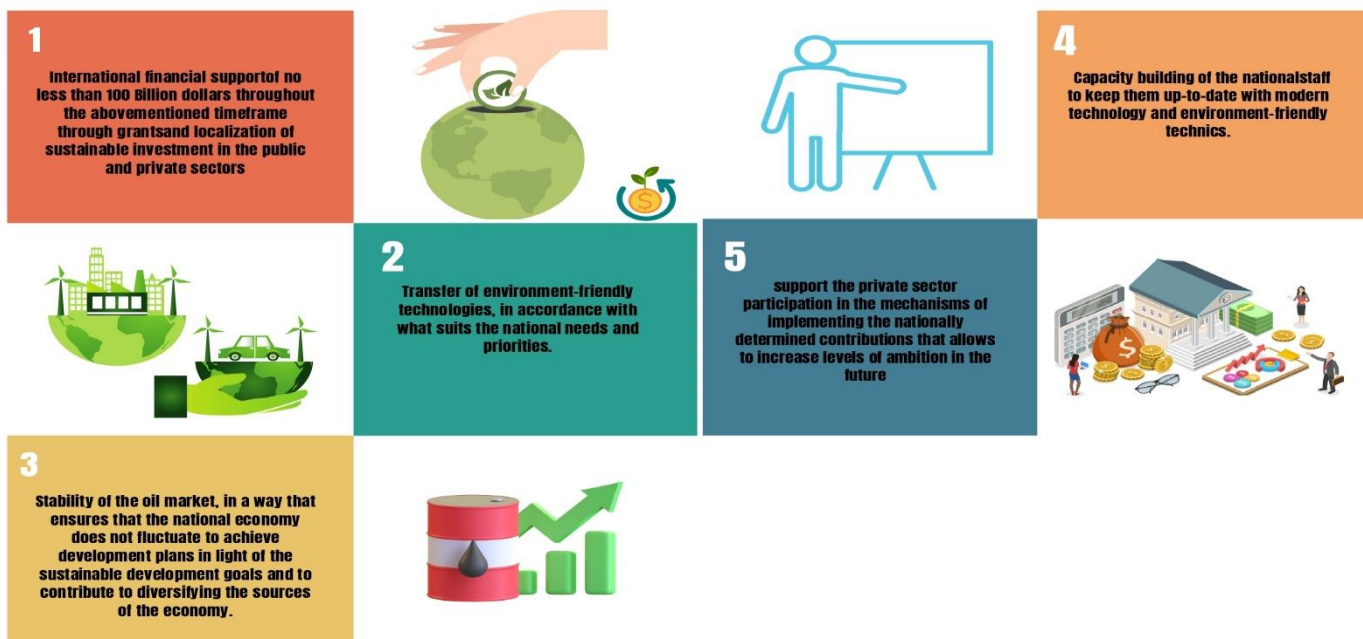
13

13. DETERMINING THE TYPE, FORM AND LEVEL OF INSTITUTIONAL STRUCTURES REQUIRED IN ACCORDANCE WITH INTERNATIONAL AND NATIONAL TRENDS TO CONFRONT CLIMATE CHANGE.

UNDP

5

Iraq can only reach its mitigation and adaptation goals included in the NDC by having the following



Iraq aspires to implement its Nationally Determined Contribution for the **timeframe from 2021**

to **2030**, with an expected reduction of between **1-2% of its total emissions**, according to national inventories of greenhouse gases, and 15% when international technical and financial support is available, and to achieve security and peace as defined in this document

25.1 Iraqi Government have funded several initiatives that address climate change, such as:

Prime minister office: development of the first international conference of Climate change in Basra governorates which include, which includes the following comprehensive national recommendations according to the formal letter that published by Prime Minister Office:

First: Agriculture and combating desertification

- Forming a high-level national committee headed by the Ministry of Agriculture and the membership of the relevant national authorities in order to implement the afforestation initiative launched by His Excellency the Prime Minister, and to integrate all afforestation initiatives launched nationally to be within the initiative of His Excellency the President, due to the importance of unifying efforts and ensuring good scientific implementation.
- Assigning the follow-up team of the outcomes of the climate conference to follow up the implementation of the initiative sponsored by the Ministry of Agriculture

Second: National Afforestation Guide

- Adoption of the National Guide for Afforestation issued by the Ministry of Higher Education and Scientific Research.
- The Ministry of Higher Education and Scientific Research sends an electronic and paper copy of the National Guide for Afforestation by an official letter to the Prime Minister's Office for the purpose of circulating it to all national authorities.

Third: Natural Cover Development Project to Combat Desertification:

Assigning the Ministry of Agriculture to adopt a national program for the purpose of selecting the appropriate types of afforestation recommended in the National Afforestation Guide, and propagating them as they have competence, as well as choosing their cultivation areas, according to the program prepared for this purpose, a copy of which was submitted to the Technical Undersecretary of the Ministry of Agriculture, representative of the Ministry of Agriculture in the team.

Fourth: Setting Iraq's vision for climate action until 2030

- Forming a sub-team headed by the Undersecretary of the Ministry of Technical Planning and the membership of representatives of the output team from the ministries of (Environment, Planning, Higher Education and Scientific Research, Oil, Finance, Agriculture, Electricity, Water Resources) to develop Iraq's vision for climate action and grant the sub-team the authority to seek the assistance of whomever it deems appropriate for its work .
- The same sub-group shall be tasked with reviewing the version of the Green Paper prepared by the Ministry of Environment with the various national authorities.

Fifth: Implementation of the projects contained in the National Biodiversity Strategy, the Pollution Control Strategy and the Emission Reduction Document

Assigning a sub-team headed by the Undersecretary of the Ministry of Technical Planning and the membership of the representatives of the Ministry of Environment in the team for the purpose of translating the projects mentioned in the above documents into executive programs (issuing a project document) to be approved and submitted to the Ministerial Council of Economy.

Sixth: Expanding the National Initiative to Reduce Emissions to include various sectors

Assigning the Undersecretary of the Ministry of Environment and Head of the National Initiative to Reduce Emissions to develop mechanisms and proposals that contribute to expanding the work of this initiative to include the private sector and various other sectors.

Seventh: The priority of Basra Governorate

- Holding an annual Iraqi International Climate Conference in Basra Governorate .
- Work on activating seawater desalination projects as well as injecting wells from seawater to alleviate the water crisis in the governorate .
- Instructing the Ministry of Agriculture to give priority to Basra Governorate in the afforestation initiative.

Eighth: Preparing national interventions and statements to pressure international agreements, especially the Convention on Climate Change

- Forming a team headed by the Ministry of Foreign Affairs and the membership of each of the ministries (environment, water resources) to present an integrated vision on the possibility of placing the water item on the agenda of the United Nations General Assembly .
- The ministries (Foreign Affairs, Environment, Water Resources) to implement several side events related to the issue of water and the impact of climate change and the consequent emergence of diseases and epidemics, as well as increasing coordination with countries affected by climate change to pressure upstream countries (Iran, Turkey) to sign transboundary water agreements .

Ministry of Environment: is engaged in several climate change-related initiatives, such as:

- Creating a national climate change adaptation action plan
- Provide a framework at the national level for tracking and evaluating greenhouse gas emissions.
- Raising public awareness of the effects of climate change.
- Implementation of the governmental program to support climate change in Iraq
- High level participatory approach to support Iraq negotiation in COP-28.

Ministry of Electricity: By putting several projects into action, the Ministry of Electricity hopes to raise the proportion of renewable energy in Iraq's energy mix. These programs include:

- Building of wind and solar power facilities
- Increasing the traditional power plants' efficiency

Ministry of Water Resources: implements several projects, such as the following, in order to manage water resources in a sustainable manner:

- Constructing reservoirs and dams
- Increasing irrigation's effectiveness.

Ministry of Agriculture: By putting several initiatives into action, the Ministry of Agriculture is trying to improve the agricultural sector's ability to adapt to climate change. These initiatives include:

- Creation of plant and crop types resistant to climate change
- Educating farmers on methods of sustainable farming

Other Iraqi ministries also support climate change by implementing related projects. These include the following:

Ministry of Oil and Energy Affairs, according to their report number 402 in the first of October 2023, the Ministry of Oil's measures in the field of energy reduction includes the following:

- Establishment of a central committee at the Ministry's headquarters from the concerned departments with a representative from the Ministry of Environment.
- Establishment of subcommittees in oil companies.
- Obtaining the approval of the Prime Minister to authorize the Ministry of Oil to establish a mechanism for working with carbon bonds, and to establish and approve working mechanisms and negotiations with the competent companies to finance national projects from this section, which will save the necessary costs that burden the general budget. Work is currently underway on three
- Projects with external carbon financing exceeding \$33 million.
- The cadres of the two committees are being trained through carbon economics programs and in cooperation with the Norwegian side within the OFD mechanism signed between the two countries. One program has been completed and the other is under implementation
- Building the ministerial team for the methane emissions inventory program through the cooperation mechanism with the Norwegian side. Conduct an inventory of methane emissions for the Middle Oil Company as a case study and train staff on the program Methane Inventory MIST.
- Direct training of cadres from other oil companies to work on the program
- Obtaining free licenses to install it within the capacity building program.
- According to the second national emissions report for the year 2019, Iraq contributed to the release of 177 million tons of emissions during that year. The BNGL-1 project achieved a reduction of 5 million tons per year. The national reduction rate for the project alone is: $177/5=2.78\%$. This is higher than what is required in the national contributions document NDC is 2-1% (Ministry of oil, 2023).

Ministry of Health/ department of climate change: raising public awareness of climate change and human health, development a study to demonstrate the effect of climate change on cardiac disease during summer.

Ministry of higher education and scientific research: establishment of scientific committees in all Iraq universities to mainstream the topic of climate change in syllabus and activities of all academic fields.

Ministry of education: use the climate change principles in the Textbooks in Initial and advanced academic stages.

Ministry of planning: preparation of the national report to review the climate change challenges in Iraq and the measures to address the climate change in Iraq.

25.2 Iraq is confronted with some noteworthy obstacles concerning climate change, such as:

- Its primary energy sources are gas and oil; its geographic location makes it susceptible to the effects of climate change
- Disagreements about politics and security

By putting the aforementioned programs into action and encouraging global collaboration on climate change, the Iraqi government hopes to address these issues.

Reference:

1. Ministry of Environment (2015), National contribution document.
2. Prime minister office (2023). Basra conference recommendation.
3. Ministry of planning (2023). The challenges of climate change in Iraq.
4. Ministry of Oil (2023). The renewable energy report – climate and Carbon emission.

26. NAMA

26.1 The NAMA Strategy

The NAMA (Nationally Appropriate Mitigation Action) strategy represents a sectoral approach to effectively reach the ambitious targets outlined in the Nationally Determined Contributions (NDCs). Several key features emerge from the strategic plan derived from the NAMA Baseline Report.

The strategy requires a strong emphasis on economic alignment. This entails ensuring that proposed projects are not only geared towards reducing emissions but also in tune with Iraq's national economic interests. The goal is to stimulate economic growth that is conducive to poverty reduction, creating fresh employment opportunities within the private sector while nurturing growth in emerging fields.

The NAMA strategy places significant importance on the initiation of the first set of strategic projects that seamlessly align with both Iraq's NDC objectives and the Sustainable Development Goals (SDGs). This convergence is pivotal in achieving a holistic and sustainable approach to mitigating climate change. It ensures that actions taken to meet NDC targets contribute

positively to Iraq's broader social and economic aspirations, encapsulating the principles of sustainability at the core of the strategy's execution.

Iraq will endorse its first NAMA before COP28 - 2023.

NAMA to Drive Progress

The concept of NAMAs (Nationally Appropriate Mitigation Actions) in Iraq presents a unique opportunity to mobilize essential technical, human, and financial resources within key sectors of the Iraqi economy:

- **Mobilizing Support for Sustainable Development:** NAMAs provide a vital avenue for the Government of Iraq to harness both national and international support. By doing so, Iraq can effectively pursue greenhouse gas (GHG) mitigation and sustainable development objectives, not only at a national level but also within local communities.
- **Aligning with NDC Objectives:** NAMAs play a pivotal role in supporting Iraq's efforts to reach its mitigation targets by 2030, aligning with a sectoral approach as outlined in its Nationally Determined Contributions (NDC). This alignment ensures that key sectors are actively engaged in the nation's broader NDC initiatives.
- **Realizing Vision 2030:** NAMAs are an integral part of Iraq's journey towards realizing its Vision 2030. By facilitating the improvement of critical infrastructure and bolstering political governance, NAMAs contribute significantly to achieving Iraq's 2030 development goals.
- **Leveraging International Funds:** The implementation of NAMAs positions Iraq to access financial resources from the international community. These funds are essential for meeting both unconditional and conditional targets established within the NDC, thus driving the nation's progress in reducing GHG emissions.
- **Strengthening National Monitoring and Reporting:** NAMAs play a vital role in enhancing Iraq's national Monitoring, Reporting, and Verification (MRV) system, as well as GHG inventories. By consolidating data across various participating sectors, NAMAs contribute to a more robust and accurate assessment of Iraq's emissions, underpinning effective climate action.

26.2 Sectorial Prioritization

Concept Note n1: Power Solar PV agrisolar and small businesses buildings)

Promote the use of solar photovoltaic systems on small farms and SMEs buildings for clean energy generation and reduced reliance on fossil fuels.

Concept Note n2: Oil and Gas Flaring from Oil Fields

Address the issue of gas flaring in the oil and gas sector to reduce greenhouse gas emissions and utilize valuable energy resources.

Concept Note n3: Agriculture and Reforestation

Encourages sustainable agricultural practices and reforestation efforts to sequester carbon and enhance ecosystem resilience.

Concept Note n4: Municipal Transport in Baghdad (

Introduce a Bus Rapid Transit (system in Baghdad to promote sustainable and efficient public transportation, reducing emissions from private vehicles

Concept Note n5: Low Carbon in the Cement Sector

Implement measures to reduce emissions in the cement industry, such as energy efficient technologies and alternative fuels.

Iraq's Sectorial Emissions

1. Oil and Gas Emissions Sector:

a. Production:

As of June 2022, Iraq's production of associated and non-associated natural gas reached 3,868 million cubic feet. Additionally, the daily production of dry gas from Iraqi fields is approximately 1,217 million cubic feet. A significant portion, about 51%, of the associated gas is flared for oil production purposes. Of this flared gas, 40% is liquefied petroleum gas (butane and propane), while the remaining 773 million cubic feet of methane is directed to power generation stations. Iraq's daily production of liquefied gas stands at 5,684 tons, with imports totaling 50 million cubic meters per day for electricity generation, of which 1,765 million are burned. The overall total, combining both domestic production and imports, covers approximately 62.5% of actual needs.

b. Consumption and Emissions:

In 2022, carbon dioxide (CO₂) emissions from the oil production sector exceeded 80,533 tons per day, representing an annual increase of over 29.4 million tons. Approximately 5% of methane gas is leaked without combustion from the carbon flare, equivalent to carbon (56-26) CO₂ eq. The annual equivalent carbon emission rate for methane gas is approximately 21.856 million tons. The total annual emissions from the oil production sector amount to about 42.513 million tons. These emissions account for 22.5% of Iraq's total greenhouse gas emissions.

2. Electricity Sector:

a. Production:

As of April 2022, Iraq's electricity production has reached 16,800 megawatts from fuel-based power stations and 5,000 megawatts from steam turbine power stations. Fuel-based power stations contribute to 77% of the total electricity production, while steam turbine power stations account for the remaining 23%. The average total demand for electricity is 25,000 megawatts, and the current production meets approximately 87.2% of this actual demand. During peak hours, the demand surges to 34,000 megawatts, constituting 64% of the total

production capacity. The power stations operate for 20 hours daily, accumulating to 7,300 hours annually. Anticipated annual growth to fulfill demand ranges from 7 to 8 megawatts until 2030, with an annual growth rate of 3.2%.

3. Industrial Sector:

a. Consumption and Emissions:

- Fuel consumption in the industrial sector is primarily concentrated in the extractive and manufacturing industries.
- Approximately 90% of emissions in the industrial sector result from cement and brick manufacturing.
- The total fuel consumption for energy production is 71.8 thousand barrels per day, including heavy fuel and diesel.
- The annual consumption rate is about 26 million barrels.
- Burning one barrel of fuel produces approximately 426.1 kilograms of carbon dioxide.
- Annual emissions reach 11,078.60 million tons per year.
- Compared to the year 2019, the annual increase rate is 1.665%.

b. Cement Production Sector:

- Carbon emissions in the cement industry have two sources: the first is the chemical reaction involved in cement production (direct emissions), which accounts for 50% of emissions, and the second source (indirect emissions) results from the use of fossil fuels in kilns.
- Fuel combustion generates additional carbon dioxide emissions of about 40% of the emissions resulting from the chemical reaction in cement production.
- Electricity used to operate factory machinery and the final transportation represent another source of indirect emissions, constituting 5-10% of industrial emissions.
- HF oil and diesel are used in Iraq in the cement industry.
- The production of one ton of cement requires approximately 6119.3 megajoules.
- Iraq produces approximately 32 million tons of cement annually.
- Approximately one ton of carbon dioxide is emitted per ton of cement production.
- Around 26 million barrels of black oil are consumed.
- Annual cement industry emissions amount to approximately 32 million tons.

c. Brick Production Sector

- In Iraq, there were a total of 713 brick manufacturing plants as of 2017.
- The overall production capacity is 11,954,000,000 bricks annually.
- Every 1,000 bricks produce 80.7 kilograms of carbon dioxide.
- The production involves the use of black oil, diesel, and other fuel types, including plastic waste and wood.

- Approximately one million tons of carbon dioxide are emitted annually from the brick manufacturing process in Iraq.
- In total, emissions from the industrial sector, including producers, amount to around 33 million tons of carbon gas.
- There is no precise data available for other manufacturing industries.

4. Transportation Sector:

- The total number of vehicles in Iraq is 7,460,000 (2023 statistics).
- The transportation sector relies on two types of emission-causing fuels.

a. Gasoline:

- Iraq consumes approximately 28 million liters of gasoline daily (22.21 million kilograms), with 18 million produced locally and 10 million liters imported (excluding the Kurdistan Region).
- Burning one kilogram of gasoline produces 0.85 kilograms of carbon dioxide per liter.
- Approximately 18,878.5 tons are released into the atmosphere daily.
- Over one year, transportation emissions amount to 18.89 million tons of carbon dioxide.

b. Diesel:

- Diesel-powered vehicles (trucks and passenger cars) account for 11% of the total vehicles in Iraq.
- The number of diesel vehicles is 820,600.
- The average daily consumption per vehicle is 20 liters, totaling 16.4 million liters daily (13.77 million kilograms).
- One kilogram of diesel combustion results in 3.22 kilograms of carbon emissions.
- This amounts to 44.33 million tons annually.
- The total carbon emissions from vehicle exhausts reach 63.22 million tons.

5. The Economic and Residential Sector Emissions

- The economic sector shares liquefied gas consumption with the residential sector.
- Liquefied gas consists of 40% butane and 60% propane.
- Approximately 1,665 kilograms of carbon dioxide are produced from each ton of liquefied gas.
- Iraq consumes around 5,500 tons daily (as of 2022) and emits 59,157 tons of carbon gas daily.
- Over the course of a year, this amounts to 3.342 million tons of carbon emissions.

6. The Agriculture and Livestock Sector

- In the agriculture and livestock sector, there are no precise statistics due to the fluctuation in agricultural and livestock products.
- However, in general, Iraq's carbon equivalent emissions for 2019 were as follows:
 - a. Methane: 4.95 million tons of carbon equivalent. (Source: World Bank statistics)
 - b. Nitrous oxide: 4.320 million tons of carbon equivalent. (Source: World Bank statistics)
 - c. Carbon emissions from the sector ranged from 5.6 to 6.7 million tons (Source: 2019 - ccafs).

7. The Municipal and Municipal Waste Sector.

- The total quantity of waste in Iraq is approximately 30,000 tons per day.
- There is an annual increase rate of 3.2%.
- According to the International Panel on Climate Change (IPCC) 2006 equations, every ton of waste generates an average of 781 kilograms of carbon equivalent per ton, consisting of CH₄/CO₂ = 50%/45% respectively.
- Annual greenhouse gas emissions are equivalent to 8.55 million tons.
- Methane is equivalent to 4.2758 million tons of carbon annually (equivalent to carbon 26x).

26.3 The sectorial approach used for verification

In order to identify priority mitigation actions, five relevant categories related to greenhouse gas emissions were targeted based on the Sustainable Development Goals (SDGs). These categories are:

1. Oil Sector NAMA Actions:

- Carbon Removal: Recovery of flare gas, carbon capture and storage (CCS), and conversion of high furnace gas to bioethanol.
- Greenhouse Gas Tracking.

2. Electricity Sector, as part of the UN Sustainable Development Goal 7 "Affordable and Clean Energy":

- Energy Efficiency: Installation of energy-efficient lighting, other electrical equipment (e.g., AC units), and thermal insulation.
- Renewable Energy: Large-scale photovoltaic solar energy, small-scale photovoltaic solar energy, and clean energy storage.

3. Industry and Metals Sector, which includes activities in the following areas:

- Recycling and Waste Management: Methane capture and flaring, waste-to-energy conversion, low-carbon waste management, and reduced raw material consumption.
- Energy Use Efficiency: Energy efficiency in the cement sector, reduced greenhouse gas emissions from refrigerants, reduced energy consumption, improved process control, and productivity enhancement, and reduced leakage.

4. In the agriculture sector, sustainable activities aimed at reducing greenhouse gas emissions include:

- **Low-Carbon Agriculture:** This involves practices such as reducing the use of fertilizers, improving waste management, promoting cover crop cultivation, adopting agroforestry, enhancing water management, and improving fuel efficiency in agricultural operations.
- **Carbon Sequestration:** Actions in this category focus on strategies to capture and store carbon, including reforestation efforts, carbon sequestration in soil, and other nature-based solutions.

4. **In the transportation and residential sectors,** particularly related to the burning of gas and diesel, measures can be taken to reduce greenhouse gas emissions, enhance fuel efficiency, and promote cleaner energy alternatives.

27. National Adaptation Plans (NAP)

Iraq has been named the fifth-most vulnerable country to climate breakdown, affected by soaring temperatures, insufficient and diminishing rainfall³, intensified droughts and water scarcity, frequent sand and dust storms, and flooding. Compounding this, water policies in neighboring countries have shrunk vital water sources, while rapid population growth, urbanization, and inefficient water use by the agricultural and industrial sectors is propelling a demand for more water. Without preparation and planning, the scale of environmental change is likely to be devastating and may force Iraqis to relocate in order to survive. Climate migration is already a reality in Iraq. At the end of 2021, IOM recorded approximately 20,000 people displaced due to water scarcity (looking at only 10 of Iraq's 19 governorates), high salinity, and poor water quality across Iraq, while a 2021 study by the Norwegian Refugee Council found that in drought-affected areas, 1 in 15 households had a family member forced to migrate in search of work¹⁰. As environmental changes intensify, displacement is likely to increase exponentially.

The NAP process seeks to identify medium- and long-term adaptation needs, informed by the latest climate science. Once major vulnerabilities to climate change have been identified, the NAP process develops strategies to address them.

The NAP approach was established under the Cancun Adaptation Framework (CAF) and re-emphasized in the Paris Agreement. Crucially, NAPs follow a continuous iterative process that is country-driven, participatory and transparent.

The NAP process is iterative and participatory, and involves a wide range of stakeholders, including government agencies, civil society organizations, the private sector, and local communities. The process begins with a stocktaking of existing climate knowledge and vulnerabilities, followed by a risk assessment and the development of adaptation options. The final stage of the NAP process is the implementation of adaptation measures and monitoring and evaluation.

NAPs are important for Iraq because the country is highly vulnerable to the impacts of climate change. Iraq is already experiencing rising temperatures, more frequent and severe droughts,

and increased sandstorms. These impacts are expected to worsen in the future, and could have a devastating impact on Iraq's economy, society, and environment.

27.1 The problems:

In Iraq, a multidimensional development and climate crisis is brewing. Iraq's oil-dependent development model, weakening human and institutional capacity, and its deep social divides and inequalities are ingredients of a "perfect storm" centering on a development-climate-fragility nexus.

There is a lack of coordination between different government agencies and ministries on climate change adaptation. This makes it difficult to develop and implement a comprehensive NAP. In addition, there is a lack of reliable data on the impacts of climate change in Iraq. This makes it difficult to assess the risks and develop effective adaptation measures.

Iraq is a fragile country with a long history of conflict and instability. This makes it difficult to implement climate adaptation measures, as resources and attention are often diverted to other priorities.

In addition to these challenges, the NAP process in Iraq is also relatively new. The country only launched its NAP process in 2021, and it is still in the early stages of development. This means that there is a lot of work to be done to develop and implement a comprehensive NAP that will help Iraq to adapt to the impacts of climate change.

Despite the challenges, there is a growing awareness of the importance of climate adaptation in Iraq. The government has committed to developing and implementing a NAP, and there is a growing number of stakeholders working on climate adaptation issues. With the support of the international community, Iraq can overcome the challenges facing its NAP and develop a resilient future.

27.2 The magnitude of the problems:

The intersection of Iraq's development gaps and climate change vulnerabilities call for a rethink of how best to address these combined challenges and respond to the needs and aspirations of the Iraqi people. One of them is adaptation, with a focus on the water-agriculture-poverty nexus.

There are a number of factors that could contribute to climate change-related conflicts in Iraq. These include:

- **Water scarcity:** Iraq is already facing a severe water shortage, which is expected to worsen due to climate change. This could lead to increased competition for water resources between different groups, both within Iraq and between Iraq and its neighbors.
- **Food insecurity:** Climate change is also expected to lead to reduced agricultural yields in Iraq. This could lead to food shortages and increased food prices, which could exacerbate social tensions and make people more vulnerable to conflict.
- **Displacement:** Climate change is expected to displace millions of people around the world, including in Iraq. This could lead to increased competition for resources and increased tensions between different groups.

- Political instability: Iraq is a fragile country with a long history of conflict and instability. Climate change could exacerbate these existing tensions and make the country more vulnerable to conflict.

27.3 Why is it important to tackle this problem and work on it?

The level of risk of climate change-related conflicts in Iraq is high. The country is already facing a number of challenges, including water scarcity, food insecurity, and political instability. Climate change is likely to exacerbate these existing challenges and make conflict more likely. Therefore, it is important to tackle the problem of climate change-related conflicts in Iraq for a number of reasons.

1. Peace and security:

Climate change-related conflicts could have a devastating impact on peace and security in Iraq. Conflict could lead to loss of life, displacement, and economic instability. It could also undermine the country's efforts to rebuild and recover from the recent war.

2. Humanitarian impact:

Climate change-related conflicts could also have a significant humanitarian impact. Conflict could lead to increased food insecurity, malnutrition, and disease. It could also make it difficult for people to access basic services such as healthcare and education.

3. Economic development:

Climate change-related conflicts could also undermine Iraq's economic development. Conflict could lead to damage to infrastructure, disruption of trade and investment, and increased unemployment. This would make it more difficult for Iraq to lift its people out of poverty and create a better future for them.

By working together, the international community and the Iraqi government can help to prevent climate change-related conflicts and build a more resilient and peaceful future for Iraq.

27.4 What are the actions needed or required to address the problems?

The Iraqi government is struggling to meet the basic needs of its population, and climate adaptation is a low priority. This is despite the fact that climate change is already having a significant impact on the country, and is expected to become even more severe in the future.

The Iraqi government and the international community need to take steps to address the risks of climate change-related conflict in Iraq. This includes investing in adaptation measures to reduce the vulnerability of communities to climate change, promoting sustainable development, and addressing the root causes of conflict.

The international community has a responsibility to help Iraq tackle the problem of climate change-related conflicts. This includes providing financial assistance, technical expertise, and diplomatic support.

- The Iraqi government should develop a comprehensive national adaptation plan (NAP) to address the impacts of climate change. The NAP should be developed in

consultation with all relevant stakeholders, including government agencies, civil society organizations, and local communities.

- The international community should provide financial and technical assistance to Iraq to implement its NAP. This could include support for developing water management systems, developing drought-resistant crops, and building flood defenses.
- Iraq needs to develop its technical capacity to assess the risks of climate change and develop effective adaptation plans. This includes building the skills of government officials, scientists, and other stakeholders.
- The Iraqi government should address the root causes of conflict by promoting political dialogue, addressing economic inequality, and building trust and reconciliation between different groups. This could help to create a more stable and peaceful environment in which Iraq can adapt to the impacts of climate change.

What is the government doing now?

The Republic of Iraq is considered one of the most vulnerable countries in the Arab region to the impacts of climate change. Recent years have witnessed a higher frequency and intensity of extreme weather events, such as heat waves, drought, sand and dust storms, leading to rising environmental degradation and socio-economic impacts throughout the country.

In 2020, the Government of Iraq started the process of developing a National Adaptation Plan (NAP) as a means to identify areas for resource mobilization, analyze and address gaps in institutional capacity, and build awareness of the NAP within and outside Iraq. The NAP planning process offers the chance to ensure that migration, displacement and planned relocation are fully addressed as both potential challenges and potential opportunities

28. IRAQ'S CLIMATE VISION FOR GREEN GROWTH STRATEGY

Reference to the Prime Minister's Office Letter No. 2318002/3006 dated June 15, 2023, regarding the Implementation of Decisions from the Iraq Climate Conference. The letter concerns the formation of a subcommittee responsible for preparing Iraq's Vision, chaired by Dr. Maher Hammad Johan, the Technical Deputy-Minister of the Ministry of Planning. The subcommittee includes representatives from the Ministries of Environment, Higher Education and Scientific Research, Oil, Finance, Agriculture, Electricity, and Water Resources. The subcommittee is tasked with this responsibility for a duration of 3 months, starting from June 15, 2013. The proposed vision paths are outlined below:

28.1 Energy Strategy: Enhancing energy diversity, optimizing efficiency, and mitigating emissions.

The key performance indicators (KPIs) to measure the success and progress of energy strategy includes:

- **Gas Flaring Reduction:** Achieve zero associated gas flaring and stop burning by 2030, effectively reducing methane emissions and other greenhouse gases.
- **Carbon Footprint Reduction:** Decrease the carbon footprint of oil production processes through electrification and operational improvements while ensuring energy

security and cost reduction.

- **Renewable Energy Expansion:** Expand renewable and alternative energy projects, particularly through the installation of solar energy systems, with a specific focus on government buildings.
- **Efficiency Improvement:** Improve the efficiency of electricity generation equipment by transitioning from simple cycle to combined cycle systems.
- **Carbon Capture and Utilization:** Establish stations for capturing CO₂ gas from the atmosphere and its utilization in various industrial applications, or its storage in geological formations.
- **Electricity Loss Reduction:** Reduce the loss of generated electrical energy by enhancing the efficiency of key system components (production, transportation, and distribution) and decreasing technical and non-technical losses using modern technology.
- **Nuclear Power Feasibility Study:** Conduct a feasibility study on the establishment of nuclear power plants in the long term, considering both economic and security aspects.

28.2 Sustainable Water Management: Implementing integrated strategies to ensure water security while effectively managing the water footprint.

Sustainable Water Management strategy has well-defined key performance indicators (KPIs) to measure progress in implementing integrated water management. Here are the KPIs:

- **Water Resources Management:** Enhance water resources management in line with the principles of integrated water management, promoting sustainability and resource optimization.
- **Water Policy Development:** Develop policies and enhance plans to rationalize water consumption and improve water management, ensuring that water is used efficiently and sustainably.
- **Water Use Efficiency:** Improve water use efficiency across various sectors, including agriculture, industry, and domestic uses, reducing wastage and optimizing resource utilization.
- **Irrigation Efficiency:** Enhance field irrigation efficiency through the adoption of modern irrigation techniques, lining irrigation canals, and reducing water losses, thereby conserving water resources.
- **Water Resource Development:** Develop available water resources by implementing water harvesting systems, including rainwater harvesting and torrents, to increase water availability.
- **Non-Conventional Water Sources:** Promote the use of non-conventional water sources, such as the reuse of agricultural drainage water, to reduce pressure on traditional water sources.
- **Environmental Runoff Reduction:** Ensure that minimal environmental runoff occurs in rivers and prevent the expansion of marine water in the Shatt Al-Arab, safeguarding the ecosystem.
- **Marsh Reflooding:** Implement marsh reflooding initiatives to restore the integrity of marsh ecosystems, which play a crucial role in mitigation and biodiversity preservation.

These KPIs provide a comprehensive framework for monitoring and assessing the success of your Sustainable Water Management strategy in achieving water security and effective water footprint management.

28.3 Agricultural and Food Strategy: Embracing water and energy smart farming practices and reshaping the agricultural landscape.

Agricultural and Food Strategy emphasizes sustainable practices and reshaping the agricultural landscape. Here are key performance indicators (KPIs) to assess the progress of this strategy:

- **Climate-Resilient Agriculture:** Invest in climate-resilient agriculture by conducting a study on the water needs of plants in various growth stages, ensuring water-efficient practices.
- **Drought-Resistant Crops:** Select and promote varieties of crops that are drought-resistant, reducing the vulnerability of agriculture to water scarcity.
- **Virtual Water Utilization:** Apply the concept of virtual water when formulating agricultural plans, especially in the importation of food items that require substantial water for irrigation. This practice contributes to water-wise food sourcing.
- **Desertification Prevention:** Carry out initiatives to combat desertification by rehabilitating vegetation cover, expanding dune treatment efforts, and establishing green belts, thus mitigating the detrimental effects of desertification.
- **Land Degradation Reduction:** Implement measures to reduce agricultural land degradation and promote the recycling of agricultural and livestock waste, ensuring the sustainability of agricultural practices and minimizing environmental impact.

These KPIs provide a means to gauge the effectiveness of Iraq's Agricultural and Food Strategy in adopting water and energy-efficient farming practices and reshaping the agricultural landscape in a sustainable manner.

28.4 Environmental Strategy: Minimizing pollution and embracing a sustainable environmental footprint.

Environmental Strategy aims to minimize pollution and establish a sustainable environmental footprint. Here are key performance indicators (KPIs) to track the progress of this strategy:

- **Pollution Reduction:** Reduce pollution by implementing and adhering to environmental standards and limits for pollutants, ensuring that emissions and contamination stay within acceptable boundaries.
- **Environmental Restoration:** Restore the environment by eliminating pollutants from water, air, and soil, actively addressing the legacy of pollution and contamination.
- **Sustainable Resource Use:** Promote the sustainable use of natural resources, emphasizing practices that do not harm the environment and are aligned with conservation principles.
- **Afforestation and Protected Areas:** Implement afforestation and forest cultivation

initiatives while establishing protected areas to reduce air pollution, preserve biodiversity, and create green spaces for environmental health.

These KPIs provide a clear framework for evaluating the success of your Environmental Strategy in reducing pollution and fostering a sustainable environmental footprint.

28.5 Urban Development Strategy: Constructing climate-resilient, sustainable cities with a focus on green building principles.

Urban Development Strategy focuses on building climate-resilient and sustainable cities with an emphasis on green building principles. Here are key performance indicators (KPIs) to measure the progress of this strategy:

- **Construction Material and Technology Investment:** Invest in the production of construction materials and sustainable technologies that promote energy efficiency and reduce greenhouse gas emissions in urban development projects.
- **Sustainable City Construction:** Ensure that the construction of sustainable cities adheres to the principles of green construction, emphasizing eco-friendly and environmentally responsible building practices.
- **Building Code and Standard Enhancement:** Update and approve building codes, standards, and sustainability parameters that support climate-resilient and sustainable urban development, promoting best practices and environmental responsibility.
- **Urban Circular Economy Implementation:** Promote and implement urban circular economy principles in city development, emphasizing the reduction, reuse, and recycling of resources and waste, contributing to the sustainability and resilience of urban areas.

These KPIs provide a framework for evaluating the success of your Urban Development Strategy in creating cities that are resilient to climate challenges and built with sustainability and green principles in mind.

28.6 Sustainable Transportation Strategy: Implementing modern and eco-friendly transport systems that lower emissions and protect the environment.

These Key Performance Indicators (KPIs) focus on transportation and sustainability initiatives:

- **Public Transport Network Expansion:** Expand public transport networks and promote the use of modern renewable energy sources in public transportation systems, reducing emissions and enhancing efficiency.
- **Electric Car Adoption:** Implement plans for the gradual transition from traditional

car fuel systems to electric cars, contributing to a reduction in greenhouse gas emissions and dependence on fossil fuels.

- **Transport Engine Standards:** Establish specific standards for the engines used in various modes of transportation, including aircraft, cars, trains, and other means, to improve energy efficiency and minimize environmental impact.
- **Railway Freight Transport:** Promote the utilization of railways for the transportation of goods, encouraging a more environmentally friendly and efficient mode of freight transportation.

These KPIs align with sustainability and climate-resilient transportation goals and provide a means to monitor and evaluate progress in these areas.

28.7 Water and Sanitation Strategy: Ensuring sustainable and secure treatment of drinking water and sanitation.

These Key Performance Indicators (KPIs) pertain to water management and environmental sustainability:

- **Potable Water Infrastructure:** Ensure the secure delivery of potable water to homes while preparing the infrastructure for long-term sustainability and promoting rational water consumption through the adoption of modern control methods.
- **Wastewater Treatment Technology:** Implement modern technologies for wastewater treatment, improving the efficiency and environmental impact of the treatment processes.
- **Sewage Water Treatment:** Establish effective sewage water treatment systems, addressing the safe and sustainable disposal of sewage.
- **Waste Recycling and Landfill Control:** Promote waste recycling and enhance control over sanitary landfill operations to minimize the environmental impact of waste disposal.
- **Treated Sewage Water Reuse:** Redirect treated sewage water to areas outside cities for agricultural and industrial purposes, optimizing the utilization of this resource.

These KPIs form a comprehensive framework for managing water resources, wastewater, and waste in a sustainable and environmentally responsible manner. They contribute to water security and environmental preservation.

28.8 Biodiversity Strategy: Preserving biodiversity and natural ecosystems.

These Key Performance Indicators (KPIs) are related to environmental protection and conservation efforts:

- **Protected Area Preservation:** Ensure the protection and preservation of designated protected areas and critical habitats to safeguard biodiversity and sensitive ecosystems.

- **Endangered Species Conservation:** Implement measures for the conservation of endangered species and the prevention of the introduction and spread of invasive alien species that can harm native ecosystems.
- **River and Land Pollution Prevention:** Prevent pollution of river water and land by adopting ecosystem-based approaches that enhance natural processes for pollution control.
- **Forest and Protected Area Establishment:** Establish new forests and protected areas, both in rural and urban settings, with an emphasis on providing ecosystem services that protect and enhance natural reserves.

These KPIs form a framework for addressing critical environmental challenges, protecting biodiversity, and promoting sustainable ecosystems and natural reserves.

28.9 Health Strategy: Ensuring the overall well-being of the population by integrating elements of the environment and climate change into the health services for addressing the interconnected challenges that impact public health.

Key Performance Indicators (KPIs) encompass a wide spectrum of healthcare, environmental conservation, and healthcare system resilience aspects:

Environmental Health:

- **Air Quality Management:** Focus on monitoring and enhancing air quality to mitigate respiratory and cardiovascular health issues. Encourage cleaner energy sources and reduce emissions from transportation and industrial activities.
- **Climate-Resilient Healthcare Infrastructure:** Develop healthcare facilities capable of withstanding extreme weather events, given the increasing frequency of severe natural disasters due to climate change. This includes equipping hospitals and clinics to handle emergencies and power outages.
- **Disease Surveillance and Early Warning Systems:** Establish robust surveillance systems to track the spread of climate-sensitive diseases, as climate change can alter disease patterns. Early detection is vital for timely responses.
- **Health Education and Climate Awareness:** Raise public awareness about the health impacts of climate change, empowering individuals to take preventive measures and make informed decisions regarding their health.
- **Vector-Borne Disease Control:** Address the expansion of disease vectors such as mosquitoes due to climate change. Implement strategies to control vector-borne diseases like malaria and dengue fever.
- **Water Quality and Availability:** Ensure access to safe and clean drinking water, considering the impact of changing precipitation patterns and temperatures on water sources. This is crucial for preventing waterborne diseases.
- **Food Security:** Tackle food security challenges stemming from climate change by promoting sustainable agriculture and ensuring a stable food supply, thereby minimizing malnutrition and food-related health issues.
- **Mental Health and Resilience:** Recognize the psychological impact of climate-related

disasters and stressors. Provide mental health services and resilience-building programs to help communities cope with these challenges.

- **Heat-Related Illness Prevention:** Develop strategies to mitigate health risks associated with extreme heat, including heatstroke and heat-related illnesses. Implement cooling centers during heatwaves.
- **Vulnerable Populations:** Prioritize the health needs of vulnerable populations, including the elderly, children, and those with preexisting health conditions, who are often disproportionately affected by climate-related health risks.
- **Research and Data Collection:** Invest in research to better understand the links between climate change and health. Collect and analyze data to track health impacts and inform evidence-based policies.
- **International Collaboration:** Collaborate with other countries and international organizations to exchange knowledge and resources related to climate change and health. Many health challenges are global and require a coordinated response.

Additional KPIs to be integrated into the health strategy, fostering a more resilient and sustainable healthcare system capable of effectively addressing the health impacts of climate change and environmental challenges:

Ecosystem and Disease Control:

- **Marsh Ecosystem Rehabilitation:** Implement measures for the rehabilitation and protection of ecosystems in marsh areas, particularly those designated as World Heritage Areas.
- **Disease Prevention and Climate Change:** Develop and support disease prevention systems, especially those related to diseases influenced by climate change, while combating endemic and epidemic diseases.
- **Infrastructure Rehabilitation for Health:** Establish and rehabilitate fragile healthcare infrastructure to enhance the capacity for health response during crises.
- **Climate-Smart Healthcare Facilities:** Adopt climate-smart practices in healthcare facilities and enhance the resilience of health systems to climate-related challenges.
- **Health and Family Program Support:** Provide support for health and family programs to address various health and well-being issues.
- **Mitigating Technological Health Impacts:** Implement measures to reduce the negative health impacts of technological applications, promoting the safe and responsible use of technology.

These KPIs collectively address a diverse spectrum of healthcare and environmental concerns, underscoring the significance of safeguarding ecosystems, fortifying healthcare systems against climate challenges, and prioritizing the well-being of communities.

28.10 Education and Scientific Research Strategy: Fostering education and research endeavors that actively address climate change and uphold environmental conservation.

These Key Performance Indicators (KPIs) pertain to education, research, and capacity building in the context of environmental and climate issues:

- **Curriculum Integration:** Ensure that educational curricula at all levels, from primary

education to higher education, directly address environmental and climate issues and their impacts.

- **Scientific Discipline Update:** Update and modernize scientific disciplines and fields of study that are pertinent to environmental and climate issues, reflecting the evolving knowledge and challenges in these domains.
- **Research Center Support:** Provide support to research centers focusing on energy, renewable energy, and environmental and climate change issues, fostering innovation and solutions to critical challenges.
- **Education for Sustainable Development (ESD):** Integrate Education for Sustainable Development (ESD) into education policy and invest in building the capacity of human resources to promote sustainable practices and awareness.
- **Investment in Human Capital:** Direct significant investments toward sectors that harness the creative potential of human capital, with a special focus on education and the advancement of scientific research, promoting innovation and sustainable development.

These KPIs form a comprehensive framework for advancing education, research, and capacity building to address environmental and climate challenges and promote sustainable development.

28.11 Housing and Climate Migration Strategy: Ensuring secure and resilient housing in an evolving environmental landscape.

These Key Performance Indicators (KPIs) focus on addressing the impacts of climate change and ensuring the well-being of affected populations:

- **Climate Change Impact Mitigation:** Implement strategies to mitigate the effects of climate change on the population, emphasizing adaptation measures to enhance the quality of life in areas most affected by climate change.
- **Preventing Urban Displacement:** Develop initiatives to prevent the displacement of people from urban areas to agricultural lands, ensuring that urban populations can continue to access essential services and maintain their quality of life.
- **Climate Migration Management:** Establish monitoring systems for climate migration and provide necessary services and support in the areas to which displaced populations have relocated, safeguarding their well-being and integration.

These KPIs are essential for addressing the human aspects of climate change and urban development, with a focus on resilience and sustainable solutions for affected communities.

28.12 Responsive Rural Development Strategy: Creating and sustaining rural communities that offer a high quality of life for their residents while preventing climate-induced displacement and strengthening the resilience of these communities in the face of environmental challenges.

The Responsive Rural Development Strategy aims to establish and maintain thriving rural communities, ensuring a high quality of life for their residents, while mitigating climate-induced displacement and enhancing their resilience to environmental challenges. Key Performance Indicators (KPIs) for this strategy include:

- **Rural Services Provision:** Provide essential services to rural areas while aligning with the specific needs and requirements of rural development.
- **Rural Migration Reduction:** Implement initiatives to reduce rural-to-urban migration by fostering the development and improvement of rural regions, making them more attractive for residents.
- **Empowerment of Rural Women:** Support and empower rural women, recognizing their crucial role in community development and resilience.
- **Climate-Resilient Rural Development:** Ensure effective development management that addresses the impacts of climate change on rural populations, safeguarding their well-being and livelihoods.

These KPIs are vital for creating sustainable and resilient rural communities that can thrive and adapt in the face of environmental challenges, while promoting social inclusivity and gender equality.

28.13 Employment and Green Job Strategy: Generating employment prospects to address unemployment while making investments in climate-related opportunities.

The Key Performance Indicators (KPIs) are focused on promoting economic growth, job creation, and community engagement in the context of environmental and climate issues:

- **Microfinance for Agricultural and Craft Industries:** Provide support for microfinance initiatives aimed at developing small and medium enterprises in agricultural industries and craftsmanship, fostering economic growth in these sectors.
- **Climate Issue Participation:** Expand community participation in addressing climate issues, including through volunteer work and civic engagement, promoting a sense of collective responsibility and action.
- **Green Jobs Creation:** Create opportunities for green jobs, facilitating employment in sectors that contribute to environmental sustainability and climate resilience.
- **Job Opportunities and Support for Vulnerable Populations:** Offer job opportunities for youth, climate migrants, and displaced individuals, providing them with access to loans and financial support to enhance their economic prospects and self-reliance.

These KPIs aim to stimulate economic development, environmental stewardship, and social inclusion, fostering a holistic approach to sustainable growth.

28.14 Risk Management Strategy: Implementing risk management measures to mitigate the impact of climate and environmental disasters and prevent their consequences.

The Key Performance Indicators (KPIs) outlined here focus on strengthening disaster preparedness, early warning systems, and risk management related to environmental and climate issues:

- **National Early Warning System Enhancement: Develop** a comprehensive national early warning system that leverages artificial intelligence to predict weather conditions, enhance disaster preparedness, and build the capacity of institutions to address environmental and climatic disasters.
- **Network Unification for Early Warning:** Integrate and unify existing early warning and remote sensing systems across relevant ministries, fostering collaboration and information-sharing to bolster the capacity of both official institutions and society in managing environmental and climate-related risks.
- **Environmental and Climate Risk Matrix Development:** Create a matrix to assess and quantify environmental and climate risks, providing a structured framework for risk analysis and mitigation.
- **Flood Prediction and Hazard Mapping:** Develop the capability to predict potential floods and map their hazards, enabling proactive measures to mitigate the impacts of flooding.

These KPIs are essential for building resilience, reducing risks, and enhancing preparedness in the face of environmental and climatic challenges.

28.15 Private Sector and Civil Society Engagement Strategy: Recognizing the vital role of the private sector and civil society in addressing environmental, climate, and investment challenges.

These Key Performance Indicators (KPIs) emphasize the involvement of the private sector and civil society in shaping policies and initiatives related to environmental and climate issues:

- **Private Sector and Civil Society Engagement:** Promote active participation of the private sector and civil society in the development of policies and plans addressing environmental and climate concerns. Encourage collaboration and contributions from a wide range of stakeholders.
- **Civil Society Climate Initiatives:** Encourage civil society to voluntarily undertake initiatives for both adaptation and mitigation to climate change. These initiatives can play a pivotal role in addressing climate challenges.

These KPIs foster collaboration and engagement from diverse sectors, enhancing the collective effort to address environmental and climate issues.

28.16 Awareness-Building Strategy: Promoting environmental and climate awareness.

The Key Performance Indicators (KPIs) highlighted here aim to promote understanding, awareness, and education concerning environmental and climate issues:

- **Procedures and Guidelines for Environmental Understanding:** Develop and implement procedures and guidelines to enhance understanding of the environment and climate change, providing a structured framework for informed decision-making.

- **Environmental and Climate Awareness Programs:** Create and implement awareness programs focusing on environmental and climate issues across various sectors, fostering a sense of responsibility and shared knowledge.
- **Integration of Environmental and Climate Education:** Incorporate environmental and climate issues into educational curricula to ensure that these topics are an integral part of the learning experience from an early age.
- **Community Health Awareness:** Raise awareness among communities exposed to climate-related diseases, equipping them with information and knowledge to protect their health in the face of climate-related health risks.
- **Media and Communication Outreach:** Utilize media, satellite channels, and social media platforms as effective means for disseminating environmental and climatic culture to a wider audience. These channels can play a crucial role in raising awareness and fostering a culture of environmental stewardship.

These KPIs form a comprehensive approach to enhancing understanding and awareness of environmental and climate issues across society, promoting informed decision-making and proactive measures.

28.17 Human Resources Strategy: Investing in and empowering youth, particularly girls, and enhancing support for women and children.

The Key Performance Indicators (KPIs) provided focus on building human capacity and engaging various demographic groups in addressing climate change:

- **Youth Engagement in Climate Projects:** Invest in the demographic potential of young men and women by involving them in climate adaptation and mitigation projects, harnessing their energy and creativity to tackle climate challenges.
- **Manpower Strengthening for Improved Services:** Enhance service quality by bolstering the workforce in both the public and private sectors, ensuring that there are sufficient skilled professionals to address climate-related issues effectively.
- **Private Sector Capacity Building for Climate Resilience:** Equip the private sector with the necessary skills and knowledge to confront climate change, fostering resilience and sustainability in business practices.
- **Empowerment and Training for Rural Women:** Empower rural women through training programs that provide them and children with the tools to address climate change, enhancing their ability to adapt to environmental challenges.

These KPIs highlight the importance of human capital development and engagement in climate-related efforts, promoting a more resilient and sustainable approach to addressing climate change.

28.18 Adaptive Legislative Strategy: Implementing responsive legislative and legal frameworks to safeguard the environment and tackle the impacts of climate change.

The Key Performance Indicators (KPIs) provided emphasize the importance of legal frameworks and regulations for climate change adaptation and environmental protection:

- **Climate Change Law Update:** Revise and update existing laws and regulations related to climate change adaptation and mitigation to ensure they are in line with current environmental challenges and best practices.
- **Legal Framework for Environmental Protection:** Develop a comprehensive legal framework aimed at safeguarding the environment, reducing emissions, and supporting measures to address climate change, with the ultimate goal of enhancing the quality of life in Iraq.

These KPIs are essential for establishing a legal foundation that addresses climate-related issues and environmental protection in a comprehensive and effective manner.

28.19 Climate Technology Strategy: Implementing eco-friendly and efficient technological solutions to confront the challenges of climate change.

The Key Performance Indicators (KPIs) provided focus on technology transfer, green and clean technologies, and the adoption of innovative approaches to address climate change and environmental sustainability:

- **Climate Technology Transfer Expansion:** Promote the expansion of climate technology transfer, tailored to the national context, with a focus on technologies that reduce greenhouse gas emissions.
- **Support for Green and Clean Technologies:** Provide support for green and clean technologies, particularly those that minimize waste, such as solar and wind energy.
- **Technology Transfer for Climate-Smart Agriculture:** Facilitate technology transfer for agriculture, including the use of soil moisture sensors and precision agriculture techniques. Embrace modern technologies to address water scarcity and implement climate-smart agriculture practices, utilizing Fourth Industrial Revolution applications like artificial intelligence, robotics, and e-waste management.
- **Digitizing Energy and Environmentally Friendly Digital Applications:** Employ digitalization processes in energy production to reduce energy losses, generate energy from renewable sources, and create environmentally friendly digital applications.
- **Efficiency Enhancement of Information and Communication Technologies:** Raise the efficiency of Information and Communication Technologies infrastructure to contribute to the development of innovative solutions for climate change mitigation.
- **Support for Research and Development in Green Technologies:** Back research and development programs in green technology applications, embracing digital transformation initiatives to establish smart cities, improve waste management, and enhance energy management for long-term sustainability.
- **Support for Extracting and Processing Minerals for Energy Technologies:** Provide

support for the extraction and processing of minerals used in clean energy technologies, energy storage batteries, and electric vehicles.

These KPIs highlight the significance of technology and innovation in addressing climate change and environmental challenges, with a strong focus on sustainability and green practices.

28.20 International Cooperation Strategy: Playing an active role in orchestrating international collaboration to bolster environmental initiatives and combat climate change in Iraq.

The provided Key Performance Indicators (KPIs) focus on international commitments, cooperation, and partnerships to address climate change and environmental issues:

- **Paris Agreement Commitment Implementation:** Act on Iraq's commitments to the Paris Agreement, reducing emissions and air pollution, and considering healthcare aspects as stipulated in COP2 decisions.
- **International Support for NDC Implementation:** Ensure international support for the implementation of Iraq's Nationally Determined Contributions (NDC) and associated projects.
- **International Cooperation for Risk Management:** Strengthen international cooperation for information exchange related to risk management and addressing the effects of climate change, facilitating a collaborative approach to mitigating climate-related challenges.
- **Memorandums of Understanding (MOUs) Incorporating Climate Change:** Establish Memorandums of Understanding (MOUs) that align with climate change and development goals, creating a framework for addressing environmental and developmental challenges.
- **Partnerships with Energy and Emission Reduction Institutions:** Activate partnerships with international institutions specializing in energy and emission reduction, such as the International Energy Agency, the International Renewable Energy Agency (IRENA), and the International Atomic Energy Agency (IAEA), to leverage expertise and resources in these areas.

These KPIs underline the significance of international collaboration and commitment to effectively address climate change and promote environmental sustainability.

28.21 Climate Governance Strategy: Ensuring effective and transparent governmental performance in addressing climate issues while maintaining integrity and preventing corruption.

The Key Performance Indicators (KPIs) provided emphasize the importance of effective institutional frameworks, knowledge sharing, transparency, regulation,

collaboration, and integrity in addressing climate change and environmental sustainability:

- **Institutional Capacity Enhancement:** Develop an institutional framework capable of strengthening mechanisms to improve capacity levels for effective planning and management of climate-related initiatives.
- **Knowledge Exchange for Efficiency:** Ensure that lessons learned, and best practices are shared comprehensively, leaving no one behind, to enhance the efficiency and effectiveness of climate action.
- **Transparency and Predictability in Funding:** Promote transparency in funding allocation and enhance predictability in financial support for climate-related projects and programs.
- **Coherent Financial Regulations:** Establish coherent and consistent regulations that unite financial regulators and supervisory authorities, enhancing the role of the financial system in managing climate-related risks and facilitating financial mobilization for low-carbon and climate-sensitive investments.
- **Collaborative Approach for Stability:** Adopt a collaborative approach that supports stability and prevents conflict and tension, particularly concerning issues related to water and displacement.
- **Corruption Control in Climate Projects:** Implement measures to control corruption in the implementation of climate projects and programs, ensuring that resources are allocated efficiently and transparently.
- **Integration of Climate Measures into National Policies:** Integrate climate change measures into policies, strategies, and plans at the national level to ensure a comprehensive and coordinated approach to addressing climate challenges.

These KPIs highlight the need for robust institutional frameworks, transparency, and integrity in climate-related efforts, promoting a holistic approach to climate change and environmental sustainability.

28.22 Shift in Consumption and Production Patterns Strategy: Embracing suitable consumption practices that are adaptable to the challenges of climate change.

The provided Key Performance Indicators (KPIs) focus on analyzing and modifying consumption patterns and promoting environmentally responsible practices:

- **Consumption Pattern Analysis:** Analyse consumption patterns in energy, food, and water to identify areas for improvement and efficiency.
- **Supportive Policies for Reduced Consumption:** Encourage the development and implementation of supportive policies aimed at reducing food and water consumption and ensuring the safe and sound disposal of solid waste.
- **Energy-Efficient Goods:** Promote the use of energy-efficient products and goods to reduce energy consumption and promote sustainability.
- **Recycling and Waste Utilization:** Encourage recycling and the utilization of municipal and agricultural waste to minimize environmental impacts and promote resource efficiency.

These KPIs reflect a commitment to sustainable consumption and responsible resource management, contributing to environmental preservation and climate change mitigation.

28.23 Climate Innovation Strategy: Creating a secure and sustainable environment that fosters creativity and innovation.

The provided Key Performance Indicators (KPIs) highlight the importance of fostering creativity, innovation, and skills development in various sectors:

- **Creative Capability Development:** Focus on developing creative capabilities, particularly in education, training, and culture, and link them with the advanced and accurate industrial sector, with a strong emphasis on sustainable energy innovations.
- **Practical Expertise and Skills Training:** Ensure that trainees gain practical expertise and skills that are relevant to the demands of the industry.
- **Stimulating Creativity and Innovation:** Provide the necessary requirements to stimulate creativity and innovation among citizens, encouraging them to contribute to the development of new ideas and solutions.
- **Supportive Strategies and Policies for Creative Ideas:** Develop stimulating and supportive strategies and policies to effectively implement creative ideas and innovations, facilitating their integration into the economy.
- **Development of Key Economic Sectors:** Concentrate on developing economic sectors with special significance, such as Information and Communication Technology and advanced industries, to promote economic growth and sustainability.
- **Intellectual Property Management:** Apply intellectual property regulations to ensure the proper and effective management of intellectual property rights, fostering innovation and protecting the interests of innovators.

These KPIs underscore the importance of nurturing creativity, innovation, and skills development across various sectors, contributing to economic growth, technological advancement, and sustainable development.

28.24 Financing Strategy: Prudent allocation of financial resources and investments to address the challenges posed by climate change.

These Key Performance Indicators (KPIs) center on securing funding from various sources to support climate mitigation, resilience, and sustainability efforts:

- **National Funding for Green Initiatives:** Secure national funding aligned with the reduction of greenhouse gas emissions and the establishment of infrastructure resilience and sustainability, emphasizing the importance of domestic financial support for environmentally responsible projects.
- **International Financial Support Mobilization:** Mobilize international financial

support by actively engaging with developed countries to fulfill their commitments, including the goal of jointly mobilizing \$100 billion annually to meet the urgent mitigation and adaptation needs of developing countries, with a focus on cooperation with the Green Climate Fund (GCF).

- **Private Sector Engagement in Low-Carbon Investments:** Encourage private sector involvement in mobilizing finance for low-carbon and flexible investments, leveraging the potential of private capital for sustainable climate initiatives.
- **Sustainable Financial System for Climate Initiatives:** Establish a new and sustainable financial system that provides financing for private sector initiatives and innovations to address climate change and improve agricultural production in arid regions, ensuring a consistent flow of funds for climate-resilient projects.
- **Arab and International Development Finance Support:** Mobilize Arab and international development finance institutions to provide continuous funding for scientific and technical assistance initiatives aimed at implementing climate change mitigation and adaptation measures, emphasizing collaboration with regional and global partners.

These KPIs emphasize the importance of diversified funding sources and active engagement with international organizations, private sector stakeholders, and development finance institutions to support climate-related initiatives.

28.25 Coordination and Unity of Efforts Strategy: Facilitating effective coordination to bring together collective efforts in tackling climate change.

These Key Performance Indicators (KPIs) are focused on enhancing coordination and collaboration among various stakeholders to address climate-related challenges:

- **Policy Coordination and Knowledge Exchange:** Facilitate the coordination of policies, the development of national plans, research activities, and the exchange of knowledge and information among all relevant parties involved in climate initiatives, promoting a holistic and well-informed approach.
- **Institutional Coordination Mechanism:** Establish a comprehensive institutional coordination mechanism that clearly defines the roles and responsibilities of each ministry and stakeholder concerning climate issues, ensuring a well-organized and efficient response to climate challenges.
- **Participatory Approach Promotion:** Promote a participatory approach that encourages active engagement and collaboration between government agencies, civil society organizations, the private sector, and international organizations, fostering a collective effort in addressing climate-related issues.
- **High-Level Technical Cooperation Plans:** Develop plans for high-level technical cooperation at both regional and international levels, enhancing knowledge sharing and technical assistance to effectively address climate challenges through cooperation with neighboring countries and the global community.
- **Sectoral Committee Coordination and National Unity:** Ensure the efficient

coordination of sectoral committees and unify their efforts at the national level, fostering a cohesive and synchronized approach to address climate and environmental challenges.

These KPIs underscore the significance of coordination, clear roles and responsibilities, active engagement, and international collaboration in addressing climate issues and driving sustainable climate-related initiatives.

28.26 Climate Issue Monitoring and Evaluation Strategy: Establishing sustainable mechanisms for monitoring and evaluating climate action.

The Key Performance Indicators (KPIs) for the Climate Issue Monitoring and Evaluation Strategy:

- **Clear Implementation Objectives and Mechanisms:** Establish clear implementation objectives and define specific roles and mechanisms for follow-up, monitoring, and evaluation, ensuring that climate and environmental initiatives are effectively carried out.
- **Standard Progress Measures:** Develop standardized measures (indicators) to track progress at both national and regional levels, enabling accurate assessment of the success and impact of climate and environmental programs.
- **Monitoring and Evaluation Committee Formation:** Create follow-up, monitoring, and evaluation committees responsible for generating periodic reports on the progress of climate and environmental initiatives, enhancing transparency and accountability in the process.

29. MARSHLAND

The Iraqi Marshland:

The marshes are the largest wetland ecosystem in the Middle East, the intercontinental flyway of migratory birds, support endangered species, and sustain fisheries of the Gulf. In addition to these important ecological benefits, these marshlands represent a unique element of our global heritage and resources. They have been home to indigenous human communities for millennia and are regarded as the site of the legendary "**Garden of Eden.**"

29.1 A milestone for the Marshland:

It was listed on July 17, 2016, according to the regulations of the United Nations Educational and Scientific Organization (UNESCO), as a special social reserve, in addition to its ancient cities such as Ur, Eridu, and Uruk.

The UNESCO listing of the Iraqi marshes as an archaeological site represents a significant milestone in the conservation and recognition of the marshlands' cultural and historical heritage. This designation acknowledges the region's importance as a site of historical

significance, including ancient cities such as Ur, Eridu, and Uruk, and it emphasizes the need to preserve and protect this cultural wealth. It also highlights the potential for tourism and archaeological visits, which can contribute to the enrichment and revitalization of the area. UNESCO's recognition places a global spotlight on the marshes, raising awareness about their historical value and promoting their conservation as a shared responsibility. [1]

29.2 Iraqi Marshland: The Problem, Magnitude, and Importance

Marshland and Water:

The marshlands once covered over 20,000 square kilometers of interconnected lakes, mudflats, and wetlands within modern-day Iraq and Iran. However, in the past thirty years, over 90% of the marshlands have been desiccated through the combined actions of upstream damming in Syria, Turkey and Iraq as well as the development of extensive downstream drainage projects within Iraq alongside climate change effect and the raising of heat in extreme temperatures.

The Marshes which is an area of low-lying land where river water gather and then turns into wide lakes of different depths, the Iraqi marshes is fed by the waters of Mesopotamia from the waters of the Tigris and Euphrates and is located in the south of the Iraqi alluvial plain. Its area ranges - estimated - between **9000 to 20,000 square kilometers**, and there are **20** districts within the three governorates of the region (Maysan, Dhi Qar, and Basra).

The three main marshes are:

- The Hawizeh Marsh on the Iranian border covers almost 2,800 square meters.
- The Hamar Marsh is in the center of the region, which covers almost 3,000 square meters.
- Central Marsh bounded by the Tigris River to the east and the Euphrates River to the south. Roughly located between Nasiriyah, Maimona, Qalat Saleh and Qurnah, and cover an area of about 3,000 square kilometers. [2]

Water storage and control projects in Iraq, Turkey, and Iran have significantly impacted the marshes located at the end of the Tigris and Euphrates watersheds. These projects include the Hindiyah Dam in 1913, which controlled downstream water distribution, affecting the Hamar Marsh. The Kut Dam, constructed in 1938, directed more water for agriculture, reducing flow to the Central and Hawizeh marshes. In the 1950s, Iraq initiated projects like the Samarra Dam and Ramadi Dam, diverting excess water. The Haditha and Mosul Dams were completed in the 1980s. Turkey and Syria also built dams in the 1960s and 1970s. In 1990, Turkey's Southeast Anatolia Project (GAP) impacted the Euphrates River. Iran's projects reduced Tigris River tributary flow. In 2016, the Ilisu Dam became operational. The Ataturk Dam in 1990, along with other dams in Turkey, Syria, and Iraq, led to a significant change in the Tigris River's operational scheme, jointly managing the two watersheds. This altered hydrological records in the upstream marsh area before and after 1990. Construction of dams on the rivers in all the trans-boundary water co-riparian countries, making a severe reduction

of water flows reaching the marshes, causing severe increase in salt erosions and reduction in water levels.

To date, the development of oil production facilities has necessitated the draining of about 5%-10% of the total marsh area. Future development of oil fields within the region may require additional draining of the marshes, and such developments should be integrated into a sustainable development strategy to allow appropriate consideration of the needs of local people and the protection of ecosystems and agricultural systems.

This being said, marshes through the years and their ecology system of the marshes evolves based on the annual flooding that flushes the salts accumulated in the water after the dry season. Moreover, annual evaporation rates have been estimated at 2,000 to 3,000 mm, while rainfall averages only 100 mm. [3]

Marshland and Wars:

In the last 15 years, the wetlands of lower Mesopotamia and neighboring Iran have come under considerable pressure from regional conflicts. Much of the fighting during the prolonged Iran-Iraq War (1980-88) took place in and around the wetlands, and caused considerable damage to the marsh ecosystems. Haur Al Hawizeh probably suffered the most damage of all Iraqi wetlands. Several of the greatest battles of the war took place in these marshes, and involved extensive burning, heavy bombing and shelling, and widespread use of chemical weapons. Large areas of reed-beds were deliberately destroyed by Iraqi troops in Haur Al Hawizeh and the Central Marshes during searches for deserters; heavily armored boats were used to crash through reed-beds, special reed-cutting machines were used, and large areas were simply set on fire. [4]

Marshland and IDP:

In 2021, the International Organization for Migration (IOM) conducted a survey in Basra city where they interviewed migrants from rural parts of neighboring governorates including the Marshland in southern Iraq. It was reported that the two main drivers for migration to Basra city, the largest urban city in the south, were the lack of economic opportunities (52%) and water scarcity (49%), followed by death of livestock (16%), lack of access to services (13%), and crop failures (10%). Most displaced persons surveyed moved to the city with their families, with a few cases of individuals moving on their own. [5]

Marshland and Biodiversity:

The marshlands in Iraq are crucial as wintering grounds for migratory birds in Eurasia. Surveys conducted in 1979 uncovered internationally significant wintering concentrations of up to 70 species of waterfowl, supporting several globally threatened species seasonally. These include the Dalmatian pelican, pygmy cormorant, imperial eagle, white-tailed eagle, and marbled duck. In 1994, Evans identified 12 Important Bird Areas in Mesopotamia of global and regional importance.

Globally, there are around 285 species of water birds, with 134 to 158 species documented to reach the Iraqi marshes according to the Treaty for the Protection of African-Eurasian Migratory Waterbirds (AEWA), underscoring their international importance.

These marshes are home to 40 bird species and various fish species. They previously housed millions of birds and served as a stopover for countless migratory birds, such as flamingos, pelicans, and herons during their migration from Siberia to Africa. Swamp-dwelling populations, including 40% to 60% of the world's marbled teal and 90% of the world's Basra's reed warbler, are at risk.[6]

Globally, six threatened species have been observed, including the marbled teal, white-headed duck, Basra reed warbler, and great spotted eagle. The remaining two species solely nest in swamps and marshes within the country, marking the sole location for their habitat. The African arrow and the ibis are identified within the Mesopotamian marshes Endemic Bird Area (EBA), encompassing regions with overlapping breeding areas for two restricted-range bird species. The ecoregion, and the EBA, are the only breeding area of the Iraq babbler and the Basra reed-warbler.[7]

Furthermore, the forbidden ibis and the African darter are in imminent danger. [8]

In southern Iraq, a variety of masked crow known as the Mesopotamian crow was discovered. Regrettably, seven species are now extinct or nearly extinct in the marshes, including the Indian crested porcupine, the little Bengal lizard, and the gray swamp wolf. The desiccation of the marshes has significantly diminished biological productivity.

The future of the two otter species, the European otter and Maxwell's water dog, historically present in the marshes on both sides of the border, remains uncertain. The marshland biodiversity has faced more severe challenges, notably continuous hunting of endangered species unique to the marshlands and elevated pollution levels due to industrial oil extraction, as well as the destructive effects of war and demolitions over the years. [9]

What have the marshland biodiversity endured in more severe situations is the continuous hunting for the endangered species that are endemic to the marshlands, moreover the levels of pollution due to the industrial oil extraction and war weapons through years of war and demolitions.

29.3 The Importance:

Multiple benefits can be expected to occur from restoration of the marshlands:

On a local level: Increased agricultural and agricultural innovation in terms of crops, planting and techniques of advance irrigation system and fisheries and marine production and enhancement for the Marsh people along capacity building for them this will highly helping poverty alleviation, amelioration of climatic extremes; improvement of fish, wildlife, and endangered species habitat; water quality improvement; bioremediation of toxic materials.

On a regional and global level: opportunities for traditional cultural and economic uses of the marshes:

Historical and Cultural Significance: Lower Mesopotamia is believed to be the site of the Garden of Eden, and it boasts ancient cities like Ur and Babylon. These historical and cultural landmarks underscore the rich heritage of the region, and can be vastly one of the most important sites of Tourism and Archeological visits, this will help enrich the area

Traditional Lifestyle: The Marshland people have maintained their traditional lifestyle for over five thousand years. Their reed houses and reliance on the surrounding lakes and marshes exemplify the importance of cultural practices and heritage in shaping their way of life.

Economic Activities: The Marshland people are buffalo herders, fishermen, and mat-weavers, with water buffalo forming the basis of their family wealth. Their ability to adapt their economic activities, such as fishing and mat-weaving, reflects the influence of cultural practices on their livelihood.

UNESCO Recognition: The designation of the Iraqi marshes as a special social reserve by UNESCO in 2016 highlights their cultural and historical significance. This recognition promotes the preservation and protection of this cultural heritage, paving the way for potential tourism and archaeological visits, which can contribute to the revitalization of the area.

Isolation and Cultural Preservation: The geographic isolation of the Marshland people due to the vast stretches of water and reeds has helped preserve their culture. Despite the passage of time, their way of life has remained largely unchanged, underscoring the resilience of cultural values in the face of external influences.

In summary, this emphasizes the enduring importance of social and cultural values in Lower Mesopotamia, particularly in the context of the Marshland people. Their cultural heritage, traditional practices, and adaptation to economic changes demonstrate how these values have shaped their history, lifestyle, and resilience throughout the millennia. More attention will be attracted from the co-riparian countries to experience the importance of this area and acknowledge its rights to more water shares. That is in addition to maintaining the status of the UNESCO listing.

29.4 What is the government of Iraq is doing now:

- The Iraqi government has established the **Center for Restoration of Iraqi Marshes and Wetlands** during 2004, as one of the main pillars in **Ministry of Water Resources**, which will be working in conjugation with Ramsar, this canter have a program which consist:
 - Flooding the Marshes.
 - Maintain Marshland feeding from Tigris and Euphrates.
 - Hydraulic stations for Monitoring.

During 2013, the center established The National Atlas of Marshes and Wetlands in Iraq, which is a condition of the Ramsar Convention. The project identified a long list of potential sites, focusing first on the Central Marshes and the Hammar Marshes.[10]

Among other main projects.

- **The Ministry of Water Resources** launched a broad campaign to remove violations of water resources, with great support from the armed forces represented by the Joint Operations Command and the Ministry of Interior, as well as governors and local governments, noting “the great effort made in this direction, which contributed to removing many violations of water resources”.
- Diplomatic efforts are channeled with the lead of the **Prime Minister Mohammed Shiaa AlSudani** to negotiate the water shares with the neighboring countries, to secure the marshland water share, in order to flood the marshes and work on the reviving project.
- **UNDP alongside the Ministry of Health and Environment (previously merged ministries), Ministry of Environment now during 2021, on a project for the support of the Haweizh Marshland Habitat (With support from the Regional Office for Arab States Funded by the Swedish International Development Cooperation Agency)**, This national project aims to support marsh communities to become able to withstand the risks resulting from climate change and climate disasters, such as recurring droughts, which constitute a double threat to the population, as they lead to increased poverty rates and population displacement due to water scarcity and the deterioration of the ecosystem, which affects the availability of livelihoods. Live.

The project provides innovative solutions to ensure the availability of potable water to support the settlement of Hawizeh Marsh communities in the most fragile areas by providing water treatment plants that operate on solar energy. The project also works to enhance the diversification of livelihoods through the development of eco-tourism and providing job opportunities for women and youth. Ecotourism contributes to diversifying family income and providing additional living opportunities for local communities to increase their resilience and reduce displacement. [11]

29.5 Needed Actions to enhance the Marshland File in Iraq:

Restoring and maintaining the Iraqi marshes is a complex and multifaceted endeavor that requires cooperation at local, national, and international levels. Here are some key actions needed to restore and maintain the Iraqi marshes:

International Collaboration:

- Engage in diplomatic efforts to secure cooperation from upstream countries (Syria, Turkey, and Iran) to ensure a sustainable flow of water

into the marshlands. This may require international agreements and negotiations.

Local and National Governance:

- Establish local and national bodies responsible for the management, conservation, and restoration of the marshlands.
- Implement and enforce laws and regulations to protect the marshlands and their ecosystems.

Water Management:

- Implement a comprehensive water management plan that ensures a steady flow of freshwater into the marshes, especially during critical periods of drought.
- Consider water allocation mechanisms that balance the needs of agriculture, municipalities, and the marshlands.

Ecological Restoration:

- Implement ecological restoration projects to rehabilitate the marsh ecosystems. This may include re-flooding drained areas and restoring native plant species.
- Control invasive species that have disrupted the natural balance of the marshes.

Water Quality:

- Monitor and manage water quality to reduce pollution from industrial activities and other sources.
- Promote sustainable agricultural practices that minimize runoff and contamination of marsh waters.

Biodiversity Conservation:

- Implement measures to protect and conserve the diverse species of flora and fauna that inhabit the marshlands.
- Enforce regulations against hunting, poaching, and overfishing of endangered species.

Community Engagement:

- Involve local communities, including the Marshland people, in decision-making processes related to the management and restoration of the marshlands.
- Develop alternative livelihoods and income-generating opportunities for local communities that do not harm the ecosystem.

Cultural and Historical Preservation:

- Promote the preservation and understanding of the cultural and historical heritage of the marshlands.

- Develop sustainable tourism initiatives that respect the area's historical significance.

Research and Monitoring:

- Invest in scientific research to understand the changing ecological dynamics of the marshlands and the impact of restoration efforts.
- Establish monitoring programs to track water levels, water quality, and biodiversity.

Education and Awareness:

- Raise public awareness, both locally and globally, about the importance of the marshlands and the need for their restoration and protection.
- Educate the public about responsible water usage and the consequences of actions that harm the marshes.

Funding and Resources:

- Secure financial resources from government budgets, international organizations, and donors to support restoration and maintenance efforts.
- Mobilize technical expertise and capacity building to ensure effective restoration.

Adaptive Management:

- Continuously assess the progress of restoration efforts and adapt management strategies as needed to respond to changing environmental conditions and challenges.

Restoring and maintaining the Iraqi marshes is a long-term commitment that requires a combination of ecological, cultural, social, and political efforts. International cooperation, sustainable management practices, and community engagement are essential elements for the success of this endeavor.

https://water.fanack.com/ar/publications/iraqi-marshes/#_ftn19

29.6 Iraq (4 Ramsar Sites, 537,900 hectares)

* Central Marshes	07/04/2014	Maysan, Dhi Qar, Basra	219,700 ha	31°10'N 046°59'E
* Hammar Marsh	07/04/2014	Dhi Qar, Basra	180,000 ha	30°48'N 047°01'E
* Hawizeh Marsh MR	17/10/2007	Basra	137,700 ha	31°25'N 047°37'E
* Sawa Lake	03/03/2014	Muthanna	500 ha	31°18'N 045°00'E

- [1] <http://whc.unesco.org/en/list/1481/>
- [2] <http://www.ag.unr.edu/swwf/readings/alwash.pdf>
- [3] <http://www.ag.unr.edu/swwf/readings/alwash.pdf>
- [4] <https://www.iasj.net/iasj/download/1ae7796a84bb1e6d#:~:text=The%20biome%20mostly%20includes%20the,and%20other%20wildlife%20breeding%20places.>
- [5] <https://iraq.iom.int/resources/migration-fragile-setting-responding-climate-induced-informal-urbanization-and-inequality-basra-iraq>
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- [10] CRIM (2013). The National Atlas of Marshes and Wetlands in Iraq.
- [11] <https://www.undp.org/iraq/stories/ahwari-women-beating-heart-iraqi-marshes>

30. IRAQ'S WATER SECURITY

Water security is a critical issue on a global scale, with a particular focus on Iraq. This matter holds significant strategic importance due to its direct impact on various aspects of livelihood and its pivotal role in shaping future growth strategies. However, Iraq faces numerous challenges and obstacles in managing its water resources, which include population growth, climate change effects, and reduced water flow resulting from upstream control by neighboring countries, and the persisting security and political instability within Iraq.

Out of the 17 most water-stressed countries globally, 11 are located in the MENA region. Water scarcity in this region. Iraq, is exacerbated by the rising demand for agriculture and the expansion of irrigated land using aquifers. Agriculture consumes more than 80% of the region's water resources, exceeding the global average of 70%. [1]

Iraq primarily relies on two sources for its water supply: surface water, encompassing the Tigris and Euphrates rivers covering 126,900 and 177,600 square kilometers, respectively, and aquifers. These rivers are trans-boundary, involving four countries: Turkey, Iran, Syria, and Iraq.

Both the Euphrates and the Tigris rivers originate in Turkey and flow to the Shatt al-Arab basin in southern Iraq. Turkey and Syria contribute 90% and 10% of the Euphrates' water flow, while Turkey, Iraq, and Iran contribute 40%, 51%, and 9% to the Tigris' flow. [2]

Historically, co-riparian states initiated large-scale water development projects independently, disrupting river flow. Originally aimed at regulating river flow and flood prevention, these projects shifted toward hydropower generation to reduce Turkey's oil dependency, escalating tensions between neighboring nations. Environmental factors, inefficient irrigation, and water-intensive crop cultivation further fueled water disputes (Kibaroglu & Scheumann, 2013).

In 2021 and 2022, Iraq faced record drought and soaring temperatures, with the southern region recording 54°C/130°F. Iraq now receives significantly less water than in the past, with water availability per capita expected to drop to 479 cubic meters by 2030, far below the WHO standard of 1700 cubic meters annually, jeopardizing food security, lives, and development. Increased salinity in the Shatt Al-Arab River and the degradation of Iraq's famous Mesopotamian Marshlands are additional concerns.

30.1 Iraq's Water Crisis: The Problem, Magnitude, and Importance

Water security is a critical issue on a global scale, with a particular focus on Iraq. This matter holds significant strategic importance due to its direct impact on various aspects of livelihood and its pivotal role in shaping future growth strategies.

However, Iraq faces several challenges in managing its water resources:

- **Population Growth:** Population growth with random trends is effective, and will be affecting water demand and availability. Studies show that water availability and water demand around 2050 will not have a balance, as the demand will be higher than the availability, due to population growth among other causes. According to the United Nations Population Division, Iraq's population growth rate in 2023 is 2.27%, and the country's current population (45.7 million) will more than double by the end of 2085. This population growth is particularly concerning in light of Iraq's increasingly critical water shortages. [3]
- **Climate Change:** Changing weather patterns affect water availability, Climate Change impacts in Iraq are varied between slow onset and onset impacts, one of the main impacts are higher occurrence of heat waves, intense rainfall events and dust storms as well as changes to rainfall patterns in different parts of the country. Predictions for 2050 estimate an increase in mean annual temperature of 2°C and a decrease in mean annual rainfall of 9%, with a decrease of 17% for the winter months, this leads to vast evaporation in water, and huge need for irrigation for the agriculture lands, while still using old techniques of irrigation as the open channels, this will as well lead to evaporation of irrigation channels, leaving plants thirsty and degradation in soil that leads to increasing salinity.

These changes will have a significant impact on water resources, including an expected 22% decrease in river runoff across the country by 2050 and saltwater intrusion into

groundwater aquifers. The increase in high-intensity rainfall events is expected to lead to a higher occurrence of flooding, including flash floods. [4]

- **Food Security and Livelihood:** Livestock is suffering from the scarcity of water, due to the less water in the areas where livestock graze, in addition to the green areas already deteriorating, this has caused the death of buffalos continuously as Media reports shows.

Also agricultural productivity is expected to decrease due to a lack of rainfall and irrigation water, desertification and soil salinization, contributing to food insecurity and the loss of agricultural livelihoods and encouraging migration towards urban areas. Electricity production from hydropower plants is expected to decrease due to lower water levels in the reservoirs, with studies estimating a 5-10% decrease of the Mosul Dam's hydropower generation by 2050. Various impacts on public health are expected as well, including impacts directly related to the increase in temperature and impacts related to the deterioration of access to water, food and electricity. [5]

The land once known as the Fertile Crescent is rapidly becoming drier, hotter, and less agriculturally productive. According to the United Nations Development Programme (UNDP) representative in Iraq, the country loses over 100 km² of agricultural land annually—an area larger than Baghdad—due to climate change, desertification, and increasing temperatures of agricultural land. This poor environmental reality, coupled with the high fertility rate and growing water scarcity, poses an additional challenge for the irrigation of arable lands. [6]

That is in addition to the crucial problem of IDPs due to Environmental causes, In July 2019, the International Organization of Migration (IOM) in Iraq identified 21,314 internally displaced persons (IDPs) from central and southern regions. These displacements were attributed to the lack of water, high salinity content, and waterborne disease outbreaks in urban and rural communities, underscoring the gravity of the water crisis [7]

- **Water Quality:** Iraq is currently grappling with significant water quality challenges, primarily related to salinity and pollutant concentration in freshwater sources. Salinity in Iraq's rivers worsens as you move southward, with the Euphrates showing higher salinity than the Tigris due to various factors such as geological features and irrigation practices. The Shatt al-Arab experiences the highest salinity due to the confluence of saline rivers, reduced water flow, and tidal influence. Waterborne diseases are widespread due to contaminated drinking water, with bacteriological contamination exceeding standards. Other pollutants, like organic and inorganic substances, are not well-documented.

Groundwater quality varies across the country, with the best-quality aquifers in the northeast and increasing salinity in central and lower areas. Seawater intrusion along the Gulf coast exacerbates groundwater salinity. Environmental degradation, including habitat loss and decreased biodiversity, has been exacerbated by decades of conflict and sanctions, with associated costs to the national economy.

Efforts to address environmental issues, including the passage of environmental legislation, have had mixed success, partly due to administrative changes within the Ministry of Environment. Health risks related to water pollution have become increasingly evident, particularly in Basra, where water quality-related illnesses led to large-scale protests in 2018. Overall, Iraq urgently needs sound environmental management measures to tackle its water quality issues. [8]

- **Reduced Water Flow:** Upstream countries control the flow of the Tigris and Euphrates rivers, reducing water availability, With Turkish project of Southeastern Anatolia Project (GAP) of 22 dams, Ilisu Dams has 10.4 billion cubic meter of capacity, and Iran's TWP of 14 dams with 1.9 billion cubic meter of capacity. [9]

These shares of water have been decreasing continuously, due to declining precipitation, gradual desertification, and upstream water use and damming. The Euphrates and Tigris rivers, providing up to 98% of Iraq's surface water, have seen a 30% decline in water flow since the 1980s, with further declines projected (50% and 25%, respectively, by 2025). Groundwater, another vital source, faces significant depletion due to salinization. Overall, Iraq's water supply is expected to decrease by up to 60% by 2025, primarily attributed to upstream neighboring countries' dam and irrigation projects. Internal water management practices within Iraq also play a critical role in exacerbating water-related conflicts. [10]

Where Iraq was until a decade ago, it received about 625 cubic meters of water per second from the Tigris River, and by late 2022, the rate of flow was reduced by a third to about 200 cubic meters per second. Concurrent with this trend, the amount of water available per Iraqi has halved from more than 5000 cubic meters in 1997 to 2400 cubic meters in 2009. [11]

Due to the low quality of water and the continuous reduction of the flows, Iraq is suffering from the spread of varied health issues and epidemics that are related to the subject, such as Diarrhea, cholera, typhoid and nematodes, according to the UNICEF almost 3.5 Million kids suffer from acute safe drinking water shortage.

The International Relief Organization said that more than 10% of tribal conflicts are primarily caused by water and arable land, indicating the critical impact of low levels on security, climate change, and the quality and quantity of potable water, especially in the southern parts of the country... There is a shortage. The country is suffering greatly from infrastructure, water access, irrigation, and gas and oil production, and that water in Iraq now meets 1/5 of the demand. The situation requires reorganizing and managing the water file, developing a local strategy to correct the situation, and working to search for solutions. An alternative to creating clean energy.

- **Security and Political Instability/ Mal Infrastructure:** Ongoing instability in Iraq compounds water management challenges, Decades of war, sanctions and political instability have had profound impacts on water management in Iraq, turning its water system from one of the best in the Middle East into one of the worst. Direct conflict damage, insufficient repairs and a lack of maintenance have

led to the deterioration of most of Iraq's water infrastructure, exacerbating problems related to leakage from water or wastewater pipes and the inefficient distribution of irrigation water.

Water service provision has suffered from a lack of access to the necessary equipment, spare parts and water treatment chemicals in addition to issues related to deteriorated infrastructure. Water utilities have also struggled with brain drain, as skilled workers left their poorly paid public sector jobs for more lucrative employment elsewhere. With the national economy in decline and government funds diverted towards security purposes, government authorities and utilities in the water sector were severely underfunded throughout the second half of the 2010s. [12]

30.2 What the government of Iraq is doing now:

The Iraqi government by the lead ministries in this sector (Ministry of Water Resources, Ministry of Environment) alongside other governmental institutions such as the Iraqi Parliament have continually worked to enhance the water file management, during

Continuous diplomatic efforts to negotiate with the neighboring countries Turkey and Iran to rephrase the agreements and obtain the needed flows/shares of water to Iraq, for several years now there are ongoing negotiations to settle the matter, this has led to several increase for water shares from Turkey in times, but nothing was regulated due to the Turkish government decisions considering the GAP project.

Other efforts were made to the Iranian side, as Iran is completely sticking to Algeria's Agreement Mandates.

Prime Minister Mohammed Shiaa AlSudani during a meeting in 11th of Sep 2023, has announced on:

- The government will present a radical strategic plan to address the water issue in all its aspects.
- Iran and Turkey has increased the flow of shares due to a visit to reach new understandings. [13]

Ministry of Water Resources/ Minister Aoun Dhiab during the International Water Conference Aug 2023:

- The ministry is working at the internal and external levels to confront water scarcity, as Iraq have developed rational plans for water management, and coordinated with all sectors and institutions to ensure the delivery of water quotas to all beneficiaries, especially in the valleys of rivers and canals, especially in the southern governorates.

- During the Third Baghdad International Water Conference, understandings were reached with it that would open the way for productive and constructive cooperation.
- The Ministry is embarking on a massive campaign to remove encroachments on water resources, with great support from the armed forces, as well as governors and local governments.

Ministry of Housing and Constructions/ Minister Banken Rigani during the International Water Conference Aug 2023:

- Iraq has developed LED sewage treatment plants, and the water produced or outputs from these networks is now used for agricultural purposes, and is very pure.

Iraqi Parliament during the conference of

Parliament Abbas Al-Zamili (Chairman of the Parliamentary Security and Defense Committee):

- A law was submitted to the Council in 2017 and was voted on by the Presidency of Parliament, to establish the **Supreme Water Council** for the purpose of diligent work and serious follow-up regarding water affairs, its quality and quantity.
- A budget of \$1 billion (a modest amount) was allocated (Iraqi Governmental Balance of 2023) as a share to the Ministry of Agriculture and Water Resources, most of this budget was allocated to operational expenditure. The parliament is working to legislate and implement allocations to the ministries of agriculture and resources that will reduce water waste by 40% over the next five years, also have allocated \$300 million to purchase modern agricultural and irrigation technologies to reduce water waste. [14]

This among other Agendas, Decisions, Implementations and Projects.

30.3 Needed Actions to enhance the Water File in Iraq:

To address the water crisis in Iraq, the country needs a comprehensive and sustainable long-term strategy that involves multiple actions and collaborations with neighboring countries. Here are some key outcomes and actions that should be considered:

- **International Agreements:** Iraq should prioritize the development of new agreements with Turkey, Syria, and Iran to ensure a stable and equitable supply of water from the Euphrates and Tigris rivers. These agreements should focus on both the quantity and quality of water entering Iraq and be aimed at promoting regional cooperation to manage water resources effectively.
- **Efficient Water Management:** Iraq must improve the efficiency of water management, including better reservoir operations and conservation practices.

This involves modernizing irrigation methods, reducing wastage, and adopting sustainable farming practices. The government should encourage and support the adoption of efficient irrigation techniques, such as drip irrigation, and promote the reuse of treated wastewater in agriculture.

- **Groundwater Resources:** As mentioned in the Strategy for Water and Land Resources, the government should actively seek additional groundwater resources to supplement the available water supply. This may involve identifying and extracting water from aquifers responsibly to ensure long-term sustainability.
- **Water Treatment Facilities:** Expanding water treatment facilities is crucial to provide clean and safe water for municipal and industrial users. Treatment should meet or exceed established drinking water standards, ensuring the health and well-being of the population.
- **Water Network Enhancement:** The infrastructure for water distribution and delivery needs to be upgraded and expanded. Investments should be made to improve the water network serving both urban and rural areas, reducing water losses and ensuring equitable access to clean water.
- **Agricultural Drainage Management:** To combat salinity issues along Iraq's rivers, it is essential to reform agricultural drainage practices. By connecting irrigation projects to drainage channels that segregate polluted agricultural runoff from the freshwater supply, water quality can be significantly improved. This will involve significant investments and changes in agricultural practices.
- **Water Education and Awareness:** Raising awareness about the importance of water conservation and responsible usage is essential. Public education campaigns can help individuals and communities understand the significance of efficient water management and encourage water-saving practices.
- **Research and Innovation:** Encourage and support research and innovation in water management, including the development of new technologies and practices for efficient water use, pollution control, and water resource monitoring.
- **Economic Diversification:** Reducing the heavy dependence on water-intensive agriculture and exploring economic diversification strategies can help mitigate the pressure on water resources.
- **Climate Change Adaptation:** Implement strategies to adapt to the effects of climate change, such as changes in rainfall patterns and increased temperatures, to reduce the impact on water resources.
- **Regional Collaboration:** Engage in diplomatic efforts with neighboring countries to foster cooperation in managing shared water resources, ensuring stability and equitable access for all.

Addressing Iraq's water crisis is a multifaceted challenge that requires a long-term commitment, collaboration with neighboring states, and the active participation of government, industry, and the public. The above outcomes and actions represent a comprehensive approach to tackling this critical issue and ensuring the sustainable use of water resources in Iraq. [15]

The critical issue of water security in Iraq is driven by a combination of factors, including population growth, climate change, reduced water flow from upstream control, and political instability. Iraq faces challenges such as rising water demand, changing weather patterns, and declining river flow due to neighboring countries' water control projects. As a result, water availability per capita is expected to decrease significantly, threatening food security and livelihoods.

Agriculture, which consumes more than 80% of the region's water resources, is a major contributor to the problem, with inefficient irrigation practices exacerbating water scarcity. The crisis extends to livestock, agricultural productivity, and electricity generation from hydropower plants. Inadequate infrastructure and governance compound the issue, while environmental degradation adds to the economic and health risks.

To address this crisis, Iraq must focus on various measures, including international agreements with neighboring countries to ensure water supply stability. Efficient water management, groundwater exploration, water treatment facility expansion, and infrastructure enhancement are crucial. Sustainable agricultural drainage practices, public awareness campaigns, research and innovation, and economic diversification strategies are essential elements of the long-term strategy. Collaboration at the regional level is also necessary to promote stability and equitable access to shared water resources.

30.4 Turkish-Syrian-Iraqi Water Historical look:

1926: The first agreement between Iraq, French Syria, and Turkey was made, agreeing not to make any changes in river management without consulting downstream countries. However, Turkey later claimed this agreement was irrelevant.

1946: A treaty of friendship was signed between King Faisal II of Iraq and the Turkish president, but Turkey did not fully implement it.

- **1970:** Turkey planning to build dams to control water shares. Iraq objected to the plans which expect to reduce water flow.

- **1975:** Turkey start the Southeast Anatolia Project (GAP). Iraq and Syria criticize the project because it is expected to reduce the water flow 80% and 50% respectively.

1980: Iraq and Turkey held a forum to discuss regional water issues, leading to the establishment of the Joint Technical Committee (JTC) as a mechanism to find mutual agreement.

1983: Turkey and Syria reached a protocol on water sharing, but Iraq did not join.

1990: An Iraqi-Syrian bilateral agreement was made, but no agreement was reached between Iraq and Turkey.

- **2009:** Turkey moved with the GAP project. Tigris and Euphrates levels fell by more than two thirds, this led to the infiltration of salt water from the Arabian Gulf into the Shatt Al-Arab River. salt water reached beyond Basrah ruined many Iraqi territories, 30.000 people migrated northward and UNESCO report estimated 100,000 Iraqis left their communities due to water shortages and warned that these vital lifelines could dry up completely by 2040.

30.5 Iranian-Iraqi Water Historical look:

1937: agreements managed to appease bilateral relations momentarily with support of the League of Nations, Iraq and Iran concluded agreements over the delimitation of the Shatt al-Arab. Karsch, 2002

1960s: withdrawal from the 1937 treaty in April 1969 Iran's growing regional power culminated in its unilateral withdrawal from the 1937 treaty in April 1969, to which Iraq declared a "blatant violation of international law. Karsch, 2002

1975: Algeria's Agreement 1975 when both countries concluded the Algiers Agreement under the initiative of Algerian President Houari Boumédiène, in which Iraq acknowledged Iran's sovereignty over half of the river, in exchange for an end to Iranian support for the Kurds. Francona, 2001; ICE, 1998; Karsch, 2002

1979: withdrew from the treaty in 1979 this set the stage for the war between Iran and Iraq that would later erupt in 1980 Karsch, 2002; Pipes, 1983

Now the Algeria Agreement is again active as the treaty to manage water relations between the two countries. [16]

[1] UNICEF: <https://www.unicef.org/mena/press-releases/running-dry-unprecedented-scale-and-impact-water-scarcity-middle-east-and-north>

[2] <https://climate-diplomacy.org/case-studies/turkey-syria-and-iraq-conflict-over-euphrates-tigris> .

[3] <https://www.washingtoninstitute.org/policy-analysis/addressing-iraqs-environmental-challenges-population-growth#:~:text=According%20to%20the%20United%20Nations,s%20increasingly%20critical%20water%20shortages.>

[4] <https://www.worldbank.org/en/country/iraq/publication/iraq-economic-monitor-the-slippery-road-to-economic-recovery>

[5] <https://www.worldbank.org/en/country/iraq/publication/iraq-economic-monitor-the-slippery-road-to-economic-recovery>

[6] <https://www.washingtoninstitute.org/policy-analysis/addressing-iraqs-environmental-challenges-population-growth>

- [7] <https://iraqrecovery.iom.int/iraqwatercrisis/>
- [8] <https://water.fanack.com/iraq/water-quality-in-iraq/>
- [9] <https://www.mfa.gov.tr/data/DISPOLITIKA/WaterASourceofConflictofCoopintheMiddleEast.pdf>
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<https://research-portal.uea.ac.uk/en/publications/urban-warfare-ecology-a-study-of-water-supply-in-basrah>
- [13] <https://www.ina.iq/193338--.html>
- [14] <https://www.youtube.com/watch?v=fP87md44TFU>
- [15] <https://t-zero.it/en/portfolio/swlri-strategy-for-water-and-land-resources-in-iraq/>
- [16] <https://climate-diplomacy.org/case-studies/iraq-iran-water-dispute-war>

31. IRAQ'S FOOD SECURITY

Food security, as defined by the United Nations' Committee on World Food Security, means that all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life.

There are four dimensions to Food Security, and they are:

- **Physical *availability* of food:** Food availability addresses the “supply side” of food security and is determined by the level of food production, stock levels and net trade.
- **Economic and physical *access* to food:** An adequate supply of food at the national or international level does not in itself guarantee household level food security. Concerns about insufficient food access have resulted in a greater policy focus on incomes, expenditure, markets and prices in achieving food security objectives.
- **Food *utilization*:** Utilization is commonly understood as the way the body makes the most of various nutrients in the food. Sufficient energy and nutrient intake by individuals are the result of good care and feeding practices, food preparation, and diversity of the diet and intra-household distribution of food. Combined with good biological utilization of food consumed, this determines the nutritional status of individuals.

- **Stability of the other three dimensions over time:** Even if your food intake is adequate today, you are still considered to be food insecure if you have inadequate access to food on a periodic basis, risking a deterioration of your nutritional status. Adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) may have an impact on your food security status.

The Integrated Food Security Phase Classification:

The Integrated Food Security Phase Classification (IPC) The IPC is a classification system for food security crises based on a range of livelihood needs.

Phase		General Description
1A	Generally Food Secure	Usually adequate and stable food access with moderate to low risk of sliding into Phase 3, 4, or 5.
1B	Generally Food Secure	
2	Moderately / Borderline Food Insecure	Borderline adequate food access with recurrent high risk (due to probable hazard events and high vulnerability) of sliding into Phase 3, 4, or 5.
3	Acute Food and Livelihood Crisis	Highly stressed and critical lack of food access with high and above usual malnutrition and accelerated depletion of livelihood assets that, if continued, will slide the population into Phase 4 or 5 and / or likely result in chronic poverty.
4	Humanitarian Emergency	Severe lack of food access with excess mortality, very high and increasing malnutrition, and irreversible livelihood asset stripping
5	Famine / Humanitarian Catastrophe	Extreme social upheaval with complete lack of food access and / or other basic needs where mass starvation, death, and displacement are evident

31.1 Iraq's Food Security context:

In Iraq, intermittent conflict as well as the impact of climate change continue to affect the lives of people. There are currently 1.2 million internally displaced persons (IDPs) and 2.5 million people in need of humanitarian assistance. Insecurity, lack of livelihoods, and destroyed or damaged housing hampers people's abilities to return home.

The impact of the Ukraine crisis on food prices [1] coupled with reduced agricultural production caused by water scarcity put further stress on food security in the country.

World Food Programme Iraq's assistance focuses on changing lives, saving lives, and supporting the Government of Iraq with social protection reform, youth empowerment, and combating climate change towards achieving Sustainable Development Goal (SDG) 2: Zero Hunger. Iraq's progress on the SDGs has been hindered by the challenges of rebuilding infrastructure in areas affected by conflict with ISIL, weak institutions and governance, climate change, delayed implementation of reforms and inadequate opportunities for youth.

31.2 Iraq's Emergency Food Security Bill:

On June 8, 2022, Iraq passed which allows the government to use public funds for urgent food security and development needs.

The emergency food security law allocates 25 trillion Iraqi dinars (about \$17 billion) for staple food supplies, gas, electricity and payment of public servant salaries. The law also aims to support Financial Precaution and Poverty Alleviation in the country. The law was meant to address an urgent food crisis sparked by the war in Ukraine and sought to be a partial alternative to the official budget for 2022.

31.3 World Food Programme Iraq country strategy:

Strategic Outcome 1: Crisis-affected people in Iraq, including IDPs and refugees, are able to meet basic food and nutrition needs during and in the aftermath of crises throughout the year.

Focus area: **Crisis Response**

Activities:

- Provide unconditional food assistance to IDPs, refugees and other crisis-affected people.

Strategic Outcome 2: Targeted communities, including farmers, have enhanced livelihoods and increased resilience to shocks by 2024.

Focus area: **Resilience Building**

Activities:

- Provide livelihood support, asset creation and climate adaptation activities, including capacity strengthening to targeted farmers and communities.
- Implement climate resilience projects for targeted individuals and communities for and on behalf of the Government and other actors.

Strategic Outcome 3: National and subnational institutions have strengthened capacities and systems for targeting and assisting food-insecure vulnerable people by 2024.

Focus area: **Resilience Building**

Activities:

- Provide institutional capacity strengthening to Government officials and partners.

- Provide support to Government officials and partners in enhancing information technology for managing PDS modernization and in strengthening the safety net component of the Government social protection system

Food Security Issues:

Governance Issues

the oil industry accounts for 90% of Iraqi government revenue. The crash of oil prices caused a \$40 billion deficit in the Iraqi budget, cutting this revenue in half. Iraq's government has been unable to properly fund various institutions. Combined with a 66% rise in population since 2000, this has placed immense stress on the country's food supply. Constant conflict and the corrupt management of resources have hindered any ability to keep up with this population boom. USAID labels just under one million Iraqis as food insecure. The World Food Program, however, estimates that this number is closer to two million.

While much focus is on obtaining aid from the international community, Iraq has not necessarily focused as much on reforming its own institutions governing agricultural industry networks. Iraq's State-Owned Enterprises are involved in every step of food production, processing and distribution. The government attempts to distribute food products and support the industry through its bloated Public Distribution System (PDS), which in 2019 cost \$1.43 billion, and its yearly \$1.25 billion effort to buy wheat and barley from Iraqi farmers at double the international price. Despite these expensive programs, Iraq still ends up importing 50% of its food supply.

Inefficient growth, processing and distribution methods and a reliance on food imports place Iraq in a delicate position. They are susceptible to global food chain supply network failures and the threat of a budget collapse due to the crash of oil prices. Such an occurrence would likely cause the food system to implode without the current level of government intervention. These governance issues, on top of decades of conflict and displacement, have exacerbated food insecurity in Iraq.

32. IRAQ'S ENERGY SECURITY

Electricity Demand and Supply

The peak daily electricity demand (excluding Kurdistan Iraq) has reached 36,560 MW in summer 2022. Despite the country's design capacity being 37,149 MW, it was unable to crank out more than 22,250 MW in July 2022. More than 2,382 MW of generated electricity are lost in the decrepit transmission and distribution grid. These issues lead to lengthy daily blackouts, especially in the summer, which are partly filled with noisy, dirty, and expensive neighborhood diesel generators. Planning of energy systems is extremely significant to devise and evaluate long-term future energy strategies. The demand for energy has increased considerably after 2003 due to limited but considerable economic development and population growth (Figure 1).

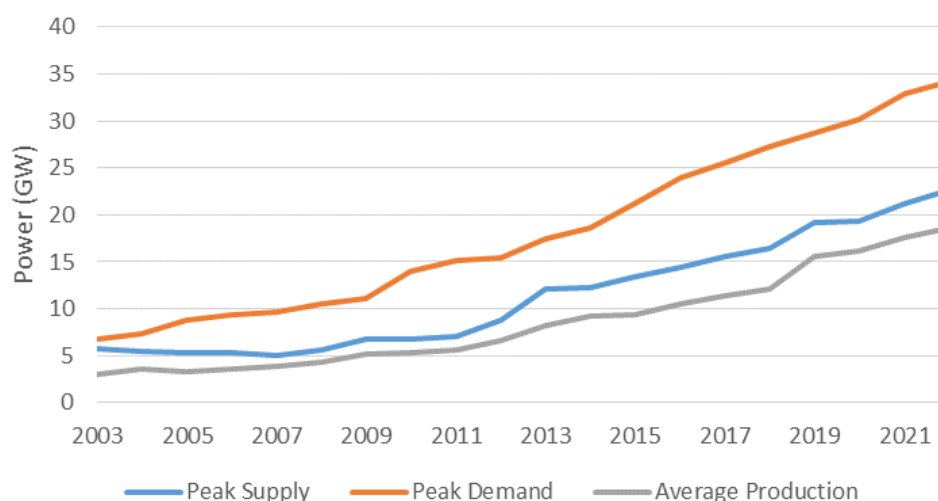


Figure 1: Iraq Electricity Peak Supply and Demand (2003 – 2022) [Data Source: MOELC]

According to the International Energy Agency [1] unchecked demand for electricity will keep rising to 68 GW by 2030 where the capacity will top at 58 GW (Figure 2).

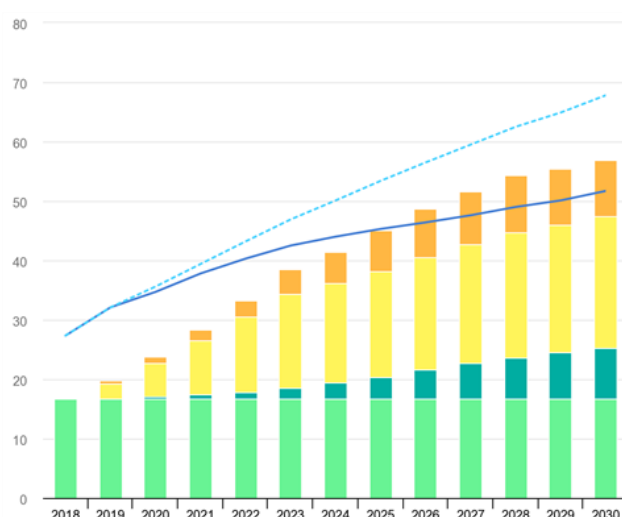


Figure 2: Iraq's electricity supply and demand, 2018-2030 [Data Source: IEA]

As of today, Iraq is a relatively low emitter of CO₂ (with per capita emission of 5.24 metric tons in 2020) compared to some other countries in the region (Table 1) [2]. However, Iraq's GHG emissions from the power sector are expected to increase, this will depend heavily on the investments that Iraq is planning to make in the future to meet the future demand for electricity.

The ever-growing consumption of fossil fuels and oil-associated gas flaring are contributing to the drastic climate change in Iraq, prolonged heat waves, erratic precipitation, desertification, drought and severe water shortage are experienced in the last several years [3]. The high percentage of fossil fuel in the energy mix besides gas flaring will not only put

Iraq away from its nationally determined contributions (NDCs) commitment but will also deviate the country away from the global path to mitigate the climate efforts.

Country	Annual CO2 Emissions [metric tons per capita]
Qatar	37.02
Kuwait	20.83
Bahrain	20.55
Saudi Arabia	17.96
UAE	15.19
Oman	12.17
Iran	8.87
Iraq	5.24

Table 1: Annual CO2e per Capita (Data Source: [Our World in Data](#))

Iraq's capital expenditure in the electricity sector was close to US\$ 40 billion during the period 2007 – 2021, around 50% of the total budget (Figure 3)[4]. Iraq also spent US\$ 14 billion importing electricity and fuel (including natural gas for power generation from Iran since 2017) during the same period.

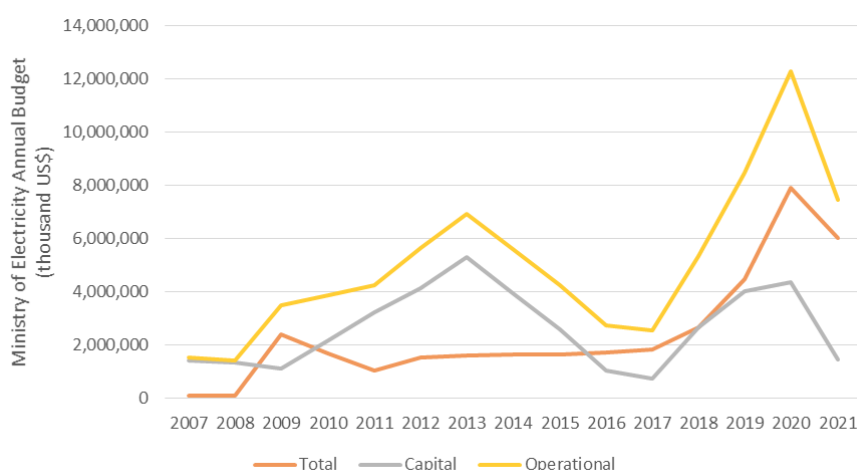


Figure 3: Iraq Electricity Annual Budget (2007 – 2021) [Data Source: Iraq Ministry of Finance]

The electricity shortage is coupled with fuel shortage, mainly natural gas and increase in the fuel costs supplied freely by the Ministry of Oil to appear as a problematic economic situation of the electricity sector.

32.1 The Challenge of Energy Dependence: Iraq's Struggle for Power

Iraq's ongoing battle with its electricity crisis is further exacerbated by its dependence on foreign fuel sources for power generation. Despite being a prominent petroleum producer and the second-largest exporter within the Organization of the Petroleum Exporting Countries (OPEC), Iraq has failed to harness its own natural gas resources for decades. Paradoxically, the nation has found itself importing gas to fuel its electricity generators.

Iran embraced the new Iraqi government post-2003, cultivating a robust network of political, economic, security, and social ties. Over the course of seventeen years, Iraq-Iran relations have deepened, giving Iran a distinctive advantage at the cost of reintegrating other regional players into Iraq's economic framework. This has become increasingly challenging, especially considering hostilities between specific Arab nations and Iran.

In 2023, Iraq's power plants generated approximately 24,000 MW, a figure considerably lower than the estimated 34,000 MW [5] required to satisfy domestic demand. The country's solution to bridge this deficit currently hinges on importing natural gas from Iran and relying on power transmissions from neighboring nations.

However, the scenario is set to intensify. By 2030, Iraq is anticipated to witness a doubling of power demand due to population and economic growth. In an endeavor to confront this impending challenge and cultivate self-sufficiency, Iraq is developing plans for new projects aimed at exploiting its natural gas reserves. But a transition to solar energy presents itself as a critical component of a comprehensive strategy, one that not only addresses energy needs but also contributes to Iraq's economic progress, stability, and the reduction of environmental pollution.

Recent efforts in the sector have directed attention toward new gas-capture and power-generation initiatives, most notably exemplified in the \$27 billion deal with France's TotalEnergies, an accord welcomed by the Biden administration. However, these endeavors are only part of the equation. Without significant infrastructure improvements, the grid will be ill-equipped to assimilate the incoming supply, leaving room for losses and theft to persist unchecked. Moreover, the establishment of an effective bill collection system is an urgent imperative to staunch the financial bleed.

According to the World Bank, Iraq is one of seven countries that account for roughly two-thirds of global gas flaring. In 2022, Iraq was the second-largest source of gas flaring worldwide, second only to Russia [6]. The TotalEnergies deal aims to help Iraq harness the natural gas emitted by its oil wells, achieve a more balanced energy portfolio, and address some of its domestic electricity shortages.

High Aggregate Technical and Commercial losses

The Aggregated Technical and Commercial (AT&C) losses represent the percentage of power produced by the MOELC-owned distribution companies for which it does not receive

payment. The electricity network in Iraq suffers from an astronomical proportion of AT&C losses, technical losses are naturally occurring losses mainly in the transmission and distribution networks. Iraq's technical T&D losses were 20% in 2019[7].

While some proportion of this loss is inevitable due to physical factors (use of poor-quality equipment and aging of the distribution network), the commercial losses are mainly caused by theft and pilferage, lack of metering, poor billing and collection. Fixing the commercial operating foundation of the distribution segment should be the top priority to achieve financial sustainability in the sector and gradual reduction of the subsidies. With generation steadily increasing, transmission systems being strengthened, and increasing fiscal pressure within the electricity sector, attention should be focused on electricity distribution, which is critical in terms of supplying new power generation to end consumers.

Neighborhood Generators

The absence of reliable power supply from the grid has led to the widespread installation of private and neighborhood diesel generators, whose constant operation imposes high generation costs, with households having to pay almost about US\$40 per kWh compared to grid supply tariff of about US\$ 3.0 per kWh. The neighborhood generators in Iraq are a primitive model of decentralized energy systems. The generators supply households in the neighborhoods through small (typically between 100 – 500 kVA diesel generators) with an isolated distribution web of wires (Photo 1) to operate household's essential loads such as lighting, fans and small appliances when power is not available from the public supply [8].

Photo 1: Iraq neighborhood electricity supply wires (Creator: © Saad Shalash/Credit: Reuters)

Decentralized energy systems using rooftop solar photovoltaic (RTSPV) panels could be an economically viable option especially in remote and shanty towns with 100s - 1000s housing units to overcome issues of scattered population especially where the grid is not available. This will have a trickle-down effect for these communities, which the majority are low income or below poverty line. However, the government needs to regulate the micro-level use of decentralized systems (including the neighborhood generators) to a micro level policy. For example, relocating the neighborhood generators from the neighborhoods due to their considerable environmental and public health impact will help to optimize utilization of distribution infrastructure, achieving higher utilization factors of 50–60% by lowering AT&C losses significantly [9].

32.2 Iraq and Climate Change

Climate change is becoming a serious environmental challenge to Iraq's ecosystem, reducing the annual rainfall, surging dust storms, decreasing the agricultural productivity, and increasing the water scarcity [10]. According to the Ministry of Environment, the country had more than 200 - 220 dust storms annually and more than 43% of agricultural lands are suffering from desertification [11]. In June 2022, eighteen international and local

organizations operating in Iraq called for international assistance for sustainable management of water resources [12]. The Central Bank of Iraq (CBI) allocated more than 17 trillion dinars (US\$ 11 billion) to tackle the effects of climate change. In addition to the budget allocated by the Ministry of Agriculture's to combat desertification and reforestation [13].

Photo 2- An Iraqi man walks on dry land that was covered with water in the Chabayish marshes in Dhi Qar (Credit: Reuters)

While extreme heat during summer is becoming more frequent, rainfall is on a downward slope especially in the southern and eastern parts of the country [14]. The average annual temperature is projected to rise by 2 degrees Celsius by 2050, while the average annual rainfall is projected to decrease by 9% [15].

Iraq announces roadmap to eliminate gas flaring by 2030

32.3 The government has identified the following NDCs to mitigate the GHGs for the energy sector [16]:

- Reduce the gas flaring at oil and gas facilities,
- Invest in development of the petroleum industries to reduce emissions, in particular improving and monitoring associated gas flaring technology to reduce methane emissions and avoid gas “venting” through gas recovery and recycling,
- Conduct periodic detection programs for methane gas leaks in oil and gas facilities for the purpose of repair (LDAR) in cooperation with international partners (Global Methane Alliance-GMA) and oil and gas companies operating in Iraq,
- Convert the existing open cycle gas turbines to combined cycles,
- Fuel switching from liquid fuels to natural gas in electric (gas) power plants and improving the quality of the fuel used, which contributes to reducing carbon emissions,
- Reduce emissions by adopting mechanisms to improve energy efficiency and rationalize its consumption,
- Convert heavy fuel electric power stations to using LPG and dry gas fuels, which can be provided by capturing associated gas and reducing methane emissions,
- Increase the use of hydroelectric power,
- Use carbon capturing and storage technologies in order to reduce carbon emissions and benefit from it in industrial processes.
- Expand renewable energy technology, especially solar and wind energy,
- Deploy sustainable public transportation and environmentally friendly technologies and gradual transition towards sustainable transportation,

- Gradual shift towards hybrid and environmentally friendly vehicles,
- Use of fuel-efficient engines in aviation sector,
- Review and update the existing laws of trade, industrial investment and customs tariffs,
- Support the participation of the private sector in the development of public transport.

Iraq stands at the crossroads of a critical environmental challenge and an ambitious vision for a sustainable energy future. The nation has made noteworthy progress in addressing the long-standing issue of gas flaring:

- More than 60% of the natural gas flaring in Iraq has been captured, according to Iraq's Environment Minister.
- Iraq has developed a roadmap to reduce gas flaring for the upcoming years, with the target of zero flaring by 2030.
- Iraq is the second largest gas flaring country after Russia, with around 40% of its gas production flared.
- "The methane flaring is one of the most prominent and important issues that the Iraqi government is working on to reduce its emissions,".
- The Global Methane Pledge, which was launched at COP26 in November 2021 and is led by the United States and the European Union, aims to catalyze action to reduce methane emissions.
- Over 100 countries are participating in the pledge, including Iraq, agreeing to take voluntary actions to contribute to a collective effort to reduce global methane emissions at least 30% from 2020 levels by 2030.
- Iraq is working with the World Bank through its Global Gas Flaring Reduction Partnership (GGFR), which is a public-private initiative to achieve zero flaring by 2030.
- "Methane flaring and emission is one of the main causes of environmental pollution in Iraq," especially in areas of oil production, which is harmful for the health and lives of the people.
- Stopping natural gas flaring and recovering all spilled gas is "sufficient", as it would help Iraq reduce the use of oil for power generation and help supply the energy deficit.

[1] IEA, Iraq's electricity supply and demand, 2018-2030, IEA, Paris <https://www.iea.org/data-and-statistics/charts/iraqs-electricity-supply-and-demand-2018-2030>, IEA. Licence: CC BY 4.0

- [2] Our World in Data ([Link](#)).
- [3] WBG, Climate Change Knowledge Portal ([Link](#)).
- [4] Al-Bayan Center by The Friedrich Ebert Stiftung Organization, A ROADMAP TO PREPARE IRAQ'S POWER SECTOR FOR ENERGY TRANSITION, <https://www.bayancenter.org/en/wp-content/uploads/2022/10/87tygu.pdf>
- [5] IRIS, Scaling Up Iraq's Energy Transition: Is Now the Right Time?, <https://auis.edu.krd/iris/publications/scaling-iraq%E2%80%99s-energy-transition-now-right-time#:~:text=In%202023%2C%20the%20country%E2%80%99s%20power%20plants%20produced%20around%2024%2C000%20MW%2C%20which%20is%20far%20less%20than%20the%20estimated%2034%2C000%20MW%20needed%20to%20cover%20domestic%20demand.>
- [6] The World Bank, Global Gas Flaring Tracker Report, [https://www.worldbank.org/en/programs/gasflaringreduction/publication/global-gas-flaring-tracker-report#:~:text=Russia%2C%20Iraq%2C%20Iran%2C%20the,%25\)%20of%20global%20gas%20flaring](https://www.worldbank.org/en/programs/gasflaringreduction/publication/global-gas-flaring-tracker-report#:~:text=Russia%2C%20Iraq%2C%20Iran%2C%20the,%25)%20of%20global%20gas%20flaring)
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- [10] Nussaibah Younis (2020), Early warning: How Iraq can adapt to climate change, The European Council on Foreign Relations ([Link](#)).
- [11] وزارة البيئة: حالة البيئة في العراق لعام 2017
- [12] وزارة البيئة (2017): برنامج العمل الوطني لمكافحة التصحر في العراق
- [13] البنك المركزي يعلن إطلاق 17 ترليون دينار كمبادرات لمواجهة التصحر والتغير المناخي
- [14] According to Iraq Ministry of Environment, national numerical climate models indicate a steady increase in temperature ranging from (0.9°C) since 2007, it may reach (3.5°C) in the year 2100. The number of days per year with ambient temperature above 50 °C have risen and a clear decrease in the annual rates of precipitation, which are expected to decrease by 2100 of more than 30% of normal rates during the period 1938-1978 according to the forecasts of the Iraqi General Authority for Meteorology and Seismology. Also see the World Bank climate projection for more information ([Link](#)).
- [15] ICRC (2021), [Iraq's perfect storm – a climate and environmental crisis amid the scars of war](#).
- [16] IEA (2022), [Nationally Determined Contribution \(NDC\) to the Paris Agreement: Iraq](#).

33. BIODIVERSITY AND LAND USE

'Biodiversity' is defined as 'the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems,' as per the Convention on Biological Diversity. The term "diversity" describes the range of variation or distinctions among a group of entities; biological diversity, then, describes the variety found in the living world, including human cultures' historical values, customs, and cultural legacy. In fact, the quantity, variety, and variability of living things are sometimes described by the phrase "biodiversity." 'Life on Earth' is effectively synonymous with this extremely broad usage, embracing a wide range of criteria. The link between biodiversity, land degradation and climate change in Iraq underscores the need for holistic and coordinated efforts to combat both challenges. Therefore, this study focus on the correlation and impact of climate change on biodiversity and land use. It concluded that

there is a significant negative effect of climate change and global warming on the biodiversity status in the last decade which require urgent support to conserve natural ecosystems and lands in Iraq

33.1 The importance of biodiversity and their relation with climate change.

To determine the status of biodiversity in Iraq and their mainstreaming with climate change, we have to tackle the below questions:

- What is the status of Biodiversity in Iraq?
- What are the impacts of climate change on biodiversity?
- What are the impacts of climate change on Marshes?
- What are the impacts of climate change on land use?
- What are the governmental efforts to reduce biodiversity loss and land retardation in Iraq?

Overview of Iraq's Ecosystems

Based on the relatively intensive surveys and research, in addition to the existing data on the local and global climate, it became possible to draw the map of the ecoregions of Iraq (Figure 1). According to this map different ecoregion was defined in Iraq, of which some are the “key ecoregions” that cover the

Majority of the country. The main ecoregions of Iraq have already been described in the 4th National Report; for this reason, only updates, recent findings, species discovery and/or pictures of key species of the various regions will be provided in the following and as Annex. Minor eco-regions of Iraq (because of the area they cover in the country) such as the Arabian Gulf eco-region will be shortly addressed. The maps below are showing the terrestrial and aquatic ecoregions of Iraq and the delineated Key Biodiversity Areas (KBAs) based on the Inventory of the KBAs of Iraq developed by the Ministry of Environment and Nature Iraq organization (1, 2).

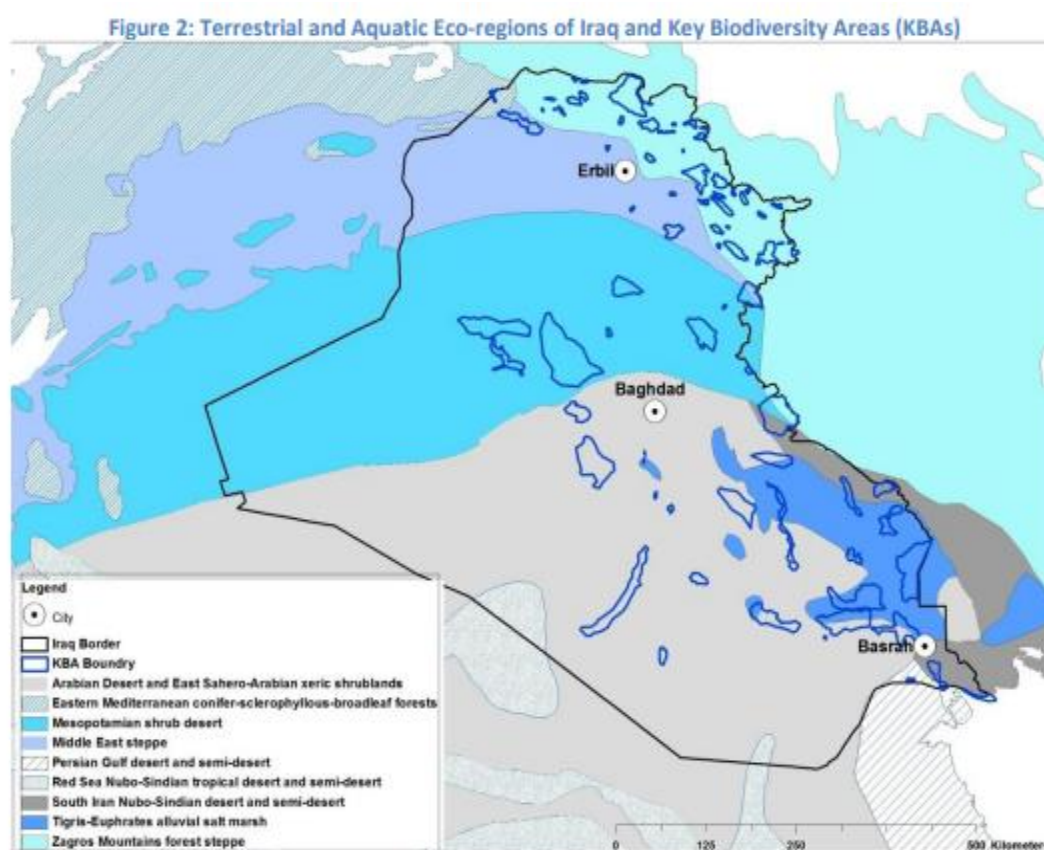


Figure (2): Terrestrial and aquatic Eco-regions of Iraq and Key Biodiversity area (KBAs).

National targets of biodiversity in Iraq

Iraq has no previous NBSAP in place, and no previous experience in its development under global guidelines. However, the National Environmental Strategy and Action Plan of Iraq (2013-2017) (NESAP) has been issued in June 2013 by the Iraqi Ministry of Environment with the support of UNEP and UNDP. The document addresses all environmental issues and concerns in Iraq and provides for actions and objectives within the time frame set (1).

Iraq has set its national targets according to the first NBSAP in Iraq, 2014, within the framework of the Aichi Biodiversity Strategic Goals and Targets:

- Iraqi Target 1: By 2020, 25% of urban and rural people have awareness of the status of biodiversity, its benefits for people, the pressures that affect it, and the actions they can take for its conservation and sustainable use.
- Iraqi Target 2 By 2020, 50% of policy makers and planners have awareness of the status of biodiversity, its benefits for people, the pressures that affect it, and the actions they can take for its conservation and sustainable use
- Iraqi Target 3 By the end of 2015 a national survey of tools used for public awareness of biodiversity is completed.

- Iraqi Target 4 By 2020 the use of tools (films, publications, educational programmes, guidance materials, and training) for raising awareness of biodiversity is improved with locally defined, area based and targeted awareness programs (e.g. governorate level).
- Iraqi Target 5 By the end of 2020 a GIS database of the extent, condition (i.e. healthy or degraded) and protection status of the natural (not altered by human intervention), semi-natural and human modified habitats of Iraq has been developed.
- Iraqi Target 6 By the end of 2020 the reasons for loss and degradation (i.e. the species that used to be present in that habitat are not there anymore, and the services that the people expected or used are reduced or absent) of each of the natural (not altered by human intervention), semi-natural and human modified habitats of Iraq have been identified to inform conservation actions.
- Iraqi Target 7 By the end of 2015 the main pressures on forest ecosystems are identified and studied (Aichi Target 5, Goal B). Iraqi Target 8 By the end of 2020 legislation to address the main pressures on forest ecosystems and native forest species is issued, promoting sustainable management, restoration and conservation.
- Iraqi Target 9 By the end of 2020, about 1,000 square km of desertified shrub land and grassland is restored
- Iraqi Target 10 By end of 2016 a national monitoring programme is established for identification of the main sources and diffusion paths of chemical and physical pollutants in the natural ecosystems and the effects of pollution on natural ecosystems
- Iraqi Target 11 By the end of 2018 environmental standards are issued and enforced for prevention and control of priority pollutants in the natural ecosystems (not altered by human intervention).
- Iraqi Target 12 By the end of 2014 a decree is issued for the establishment of protected areas in Iraq (Aichi Target 11, Goal C). Iraqi Target 13 By the end of 2014 at least three training workshops on PA management have been conducted
- Iraqi Target 14 By the end of 2015 a study and GIS maps of the most sensitive habitats (i.e. under high level of threats and containing high numbers of globally threatened species) have been developed.
- Iraqi Target 15 15. By the end of 2020 ten new Protected Areas have been gazetted and established
- Iraqi Target 16 By the end of 2016 a national assessment is published of the state of provisioning, regulating and cultural services supplied by natural ecosystems and their importance for rural and urban people and on management options to be developed for the sustainable supply of ecosystem services.

- Iraqi Target 17 By the end of 2018 a national strategy/ subnational strategies are established for the sustainable management of ecosystems to supply important ecosystem services for rural and urban people.
- Iraqi Target 18 By the end of 2016 legislation is enacted to control the introduction and diffusion of nonnative species into the natural environment.
- Iraqi Target 19 By the end of 2020 the list of invasive species of Iraq and their impacts and invasion pathways has been published.
- Iraqi Target 20 By the end of 2020 the list of threatened species of Iraq has been published and an action plan for the conservation of priority species is produced.
- Iraqi Target 21 By 2020 legislation for the conservation of threatened species is issued and enforced
- Iraqi Target 22 By the end of 2020 a survey of indigenous and local communities' traditional knowledge, use and practices relevant for the conservation and sustainable use of biodiversity is published.
- Iraqi Target 23 By 2016 a Resource Mobilization Plan for implementation of the NBSAP is established and implemented.

33.2 Biodiversity priorities of Iraq

The specified priorities of Iraq for biodiversity are:

1. Awareness
2. Habitat loss
3. Pollution
4. Western and gaseous species
5. Protected areas
6. Endangered areas
7. Traditional knowledge
8. Ecosystem services
9. Financial resources (3).

Many laws and legislations have been developed in Iraq that provide a framework for environmental protection and biodiversity. The National Biodiversity Strategy and Action Plan (NBSAP) has adopted national goals that address legislation and policies with derived measures in the following areas:

- Establishment of protected areas
- Forests
- Control of native species

- Environmental standards and pollutant indicators
- Conservation of threatened species
- Ecosystem services strategy for urban and rural populations
- Desertification and land protection
- Guidelines for sustainable use of natural resources.

Land use

The proposed classification Land Use for Iraq Cities is based on the division of land uses into three classifications:

- **Primary Classification:** They are classified into seven main categories: residential and economic (business), mixed land use, public services, recreational, infrastructure and other land uses, which are the basic land uses of cities.
- **Secondary Classification:** The primary classification has been divided into a secondary classification, to divide the land uses by sectors and activities in the city, as follows:

The city's function is important in classifying land uses in the city and is adding to the use of non-traditional land for classification according to its suitability for the city function. There is no clear classification of the land uses in Iraqi cities either primary or secondary classification but there is a different classification of each city according to the existing of land use, and its adoption in whole or near total for future land uses, this is an indication of poor control over the distribution of land uses and their lack of consideration of technological developments and the spirit of the era characterized by the emergence of sustainable and environmentally friendly land uses, such as the mixed land use and the interest in sustainable transport modes. The process of integration of land uses converged randomly and unorganized in the classification of land uses in Iraqi cities (4).

33.3 Biodiversity Loss and Climate Change

Some living organisms have been eliminated in some ecosystems, while some diseases have recently been caused due to extreme climate changes nowadays which have been affected by greenhouse gases which disturb the ecosystems. To an extent, the temperature of Earth's planet has increased markedly over the last 100,000 years. This increment can strongly affect the normal existence of a large number of living beings such as animals, plants, and microorganisms. Human life span has been decreased due to the harsh conditions in ecosystems and as one of the consequences of global warming; besides the pathogens, like bacteria, viruses and parasites, have become more resistant to disinfectants and to novel antimicrobial agents much more than before. The production and cultivation of some crops and numerous plant species become harder as a result of high salinity and decreases rainfall. Since 2007, forestation and drought have been the most obvious manifestations in many countries, especially in Iraqi lands leading to the migration of people

and some animals like birds away from them. Cattle and some animals like deer and fish have been in a limited number tending to extinction in some Iraqi areas. This review has been prepared to document the global and local impacts of climate change on biodiversity.

The national assessment reports of biodiversity in Iraq

Iraq has ratified the Convention on Biological Diversity in 2009 and has developed a national strategy for biodiversity (2015-2020). The national report has also been prepared." The sixth of the Convention on Biological Diversity is considered as part of Iraq's commitments. The National Contributions Document of Iraq focuses on protecting natural systems and declaring the marshes as the first natural reserve in 2013, which is the largest wetland area in the Middle East recognized by UNESCO as a World Heritage Site. There is also accelerated work in the Kurdistan region to protect forests in the mountains and biodiversity. Iraq is trying to protect 17 natural systems and establish a network of natural reserves throughout the country by 2035 (4).

The impact of climate change on the Iraqi marshes.

After 2003, the local population began removing some of the barriers on the Tigris and Euphrates rivers to restore the marshes with water. Since then, the Iraqi government has made great efforts to restore the marshes to 75% of their original size. Various institutions and organizations have supported the revitalization and rehabilitation of the marshes. Many projects aimed at restoring water flow in the area started in 2006 and have recovered around 50% of the marshes, making the revitalization possible. However, the increasing water scarcity and drought that has affected the country in the past decade hinder the process of marsh restoration. Despite this, 38% of the original marshland has been restored. The drought waves experienced in the past decade have caused the marshes to shrink to their original size in 2003. The three provinces where the marshes are located have been exposed to severe to moderate drought waves since 2006.

It emphasized this through the analysis of the standard indicator of rainfall and Maysan province was exposed to moderate hydrological drought during the years (2006, 2008, and 2009). Meanwhile, Dhi Qar province witnessed severe waves of climatic and agricultural drought during the period (2007-2010), and Basra province also experienced severe waves of climatic and agricultural drought in 2006, followed by moderate and severe waves of hydrological drought in 2009 (6).

33.4 Conservation Efforts

The Iraqi government and a number of international organizations are working to conserve Iraq's biodiversity. Some of the key conservation efforts include:

- Establishing and managing protected areas
- Restoring degraded habitats
- Raising awareness of the importance of biodiversity
- Working with local communities to conserve biodiversity

Despite these efforts, Iraq's biodiversity is still facing a number of threats. It is important to continue to invest in conservation efforts in order to protect Iraq's rich and diverse biodiversity.

Land degradation and climate change

Land degradation and climate change are two important environmental challenges affecting Iraq. This study dives into the complex relationship between these two difficulties, their causes, and the implications for Iraq's ecosystems and society.

A. Iraqi Land Degradation:

Land degradation is the loss in land quality and productivity caused by human activity. Several factors contribute to land degradation in Iraq:

- **Deforestation:** The removal of trees and plants for a variety of reasons, such as agriculture, building, and fuel, contributes to soil erosion and a decline in biodiversity.
- **Overgrazing:** Extensive livestock grazing harms vegetation, lowers soil fertility, and worsens desertification.
- **Monoculture, excessive irrigation, and the use of chemical fertilizers and pesticides** can all deteriorate soil quality and reduce agricultural production.
- **Water Scarcity:** Iraq confronts water scarcity concerns, which exacerbates land degradation. Some of the impacts include lower river flow and increased soil salinity.

B. Climate Change in Iraq:

Climate change is a worldwide phenomenon with local and regional consequences, and Iraq is no exception. In Iraq, the following are the most pressing climate change issues:

- **Rising Temperatures:** Temperatures in Iraq have risen, resulting in heatwaves that harm both ecosystems and human health.
- **Changing Precipitation Patterns:** Changes in precipitation patterns can cause droughts as well as significant rainfall, affecting agriculture, water supplies, and soil stability.
- **Increased Dust Storms:** Desertification caused by land degradation and rising temperatures contributes to the frequency and intensity of dust storms, affecting air quality and public health.

Interconnected Challenges: The link between land degradation and climate change in Iraq is complex and interrelated:

- **Feedback Loops:** Land degradation, including deforestation and soil erosion, exacerbates climate change by releasing stored carbon and reducing the land's ability to sequester carbon dioxide.

- Erosion and Flooding: Degraded land is more susceptible to erosion during heavy rainfall events, leading to soil loss and flooding, while droughts can intensify desertification.
- Water shortage: Climate change can cause water shortage, influencing agricultural practices and exacerbating land degradation.

C. Ecosystem and societal effects:

In Iraq, the combined effects of land degradation and climate change have far-reaching implications:

- Land degradation and climate change are also threatening Iraq's unique biodiversity, with species facing habitat loss and changing ecosystems.
- Agriculture and livelihoods: Farmers' crop yields are lowered as a result of land degradation and harsh weather brought on by climate change, which has an impact on food security and way of life.
- Forced Migration: People may be forced to migrate as a result of the combined consequences of land degradation and climate change, raising social and economic vulnerabilities.

D. Mitigation and Adaptation:

Several tactics are necessary to solve the problems caused by land degradation and climate change in Iraq.

- Reforestation and Sustainable Farming: Supporting afforestation, reforestation, and sustainable farming methods can help stop the degradation of the land and help sequester carbon.
- Water management is essential for reducing land degradation and preparing for climate change. This includes upgrading irrigation methods and conserving water.
- Strong policy frameworks, international agreements, and local governance structures are essential in tackling these issues, according to the field of policy and governance (8).

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34. CLIMATE INVESTMENT OPPORTUNITIES

Technology Transfer:

Iraq is facing severe and alarming consequences of climate change, including rising temperatures, water scarcity, drought, desertification, dust storms, and flooding, which threaten its social, economic, and security stability. Key challenges include water shortages due to upstream dam construction in neighboring countries, chronic power shortages, heavy reliance on oil and gas, associated gas flaring, frequent sand and dust storms, and extreme weather events. Despite these challenges, Iraq has untapped potential for renewable energy development, particularly in solar and wind power, and must invest in infrastructure and capacity to harness these resources efficiently. Addressing climate change requires improved water management, disaster preparedness, sustainable agriculture, economic diversification, and green job creation.

The data from the Iraqi Meteorological Organizations and Seismology Department underscores the growing occurrence of severe heat waves, extended droughts, and heavy rainfall, creating a chain reaction. Notably, prolonged droughts have contributed to intensified desertification, triggering an alarming increase in dust and dust storms characterized by their severity, frequency, persistence, and extended duration. These frequent dust storms have led to a significant surge in asthma cases, particularly among children and the elderly, and a noticeable rise in other diseases and cancer rates. Furthermore, climate change has exacerbated the issue of water scarcity in the Tigris and Euphrates rivers and their tributaries, with the World Bank's 2011 estimates indicating a critical deficit in renewable water resources compared to the actual demand between 2000 and 2009.

In recent decades, globally and in Iraq, the climate has significantly worsened, intensifying the nation's vulnerability. Iraq has now been recognized as one of the most at-risk countries, facing challenges such as diminishing water and food resources, extreme temperatures, and resultant health issues. This classification comes from the sixth report of the Global Environment Outlook for West Asia (GEO-6).

Iraq urgently needs to develop and implement an adaptation plan to address these climate-related challenges. This plan should be in harmony with existing national and sector-specific strategies, including the National Water Strategy, National Agriculture Strategy, National Biodiversity Strategy, and National Framework for Integrated Drought Risk Management. Iraq's efforts should focus on bolstering its national capacity to cope with the consequences

of climate change, prioritizing the most vulnerable regions and sectors: Water Resources, Agriculture Sector, Health Sector, Natural Systems and Forests, Sanitation and Waste Sector.

34.1 This predicament is attributed to several contributing factors:

- Iraq's heavy reliance on oil and gas as the backbone of its economy and energy sources renders it vulnerable to fluctuations in global oil prices, geopolitical tensions, security concerns, and domestic instability.
- Suboptimal water management and allocation practices within Iraq affect its oil production, agriculture, and overall well-being and strain its relationships with neighboring nations that share common water resources.
- The lack of infrastructure and capacity to harness and effectively utilize Iraq's natural gas resources resulted in wasteful flaring, air pollution, and missed opportunities for electricity generation and industrial growth.
- Pervasive power shortages and outages significantly impede economic activities, public services, social welfare, and Iraq's capacity to manage rising temperatures and increased cooling demands.
- Fragile governance structures and institutional frameworks hinder the formulation, execution, and oversight of climate change policies and projects. This also obstructs Iraq's access to international financing and advanced technologies.
- There needs to be more awareness and involvement from the public and private sectors, civil society, and academia regarding the origins, implications, and potential solutions to climate change.

These factors present formidable obstacles for Iraq in addressing the challenges of climate change. Nevertheless, they concurrently offer opportunities for Iraq to revamp its energy sector, diversify its economy, enhance its governance and regional collaboration, and bolster its resilience and sustainability. Subsequent paragraphs will delve into the necessary actions and measures to confront these issues and shape a comprehensive vision for Iraq's response to climate change.

As His Excellency Dr Jasim Al-Falahi, Deputy Minister of Environment, mentioned in the "Stakeholders Mapping for Climate Change: Leveraging Awareness, Policy, and Technology" conference held on March 18th, 2023, in Baghdad; stating "Climate change is no longer an environmental issue alone; it has morphed into a development, security, and policy issue for this generation and the next generations" and he added that "As climate change affects us all and will continue to affect us, we must take an appropriate and collaborative measures to combat it and deal with its consequences". Hence, it is crucial to tackle this issue because of:

- Climate change in Iraq threatens social stability through displacement, violence, and human rights violations, driven by issues like water scarcity and food insecurity.

- The World Bank predicts climate change could push an additional 4.6 million Iraqis into poverty by 2030.
- Iraq's economy is hampered by climate change, which affects oil and gas revenues, the power supply, and infrastructure and increases poverty and unemployment.
- Iraq's heavy reliance on oil revenue is at risk due to limited water availability for enhanced oil recovery methods.
- Chronic power shortages impact economic activities and public services.
- The agriculture sector, contributing significantly to GDP, faces water scarcity, salinity, drought, and land degradation due to climate change.
- Climate change undermines Iraq's security, creating opportunities for armed groups and terrorists to exploit vulnerabilities and challenge the government's authority.
- Increased risks of conflicts arise over scarce resources such as water and land among different communities.
- As Iraq contends with neighboring nations over shared water resources, climate change challenges regional cooperation. There is a call for enhanced dialogue and collaboration to manage these resources effectively.

There is a gap regarding the climate change issue, and to bridge the gap, some steps are needed from people, government and the private sector. It is of utmost importance to underscore the essential stakeholders and their roles in ensuring Iraq's food security, addressing water scarcity, preserving the environment, safeguarding public health, facilitating the adoption of new technologies, and enhancing infrastructure. Fostering a transformative shift in Iraq is imperative across numerous sectors, encompassing renewable energy, energy efficiency, sustainable urban planning, and climate resilience. Therefore, active engagement of all pertinent parties is necessary to collectively address climate-related challenges and initiate the required changes in Iraq.

The first gap is the awareness and what people know about climate change issues. Iraq faces a substantial and complex disconnect between its population and the looming specter of climate change. This divide stems from various factors. Firstly, the prolonged conflict and instability in Iraq have prompted a focus on immediate security concerns, sidelining long-term environmental issues. Furthermore, Iraq's heavy reliance on oil production has led to elevated greenhouse gas emissions and a need for more investment in renewable energy and sustainable practices.

Another contributing factor is the need for more public education and awareness regarding climate change. Many Iraqis still need to familiarize themselves with the realities of climate change and its potential ramifications for their lives and communities. This lack of understanding impedes individuals and communities from taking action to mitigate their carbon footprint and prepare for the consequences of climate change.

Finally, Iraq's governmental bodies and institutions have demonstrated a need for more urgency in formulating and implementing policies and initiatives to confront the repercussions of climate change. Although there have been specific endeavors, like the Iraq National Adaptation Plan, their extent and execution have remained constrained. A multifaceted approach is needed, involving enhanced public education and awareness, more robust government actions and policies, and increased investment in renewable energy and sustainable practices. Through collaborative efforts, Iraq can adopt innovative approaches to transform agricultural practices, fostering more resilient communities in the face of climate change.

34.2 Key Actions Required to Address Climate Change in Iraq:

- Developing and implementing a National Adaptation Plan (NAP) to enhance the country's climate resilience. This involves strengthening capacities and integrating long-term adaptation needs into national development planning.
- Reducing economic reliance on oil and gas by fostering the natural gas sector, promoting renewable energy sources like solar and wind power, and fostering green jobs and industries.
- Enhancing water management and allocation by upgrading water treatment facilities, rehabilitating aging water infrastructure, enforcing water usage limits, investing in modern irrigation infrastructure, water harvesting, innovative irrigation practices, and fostering cooperation with neighboring countries to ensure equitable access to water resources.
- Strengthening disaster risk reduction and preparedness through climate risk assessments, early warning systems, emergency response and recovery improvements, and resilience building in vulnerable communities and sectors.
- Enhancing governance and institutional frameworks by boosting the capacity and coordination of relevant ministries and agencies, improving transparency and accountability, mobilizing domestic and international financial resources, facilitating technology transfer and innovation, and increasing public awareness and engagement regarding climate change issues.
- Strengthening regional cooperation with neighboring countries by participating in regional initiatives and platforms, such as the Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR), the Arab Ministerial Water Council (AMWC), the Arab Forum for Environment and Development (AFED), and the Regional Center for Renewable Energy and Energy Efficiency (RCREEE)

The role of private sector investment in Iraq's renewable energy development is to provide the necessary capital, technology, and expertise to scale up the deployment of solar, wind, and other clean energy sources in the country. Private sector investment can also help diversify Iraq's economy, reduce its dependence on oil and gas, improve its energy security and governance, and enhance its resilience and sustainability. According to the International

Renewable Energy Agency (IRENA), Iraq has a strong potential for renewable energy development, especially solar PV and wind power, that could help meet its growing electricity demand and reduce its greenhouse gas emissions¹. However, Iraq faces several barriers to attracting private sector investment in renewable energy, such as:

- Lack of clear and consistent policies and regulations that support renewable energy development and integration into the grid.
- Lack of adequate and reliable data on renewable energy resources, costs, and benefits.
- Lack of access to affordable and long-term financing for renewable energy projects.
- Lack of capacity and infrastructure to harness renewable energy resources efficiently and effectively.
- There needs to be more awareness and engagement of the public and private sectors, civil society, and academia regarding the opportunities and challenges of renewable energy.

34.3 To overcome these barriers, Iraq needs to implement several actions, such as:

- Developing and implementing a National Renewable Energy Strategy that sets clear targets, incentives, and mechanisms for renewable energy development and integration.
- Conducting comprehensive resource assessments and feasibility studies to identify the most suitable locations and technologies for renewable energy projects.
- Engaging local financial institutions in renewable energy finance and creating facilities dedicated to scaling up renewable energy investment.
- Mitigating risks to attract private investors by providing guarantees, insurance, subsidies, tax breaks, or other instruments.
- Mobilizing capital market investment by issuing green bonds or other instruments to leverage public funds with private capital.
- Improving governance and institutional framework by strengthening the capacity and coordination of relevant ministries and agencies, enhancing transparency and accountability, facilitating technology transfer and innovation, and raising public awareness and engagement on renewable energy issues.

Some examples of private sector investment in Iraq's renewable energy development are:

- The World Bank Group has supported several Iraq-related projects related to climate change, such as enhancing climate resilience of the agricultural sector, promoting energy efficiency and renewable energy, and reducing greenhouse gas emissions from the oil and gas sector⁴.

- The European Union has supported Iraq with EUR€14m under the Global Climate Change Alliance Plus (GCCA+) initiative to enhance its capacity for climate governance, mainstreaming, and reporting and to implement pilot projects on water management, agriculture, and renewable energy³.
- The United Nations Development Programme (UNDP) has launched three innovative projects to promote sustainable energy solutions in partnership with the European Union and the governorates of Erbil, Sulaymaniyah, and Dohuk. The projects include installing solar panels for water pumps in rural areas, replacing conventional street lamps with energy-efficient LED lamps, and installing a mini solar park with a capacity of up to 2 MW.

Climate change in Iraq disproportionately affects vulnerable groups:

- Rural communities dependent on farming and livestock face water scarcity, drought, and reduced agricultural productivity, which can lead to potential urban migration with associated challenges.
- Women and children experience health issues, reduced education access, and well-being concerns, including heat stress, respiratory diseases, and malnutrition, with limited access to essential services.
- Ethnic and religious minorities, already facing discrimination and displacement due to conflict, experience vulnerability and insecurity as climate change restricts resource access and livelihoods.
- Inhabitants of historic southern marshlands witness biodiversity loss and depletion due to climate change, forcing migration to urban areas.

Climate change impacts cultural heritage in Iraq:

- Threatening the preservation of ancient buildings and monuments like Babylon and Ur due to erosion from salt levels, sandstorms, floods, and heat waves.
- Endangering the unique ecosystems and traditional ways of life in the historic southern marshlands by causing drying, biodiversity loss, and migration to urban areas.
- Disrupting local knowledge and practices embedded in Iraq's diverse cultural heritage, impacting rural communities' livelihoods and ancestral customs.
- Weakening social cohesion and identity by increasing resource-related disputes and violence and providing opportunities for armed groups to exploit vulnerabilities amid decades of conflict and instability.

Iraq is actively engaged in significant international climate change treaties:

- In 2009, Iraq ratified the Kyoto Protocol, which binds industrial nations to curb greenhouse gas emissions, a primary cause of global warming.

- Iraq joined the Vienna Convention and Montreal Protocol in 2008, focusing on phasing out ozone-depleting substances.
- Iraq signed and subsequently ratified the Paris Agreement in 2016 and 2021, demonstrating its commitment to global collaboration in limiting global warming well below 2 degrees Celsius.
- Given Iraq's substantial oil and gas sector, leading to high greenhouse gas emissions during extraction and flaring, the country joined the global methane pledge in November 2021, committing to a 15% reduction in emissions by 2030.
- Effective stakeholder engagement is pivotal for driving climate-resilient development in Iraq. Recent governmental initiatives include:
 - Mesopotamia Revitalization Project: Aligns with Iraq's Paris Agreement commitment, addressing climate challenges through nine programs involving multiple government sectors.
 - Waste-to-Energy (W2E) Program: This program modernizes waste management to reduce carbon emissions and generate renewable energy, collaborating with the central government and local municipalities.
 - Iraq's Green Paper: Ministry of Environment and UNDP collaboration identifies climate change issues and supports a shift to a net-zero economy.
 - World Food Programme (WFP) Collaborations: Agreements with universities enhance resilience and climate adaptation for vulnerable populations.
 - PepsiCo and UN WFP Partnership: Supports local farmers impacted by climate change and other challenges.
 - Iraq Climate Dialogue (ICD): A series of events and discussions with government stakeholders and the Kurdistan Government on national and international climate policy.
 - Academic Collaboration: A memorandum between the American University of Iraq - Baghdad and the Ministry of Water Resources fosters collaboration and knowledge exchange.
 - Iraqi Private Banks League: Engages in climate initiatives, providing grants for agriculture and renewable energy projects in line with Paris Climate Agreement commitments.

Contribution of Civil Society and Local Initiatives

Numerous initiatives have emerged throughout the country to advocate for preserving our natural heritage, promote green afforestation, and raise awareness about the importance of adopting sustainable practices. These initiatives employ community-based campaigns and workshops to disseminate knowledge in various areas. They address aspects such as sustainable urban development (e.g., Istidama Green Cities), river tributary cleanup (e.g.,

Cleanup Ambassadors), environmental awareness (e.g., Aghsan), and recycling in waste management (e.g., Global Shapers Erbil Hub).

Prominent local non-profit environmental organizations have significantly contributed to advocacy, public awareness workshops, and campaigns on climate change impacts in Iraq. Organizations like Humat Dijlah and Humat Alforat focus on water-related issues in the Tigris and Euphrates rivers. They work to enlighten governments and the public about environmental challenges within their respective regions. Their activities encompass water rights campaigns, advocacy tools, networking, engagement with decision-makers, monitoring and reporting on water concerns, and leveraging social media for solidarity and awareness. Other organizations concentrate on protecting, restoring, and conserving Iraq's natural environment, bridging the knowledge gap between science and practical applications.

QAF Lab, based in Mosul, is an innovation hub focused on addressing agricultural challenges posed by climate change. They integrate cutting-edge technology into agricultural projects to enhance crop resilience against environmental stressors. QAF Lab's research and development primarily aims to assist farmers in adapting to climate change-related challenges like droughts, floods, pests, and diseases while reducing energy consumption associated with traditional farming methods. It is actively working to tackle these problems by introducing innovative solutions and promoting sustainable farming practices. They address soil degradation through crop rotation, composting, and organic farming, improving soil health, reducing reliance on synthetic fertilizers and pesticides, and fostering healthier crops.

Additionally, QAF Lab leverages extensive data collection and analysis to help farmers make informed decisions about their agricultural activities, thereby enhancing efficiency and cost-effectiveness. This data-driven approach optimizes farming operations, increases yields, and reduces the environmental impact, addressing legacy challenges passed down through generations.

Iraqi startups are driving green and clean tech initiatives:

- **Eco Life:** Provides sustainable alternatives to plastic products using local resources.
- **Mosul Solar:** Offers solar solutions for consistent, eco-friendly energy amidst power cuts.
- **Ecomena:** Recycles plastic into durable materials, combating environmental pollution.
- **Green Gold:** Recycles organic waste into cost-effective organic fertilizers.
- **KESK:** Tackles Iraq's energy crisis with green solutions like solar power and energy efficiency.
- **Tanweer Energy Solutions:** Delivers energy-efficient solutions for commercial and industrial projects.
- **Green Shaov:** Uses AI for agricultural development and efficient water use.

- **Ecopotamia:** Sells eco-friendly, plastic-free products to encourage mindful consumption and reduce waste.

34.4 Ultimately, to tackle climate change's growing impact, we must:

- **Prevent Desertification:** Stop the spread of deserts through government strategies.
- **Be Eco-Friendly:** Encourage people to use resources wisely, recycle, reduce plastic use, and avoid littering.
- **Protect Green Spaces:** Keep plants and trees intact and create green areas to prevent soil erosion.
- **Help Desert Farmers:** Support farmers in dry areas so they don't need to move to cities.
- **Negotiate for Water:** Talk to neighboring countries like Turkey and Iran to ensure we get our fair share of river water.
- **Build Oasis Areas:** Create green areas in deserts to protect plants and animals.
- **Clean Water and Organic Waste:** Ensure villages have clean water and devices to turn waste into helpful gas and fertilizer.

35. CLIMATE FINANCE

1- Access to international climate finance

2- Access to private sector climate investment

3- Better utilize domestic climate finance

4- Better utilize climate finance

35.1 The problems:

Iraq is one of the most vulnerable countries in the world to climate change. The country is already experiencing the impacts of climate change, such as rising temperatures, water scarcity, and more frequent and severe droughts and floods. Climate change is also exacerbating existing challenges in Iraq, such as conflict, displacement, and poverty.

By 2040, Iraq requires \$US 233 billion to respond to its most pressing development gaps while embarking on a green and inclusive growth pathway. Financing Iraq's green transition will require the mobilization of both public and private capital and strategic deployment of public finance instruments to attract private finance. As a first step towards mobilizing climate finance, the GoI needs to create the enabling environment in which finance can be shifted from carbon intensive to green activities over time. This would involve strengthening institutional and technical capacities to address barriers to catalyzing climate investment in Iraq, including initiatives on identifying risks and opportunities for the financial sector, analyzing gaps in institutional capacity and governance, developing a green or climate finance strategy, creating a green or transition taxonomy, extensive

Despite its vulnerability to climate change, Iraq has limited access to climate finance. Climate finance is the funding that is needed to support developing countries in their efforts to mitigate and adapt to climate change.

There are a number of challenges that Iraq faces in accessing climate finance. These include:

- Lack of institutional capacity: Iraq does not have a well-developed institutional framework for managing and coordinating climate finance. This makes it difficult for the country to access and effectively utilize climate finance.
- Limited access to international funding: Iraq has limited access to international funding, including climate finance. This is due to a number of factors, including the country's high debt burden and its history of conflict.
- Complex and bureaucratic funding processes: The funding processes for climate finance can be complex and bureaucratic. This can be a challenge for countries like Iraq, which have limited institutional capacity.
- Corruption: Corruption is a major challenge in Iraq, and it can also hinder the effective use of climate finance.

In addition to above, the current state of Iraq's private sector limits its ability to contribute to climate action or to mobilize green finance. The dominant role of the public sector continues to constrain private sector growth and job creation. The private sector has been undermined by decades of state control (both directly and indirectly, through state-owned enterprises), complex political economy, the security situation, knowledge gaps, limited access to finance, and shortages of skilled labor.

The overarching role of the state in Iraq's financial sector has in effect crowded out the private sector. Decades of state control (both direct and indirect, through SOEs) have undermined the private sector, as have the security situation, poor governance, elite capture, knowledge gaps, limited access to finance, shortages of skilled labor, and a difficult regulatory environment (World Bank 2021c). To that end, Iraq's private sector is dominated by small and self-run or family enterprises, with low levels of productivity (ILO 2021). Additionally, these firms' potential in playing a bigger role in Iraq's green transition is constrained by harmful practices such as double-book accounting, undermining the ability of local and foreign investors to properly appraise the viability of private sector projects and make informed investments decisions.

Despite these challenges, there are a number of efforts underway to help Iraq access climate finance. The United Nations Development Programme (UNDP) is working with the Iraqi government to strengthen the country's institutional capacity for managing climate finance. The World Bank is also providing support to Iraq to develop a climate change action plan and to access climate finance.

35.2 What is the magnitude of the problem?

Iraq is one of the most vulnerable countries in the world to climate change, but it has limited access to climate finance.

A 2019 study by the World Bank found that the probability of conflict in Iraq could increase by up to 50% by the end of the century if climate change is not addressed. The study also found that the economic costs of climate change in Iraq could reach up to 19% of GDP by the end of the century.

The World Bank estimates that Iraq will need \$62 billion between 2021 and 2030 to meet its climate change adaptation and mitigation needs. However, Iraq currently only receives around \$200 million per year in climate finance. In addition, in the study of the World Bank on 2023 Iraq needs to Iraq requires \$US 233 billion to respond to its most pressing development gaps while embarking on a green and inclusive growth pathway

This shortfall in climate finance is a major challenge for Iraq. Climate change is already having a significant impact on the country, and the impacts are expected to worsen in the future. Without adequate climate finance, Iraq will be unable to adapt to climate change impacts and to mitigate greenhouse gas emissions.

The shortfall in climate finance is also a challenge for the international community. Iraq is a key country in the Middle East, and its stability is important for the region as a whole. Climate change is a major threat to Iraq's stability, so it is in the international community's interest to help Iraq access the climate finance it needs.

Despite the challenges, there are a number of efforts underway to help Iraq access climate finance. The United Nations Development Programme (UNDP) is working with the Iraqi government to strengthen the country's institutional capacity for managing climate finance. The World Bank is also providing support to Iraq to develop a climate change action plan and to access climate finance.

It is important to note that climate finance is not a silver bullet for Iraq's climate change problems. The country will also need to invest in domestic resources and to implement effective climate change policies and programs. However, climate finance can play a vital role in helping Iraq to adapt to and mitigate the impacts of climate change.

In conclusion, the magnitude of the problem regarding climate finance in Iraq is significant. The country is highly vulnerable to climate change, but it has limited access to climate finance. This shortfall in climate finance is a major challenge for Iraq and for the international community. There are a number of efforts underway to help Iraq access climate finance, but more needs to be done.

35.3 What are the actions needed or required to address the problems?

Develop and implement a “Green Finance Framework”: Develop and implement a “Green Finance Framework” to assist the Iraqi Financial Sector in its contributions to meet Iraq’s NDC goals. This framework can outline specific financial policies, regulations, tools and instruments that provide transitional support for new green technologies. Policies should also be established to enable investment and strengthen market incentives for low carbon infrastructure. This can include creating fiscal incentives (e.g., tax breaks) for diversification into climate resilient sectors and adoption mitigation technologies, addressing tariffs and nontariff barriers on agricultural inputs and facilitate access to new technologies for farmers

through expedited procedures for releasing seeds and easier movement of agricultural specialists, and support investments in climate smart agriculture.

Strengthening of the Public Financial Management system (PFM) is equally important to underpin the low carbon transition and Iraq's resilience to climate change. Relevant PFM reforms include extending the perspective of the public finances beyond the annual budget cycle, increased transparency and public reporting adapting existing PFM practices to support climate-sensitive policies, securing political backing for the transition and ensuring that basic PFM practices are in place to make these transitions affordable (green PFM). For all the steps mentioned above the GoI needs a lot of capacity building on key core areas such as debt management and reporting. Green Economy knowledge and country strategy on the latter one could be built on a parallel basis. Without a reputation of transparency and a solid track record in the Climate Change and ESG area, it would be difficult to tap ESG international investors and international capital markets. The government could make some initial moves creating investment frameworks and policy measures that would support their green strategy.

Boosting financial sustainability, de-risking the water and ag sectors, and increasing private sector participation through improving access to finance for small holders (soft loans and green financing).

Relevant information: COP27

The United Nations Climate Change Conference COP27 closed on 20 November 2022 with a breakthrough agreement to provide "loss and damage" funding for vulnerable countries hit hard by climate disasters.

COP27 resulted in countries delivering a package of decisions that reaffirmed their commitment to limit global temperature rise to 1.5 degrees Celsius above pre-industrial levels. The package also strengthened action by countries to boost the support of finance needed by developing countries.

Serious concern was expressed that the goal of developed country Parties to mobilize jointly USD 100 billion per year by 2020 has not yet been met, with developed countries urged to meet the goal, and multilateral development banks and international financial institutions called on to mobilize climate finance.

At COP27, deliberations continued on setting a 'new collective quantified goal on climate finance' in 2024, taking into account the needs and priorities of developing countries.

The conference heard many announcements:

- UN Secretary-General António Guterres announced a USD 3.1 billion plan to ensure everyone on the planet is protected by early warning systems within the next five years.
- The G7 and the V20 ('the Vulnerable Twenty') launched the Global Shield against Climate Risks, with new commitments of over USD 200 million as initial funding. Implementation is to start immediately.

- Announcing a total of USD 105.6 million in new funding, Denmark, Finland, Germany, Ireland, Slovenia, Sweden, Switzerland, and the Walloon Region of Belgium, stressed the need for even more support for the Global Environment Facility funds targeting the immediate climate adaptation needs of low-lying and low-income states.
- The new Indonesia Just Energy Transition Partnership, announced at the G20 Summit held in parallel with COP27, will mobilize USD 20 billion over the next three to five years to accelerate a just energy transition.

35.4 What is the government doing now?

The Iraqi government's efforts to access climate finance are still in their early stages, but they are a positive step forward. The government is committed to addressing climate change, and it recognizes that climate finance is essential for achieving this goal.

The Iraqi government is taking a number of steps to improve its access to climate finance. These include:

- Developing a comprehensive climate change action plan: The Iraqi government is working with the World Bank to develop a comprehensive climate change action plan. The plan will identify the country's climate change priorities and set out a roadmap for achieving these priorities.
- Creating a favorable environment for private sector investment in climate change: The Iraqi government is working to create a more favorable environment for private sector investment in climate change. This includes developing a legal and regulatory framework for climate change and providing financial incentives for private sector investment.
- In addition to these steps, the Iraqi government is also working with international partners to access climate finance. For example, the government is working with the Green Climate Fund (GCF) to develop a number of climate finance projects.

36. IRAQ'S COUNTRY PROGRAMME

The Republic of Iraq inspires to achieve a sustainable economic, human, and climate development to align with the aspirations of the Iraqi citizens. As of 2021, the population of Iraq is estimated to be over 40 million, with an annual growth rate of 2.58% and almost equal representation of men and women. In 2021, the value of the Human Development Index (HDI) in Iraq was 0.686, according to which the country is classified in the category of countries with medium human development, being ranked 121 out of 191 countries. Between 1990 and 2021, the value of the annual growth of the (HDI) was 0.85. The value of the Sustainable Human Development Index slightly increased from 0.671 in 2018 to 0.674 in 2019.

Despite the oil profits, the national unemployment rates in Iraq remain relatively high, standing at 10.8 %. These rates surge to over 15 % in 11 governorates and are particularly

acute (above 25 %) in the Districts of Muthanna, Thi-Qar, Wasit, Maysan and Salah al-deen. The prevalence of high unemployment leads to a significant incidence of informal employment, especially in rural areas and among young, less educated, economically vulnerable and displaced individuals.

The war against the terrorist organization ISIL had severe effects on Iraq. The damage inflicted on infrastructure and property is estimated to cost about 46 billion dollars for repair. This in turn, has significantly influenced the nation's approach to addressing the risks posed by climate change. Moreover, the impact of attacks by ISIL terrorists, coupled with the financial strain by defense expenditures, was further exacerbated by a sharp decline in oil prices. As a consequence, resources allocated to crucial development sectors, such as education, health, agriculture, and the environment which are vital for the wellbeing of citizens, have been constrained.

Low funding allocations for the non-oil sector have led to its contraction by 21.6% since mid-2014, while the growth of this sector was expected to be retrieved in 2017. But Iraq's heavy dependence on oil led to a 0.8% contraction in the economy in 2017, due to the decline in oil production following the agreement concluded between OPEC and non-OPEC oil producers to reduce oil production until the end of 2018. The non-oil sector suffered from negative growth since 2014. However, the improvement in the security situation and the initial efforts for reconstruction are expected to resume the growth of the non-oil sector in the future, led by the construction and services sectors, along with increased consumption and private investment.

Amidst the economical constraints that have arisen, the country's policies have played an important role upon maintaining an overall GDP of 6.4% in 2020. As an example, the National Development Plan of Iraq provided a guideline by modeling the targeted growth rates in GDP for the years 2018-2022. Most of the countries in the world depend on Iraq for oil supply; 96% of Iraq's exports, 92% of its budgetary income, and 63% of its real GDP were relying on oil in 2019. However, the COVID-19 outbreak, and fluctuating oil prices have put an unprecedented amount of strain on Iraq's economy. Therefore, the country's overall growth was decreased by 10.4% and the per capita GDP decreased by 9 % in 2020.

With a sense of global responsibility, Iraq wholeheartedly supports the objectives and adheres to the guidelines laid out in the Paris Agreement, which seeks to safeguard the planet by promoting climate change adaptation and mitigation. Consequently, Iraq is resolute in its determination to reconstruct devastated cities using modern construction systems, with a vision to transform them into environmentally friendly green cities. These green cities will serve as living evidence of peace within Iraqi society towards encouraging renewable energies and green construction to ensure sustainability in the face of the risks posed by climate change.

A crucial condition for reducing poverty in Iraq is the difficulty of guaranteeing equitable distribution and revenue source diversification. The poverty rate of the country decreased from 19% in 2012 to 15% in 2014, but then returned to rise to approximately 23%, according

to estimates. In the provinces that fell under the occupation of the terrorist organization ISIL, the poverty rate doubled to 41.2%. Although its impact remained limited in the rest of Iraq, poverty increased in all governorates, especially in the southern region, where the poverty rate continued to rise to more than 30% due to the economic crisis.

Many people were displaced due to the war conditions that occurred in the country. According to the International Organization for Migration in Iraq, the total number of displaced people reached 3.3 million people (displaced people after January 2014). In addition, 2.2 million displaced people have returned to their areas of origin. A simulation model conducted by the World Bank experts showed an increase in the poverty rate among the internally displaced persons (IDPs) by 15 %, i.e., from 23% to 38%, which is nearly double that of the rest of the population. In other words, there are four poor people out of every ten IDPs.

In overcoming the identified challenges associated with the poverty, Iraq formulated the new strategy for poverty reduction in 2018-2022 and this strategy aims to create opportunities for generating sustainable income, empowerment and building human capital and establishing an effective social safety net

36.1 Iraq proposed projects to the Green Climate Fund (GCF):

Project 01 - Solar heater production plant.

Many local markets exist for solar heaters in Iraq, and they are growing, providing a significant demand for the end product to ensure the project's long-term viability.

Evacuated tube-type solar heaters will be produced under the project. Planned production is about 10,000 solar heaters per year. When solar heaters are used, electricity consumption for water heating will drop by at least 30%, reducing the emissions associated with burning fuel in electric power generating plants to produce electricity.

Project objective: production of vacuum glass tube solar heaters using a modern plant to achieve social, economic, and environmental goals; building capacity; and creating job opportunities; as a result of facilitated technology transfer and knowledge exchange with the supplying agencies.

Product specifications

- The specifications to be adopted are based on the rules of the certification system for collectors of solar water heaters, issued by the Shamsi network (the Arab Project for the Certifications of Solar Thermal Systems), which are based on the international specifications contained in ISO 9806, 9459-2 and 9459-9.
- The insulated metal tank, the metal structure carrying it, and the solar collector will be produced.
- The modern solar collector model is adopted, using modern heat-absorbing materials with a bit of reflection and an outer tube of 5 mm diameter. The main tank is insulated with foam (polyurethane) thickness of less than 50 mm.

- The evacuation glass tubes that form the solar collector and the remainder of the rubber, silicone accessories, and electrical parts will be imported.

Project 02 - Production of solar panels

There is an existing market opportunity within Iraq, as no alternative competitors exist within the local market. Thus, the Solar PV panel production plant project is viable. This implementation aims to generate about 250 megawatts with solar panels of different capacities produced annually through the project. The project outcomes can harness the country's untapped solar energy to generate electricity. Furthermore, a market necessary to deploy these products/technologies exists in locations including irrigation systems, government institutions, and remote areas that are difficult to be connected to the national electricity grid.

Project 03 - Rehabilitation of health-fragile and poor communities exposed to health risks and increase their ability of resilience and adaptation to the negative effects of climate change.

Project objectives

To develop plans for controlling and preventing diseases resulting from climate change and sudden and extreme weather events such as floods, inundations, water scarcity and droughts, and to use early warning systems for weather forecasts. This will ensure entities prioritize climate change and low-carbon/climate resilient development through their national plans. This will provide an integrated approach to water management, as the project improves water supply, access, and storage, infrastructure, and sanitation services, simultaneously increasing the resilience of the environment to deal with the multiple pressures of climate change.

Relevant and sectoral entities

Ministry of Environment, Ministry of Health, Ministry of Water Resources, Ministry of Agriculture, Ministry of Transport/General Authority for Meteorology and Seismic Monitoring, and civil society organizations.

Project 04 - Empowering and increasing the resilience of the food and water security sectors and managing climate risks for vulnerable communities affected by climate change.

Project objectives

To enhance the ability to adapt to climate change for the livelihoods of four priority regions in Iraq by introducing climate adaptation techniques, agricultural practices, modern technologies and renewable, low-carbon energies that would increase water availability and productivity, also through shifting towards closed irrigation systems to increase irrigation efficiency and reduce waste, losses, and violations of water quotas, which leads to equitable water distribution. The objectives also include the use of early warning systems to increase resilience and eliminate the dangers posed by extreme climate events.

Relevant entities

Ministry of Environment, Ministry of Water Resources, Ministry of Health, Ministry of Electricity, civil society organizations, water user associations, farmers, and the private sector.

Project 05 - Establishment of a solar energy plant with a capacity of 25 megawatts in Najaf Governorate/Shabaka district

Abstract:

The city suffers from a shortage in the production of electrical energy, so the Iraqis were forced to use diesel generators to cover their electricity needs in all sectors including housing, markets, commerce, and agriculture, etc. The city suffers from air pollution due to the use of diesel generators, which makes the trend towards increasing the production of electrical energy by relying on the renewable energies is very necessary,

Al-Shabaka district is approximately 200 km away from the city center and is currently depending on diesel generators or irregular power lines for power generation. Its residents also suffer from high unemployment, knowing that the region is characterized by high energy potential. The solar radiation is calculated from solar radiation, which varies spatially and temporally, reaching its highest levels in the grid stations, especially during the summer, specifically in June.

Location: Najaf Governorate / Al-Shabaka District 69 N 30.48 14 93 E 43. 40 12 Al-Shabaka or Al-Shabja is an Iraqi city and one of the districts located in the southwestern part of the Najaf District in the Najaf Governorate in western Iraq. Its population is about 1,000 people in 2013 and it is about 172 miles from the center of the governorate. km, while it is 90 km away from the border center of Al-Ma'aniyah, 140 km away from the center of the Saudi Rafha Governorate, and 250 km away from the center of Al-Nukhayb District. The total area of the district is 24,277 km², while the area of the center of the district does not exceed 1 km².

Estimated cost: \$40 million with the required batteries

Product: This project includes the installation of 10 megawatts of photovoltaic panels to generate electricity and partial replacement of fossil fuels - fuel - (diesel oil)

Project goals:

1. Launching a low-carbon development (the amount of carbon dioxide reduction is about (1873) tons of carbon dioxide/ year), which made the amount of reduction ten years after the implementation of the project 18,730 tons of carbon dioxide / year
2. Filling part of Iraq's electric power needs.
3. Support for private citizens in the isolated region.
4. Implementation of part of Iraq's obligations towards the Defined Contribution Document.

http://www.un.org/News/dh/infocus/iraq/mid_year_progress_rpt.pdf

37. IRAQ'S POTENTIAL PROJECTS FOR VOLUNTARY CARBON MARKET

Carbon markets are systems that allow individuals and organizations to buy and sell carbon credits that represent reductions or removals of greenhouse gas emissions. There are two types of carbon markets: compliance and voluntary. Compliance markets are regulated by governments or international agreements, such as the Kyoto Protocol or the Paris Agreement. Voluntary markets are driven by the demand of entities that want to reduce their carbon footprint or support environmental projects without any legal obligation.

Iraq is a developing country that has a lot of potential to participate in both compliance and voluntary carbon markets. Iraq has submitted its first Nationally Determined Contribution (NDC) to the Paris Agreement in 2020, which is a document that outlines its climate goals and actions. Iraq's NDC states that it aims to reduce its greenhouse gas emissions by 14% by 2035 compared to a business-as-usual scenario. Iraq also plans to increase its renewable energy share to 10% by 2030 and 20% by 2050. To achieve these targets, Iraq will need to implement various policies and measures, such as setting a carbon price, enhancing energy efficiency, diversifying the economy, and attracting private investment.

37.1 There are several challenges and opportunities for developing carbon markets in Iraq. Some of the main challenges are:

- Iraq is highly dependent on oil revenues, which account for more than 90% of its budget. This makes it difficult for Iraq to diversify its economy and reduce its carbon footprint.
- Iraq faces severe environmental problems, such as drought, desertification, water scarcity, and pollution. These problems are exacerbated by climate change and pose a threat to Iraq's food security, health, and social stability.
- Iraq lacks a clear legal and institutional framework for implementing its climate commitments and participating in carbon markets. Iraq has submitted its first NDC to the Paris Agreement in 2020, but it has not yet ratified the agreement or established a national carbon pricing mechanism.
- Iraq has limited experience and capacity in developing and implementing carbon projects. Iraq has only registered one project under the Clean Development Mechanism (CDM), which is a mechanism under the Kyoto Protocol that allows developing countries to earn carbon credits by reducing GHG emissions. The project involves capturing and utilizing associated gas from the Rumaila oil field.

37.2 The issue of conflicts tied to carbon markets in Iraq is intricate, driven by various factors:

- Iraq's economy heavily relies on oil revenues, making it susceptible to global oil market fluctuations. A drop in oil income can lead to fiscal instability and social discontent, particularly among unemployed youth.
- Environmental challenges like water scarcity, drought, pollution, and climate change threaten Iraq's stability. Climate change may worsen water scarcity,

impacting agriculture and food security, potentially causing economic and social hardships.

- Iraq lacks a clear legal and institutional framework for implementing its climate commitments and participating in carbon markets, hindering its access to market benefits and creating uncertainty among potential partners.
- The global shift toward low-carbon technologies could affect Iraq's oil sector, potentially reducing oil exports and revenues, impacting economic diversification, and posing challenges for oil sector workers.
- To prevent or mitigate these conflicts, Iraq can consider the following measures:
- Diversify the economy by strengthening the private sector, developing non-oil sectors, enhancing governance, and investing in human capital.
- Implement comprehensive water management strategies, focusing on efficiency, infrastructure, cooperation, and involving local communities.
- Establish a clear legal framework for carbon market participation, including ratifying the Paris Agreement, setting a national carbon price, and building capacity and awareness.
- Support a just transition for affected oil sector workers, offering social protection, training, alternative employment, and mechanisms for dialogue and participation.

Addressing conflicts related to carbon markets in Iraq is imperative due to its potential far-reaching consequences for the nation's development, stability, and climate efforts. The associated risks are substantial and encompass:

- **Economic Risks:** Iraq's global energy market competitiveness and revenues are at stake if it doesn't adapt to the low-carbon transition and engage in carbon markets. Missing out on opportunities like income from carbon credits and attracting private investment is a concern.
- **Social Risks:** Failing to address the needs of the population, especially unemployed youth, can lead to social unrest and violence. Additionally, ensuring a fair transition for affected oil sector workers is a challenge.
- **Environmental Risks:** Iraq faces environmental issues like water scarcity, drought, desertification, pollution, and climate change, which threaten food security, health, and social stability. Failing to meet climate commitments and contribute to global net-zero emissions goals is another risk.

The consequences of conflicts related to carbon markets in Iraq are affecting various groups of people, such as:

- The Iraqi population, especially the youth, who are suffering from unemployment, poverty, and lack of opportunities. Climate change and environmental degradation are exacerbating these problems and fueling social unrest and violence.

- The workers in the oil sector, who may face job losses or skill mismatches as a result of the low-carbon transition. They may also perceive the transition as a threat to their interests and livelihoods.
- The farmers and rural communities, who depend on water and agriculture for their food security and income. Water scarcity and suboptimal water quality can significantly reduce crop yields and affect agri-food systems.
- The people living in the marshlands, who have a unique culture and ecosystem that has been damaged by years of conflict and neglect. The marshlands are also threatened by climate change, which could further reduce their water availability and biodiversity.
- The people living in the cities, who are exposed to air pollution and health risks from the emissions of the electricity, oil and gas operations and transport sectors. These sectors account for almost three quarters of Iraq's carbon emissions.

Some of the actions needed or required to address the problems of conflicts related to carbon markets in Iraq are:

- Implementing key structural reforms to diversify Iraq's economy and reduce its dependence on oil revenues. This could include enhancing the role of the private sector, developing non-oil sectors such as agriculture, industry, and services, improving governance and transparency, and strengthening human capital.
- Adopting a comprehensive and integrated approach to water management that considers the needs and interests of all stakeholders. This could include improving water efficiency and conservation, investing in water infrastructure and technology, promoting regional cooperation on water issues, and involving local communities in water governance.
- Developing a clear legal and institutional framework for implementing Iraq's NDC and participating in carbon markets. This could include ratifying the Paris Agreement, setting a national carbon price, establishing a national authority for carbon markets, developing standards and guidelines for carbon projects, building capacity and awareness among relevant actors, and engaging with regional and international partners on carbon market cooperation.
- Supporting a just transition for the workers in the oil sector who may be affected by the low-carbon transition. This could include providing social protection, training, education, and alternative employment opportunities for the displaced workers, as well as creating dialogue and participation mechanisms to address their concerns and expectations.

37.3 The government of Iraq is actively addressing climate change and engaging in carbon markets through various measures, including:

- National Adaptation Plan (NAP) Development: Collaborating with the UN Environment Programme (UNEP) to create a NAP, enhancing Iraq's resilience to

climate change. The NAP process involves strategic planning based on climate change projections to reduce vulnerability.

- **Revised Nationally Determined Contribution (NDC):** Iraq submitted an updated NDC to the Paris Agreement in October 2021. This revised commitment includes a higher conditional mitigation target of 15%, up from the initial 13%, and outlines plans to install 12 GW of renewable energy, involving private sector investments.
- **Environmental Protection Commitments:** The Prime Minister, Mustafa al-Kadhimi, pledged to reduce carbon emissions, combat desertification, and preserve biodiversity, particularly in regions like Basra, which face environmental challenges like water scarcity and pollution.
- **Economic Diversification and Structural Reforms:** Iraq is pursuing key structural reforms to diversify its economy and reduce its reliance on oil revenues. Recommendations from the World Bank include strengthening the role of the private sector, fostering non-oil sectors, improving governance and transparency, and enhancing human capital. The report also advises adopting mitigation measures to bridge supply-demand gaps while decarbonizing the energy value chain.

The private sector plays a crucial role in advancing carbon markets in Iraq by offering investment, innovation, and expertise. Some key functions and prospects for the private sector in carbon markets include:

- **Promoting Low-Carbon Growth:** Investing in technological innovation, financing mitigation and adaptation efforts, adopting eco-friendly production methods, and encouraging climate-conscious consumer choices.
- **Engaging in the Voluntary Carbon Market:** Active participation in the voluntary carbon market, where individuals and organizations can trade carbon credits representing emissions reductions or removals, with no legal obligations. This market is expected to expand as more entities commit to achieving net-zero emissions by 2050 or earlier.
- **Supporting Environmental Projects:** Backing initiatives focused on renewable energy, energy efficiency, forest preservation, waste management, and other eco-friendly endeavors. These projects can produce carbon credits for sale in the voluntary market, offering an additional revenue source and contributing to the global fight against climate change.
- **Integrating Climate Risk Considerations:** Factoring climate risk into decision-making processes, investing in critical infrastructure, and delivering training and support for community resilience. These actions help the private sector reduce vulnerability to climate-related shocks and disasters while creating value for stakeholders.

Iraq's potential projects for the voluntary carbon market are not yet well-defined due to the absence of Iraq's ratification of the Paris Agreement or the establishment of a national carbon pricing mechanism. However, based on research findings, there are some conceivable projects:

Utilizing Associated Gas: One ongoing project is the capture and utilization of associated gas from the Rumaila oil field. This initiative involves the installation of gas compressors and pipelines to gather associated gas currently flared at the oil field, which is then repurposed for power generation, industrial applications, or export. It is estimated to reduce GHG emissions by approximately 1.8 million tons of CO₂ equivalent annually.

Expanding Renewable Energy: Iraq has the potential to significantly increase its share of renewable energy, particularly from solar and wind sources. Transitioning from less than 1% in 2019 to 14% in 2030 and 30% in 2050 is possible, reducing GHG emissions, fostering job creation, and enhancing energy security. These renewable energy projects could generate tradable carbon credits in the voluntary carbon market.

Strengthening Natural Carbon Sinks: Iraq's rich biodiversity and natural ecosystems are under threat due to environmental challenges and climate change impacts, including drought, desertification, and pollution. Initiatives to safeguard and rehabilitate natural systems, like the marshlands in southern Iraq, can enhance natural carbon sinks. These projects capture and store atmospheric carbon dioxide. In turn, these efforts generate carbon credits that can be offered in the voluntary carbon market.

These prospective projects necessitate the implementation of various supporting policies and actions. These include setting net-zero emissions goals, introducing carbon pricing mechanisms, improving energy efficiency, diversifying the economy, and attracting private investments. These steps are vital for Iraq to tap into the growing global voluntary carbon market, as an increasing number of nations and companies are committing to achieving net-zero emissions by 2050. Through the development of renewable energy and natural gas resources, Iraq can generate carbon credits for sale in the voluntary market, thereby creating an additional income source and aiding in the worldwide fight against climate change.

SECTION D: IRAQ'S POSITION PAPER

COP28 AGENDA AND IRAQI POSITION

38. COP28 AGENDA ITEM 3(A)/ REPORT OF THE SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

Background:

The Subsidiary Body for Scientific and Technological Advice (SBSTA) is one of the two subsidiary bodies established by the United Nations Framework Convention on Climate Change (UNFCCC) to assist the Conference of the Parties (COP). The SBSTA serves as a link between information provided by expert sources (such as the Intergovernmental Panel on Climate Change IPCC and other relevant international organizations) and the COP, which is responsible for making decisions regarding climate policy.

The Chair of the SBSTA, Harry Vreuls (Kingdom of the Netherlands), will report on the work conducted at SBSTA 58 and 59, including any recommendations of draft decisions and conclusions for consideration and adoption at COP 28. In addition, the informal summary report on the 2023 ocean and climate change dialogue, convened at SBSTA 58, will be presented.

Action:

The COP will be invited to take note of the progress in the work of the SBSTA and to consider the recommended draft decisions and conclusions for adoption.

Probable Iraq Position:

- Iraq should take note of the report and the progress that has been made.

COP28 AGENDA ITEM 3(A)/ REPORT OF THE SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

Background:

The Subsidiary Body for Implementation (SBI) is one of the two subsidiary bodies established by the United Nations Framework Convention on Climate Change (UNFCCC) to support the work of the Conference of the Parties (COP). The SBI focuses on the implementation of the decisions made by the COP and assists in assessing the effectiveness of these measures.

After each session, the SBI produces a report summarizing the proceedings, discussions, and decisions made during the meeting. The report is then submitted to the COP for consideration and further action.

The Chair of the SBI, Nabeel Munir (Pakistan), will report on the work conducted at SBI 58 and 59, including any recommendations of draft decisions and conclusions for consideration and adoption at COP 28.

Action:

The COP will be invited to take note of the progress in the work of the SBI and to consider the recommended draft decisions and conclusions for adoption.

Probable Iraq Position:

- Iraq should take note of the report and the progress that has been made.

39. COP28 AGENDA ITEM 5/ REPORTING FROM PARTIES NOT INCLUDED IN ANNEX I TO THE CONVENTION

Background:

This refers to the communications and submissions that developing countries (non-Annex I Parties) provide to the United Nations Framework Convention on Climate Change (UNFCCC). Unlike developed countries (Annex I Parties), developing countries have different obligations and expectations regarding reporting, reflecting their varied capacities and levels of responsibility for greenhouse gas emissions.

Types of Reports from Non-Annex 1 Parties:

- National Communications (NCs): These are comprehensive reports submitted periodically by non-Annex I Parties, providing information on greenhouse gas inventories, measures to mitigate and adapt to climate change, and their needs for financial and technical support.
- Biennial Update Reports (BURs): Introduced in 2010, BURs are shorter, more frequent reports that provide updates on greenhouse gas inventories, mitigation actions, and support received. They are submitted every two years.

Probable Iraq Position:

- Iraq has yet to submit its first BUR.
- Iraq has submitted its first NC in 2015 and revised it in 2017 and it should work on the second NC.

40 COP28 AGENDA ITEM 6/ REPORT OF THE ADAPTATION COMMITTEE AND REVIEW OF THE PROGRESS, EFFECTIVENESS AND PERFORMANCE OF THE ADAPTATION COMMITTEE

Background

During a workshop on enhancing the Adaptation work held in Bonn, Feb 2015. AC explored the following **five topics**: access to finance; national-level institutional arrangements and mobilization of finance in developing countries; the importance of integrating adaptation into development; the role of the private sector; and the NAP process.

- **COP21, Paris 2015:** The Adaptation Committee had agreed on the implementation of a 3 years' work plan 2016–2018, during the COP, the IPCC were invited and it requested the AC to further strengthen cooperation with the SCF and other constituted bodies under the Convention.
- **9th meeting of the Adaptation Committee, Bonn 2016**
- In support of the implementation of the Paris outcome, the AC agreed on next steps to undertake the five tasks that were mandated to the AC or to the AC together with other bodies. For the 2016 Technical Examination Process on adaptation (TEP-A). the AC agreed on the umbrella topic **“Reducing vulnerability and mainstreaming climate change adaptation, including through the process to formulate and implement national adaptation plans”**.
- It also agreed on next steps in the collaboration with the GCF and endorsed a concept note for a side event which will set the groundwork for a potential partnership platform with national, regional and international organizations, centers and networks.
- The AC agreed on an expanded TEP-A working group involving other bodies and stakeholders and agreed to forward a draft list of topics for the 2017-2020 TEMs for the consideration of the working.
- It requested the AC to make use of additional modalities for responding to the relevant mandates contained in decision 1/CP.21, including engaging with the Nairobi work programme and its partner organizations, research institutions and other institutional arrangements outside the Convention.
- **11th meeting of the Adaptation Committee:** The GCF initiated expert consultations with the AC on the readiness programme for NAPs and consultations are ongoing on possible collaboration on, and dates for, a workshop to advance the understanding and overcome challenges relating to the establishment of National Implementing Entities and accessing the readiness programme for adaptation of the GCF.
- The TEP-A was established at **COP 21** as part of the enhanced action prior to 2020 in the decision adopting the Paris Agreement.
- A draft technical paper on long-term adaptation planning was welcomed by the AC.
- **In 2019, on the 15th and 16th meetings:**
- The AC agreed on the approach to the 2019 TEP-A, including six thematic clusters to serve as an umbrella to organize the technical expert meeting over two days. Furthermore, it shortened the list of potential themes for the 2020 TEP-A:
 - a. 1.5 degrees;
 - b. Education, public participation and youth; and a
 - c. Summary of the 2016 to 2019 TEPs.
- With regard to technical support and guidance on means of implementation, a user-friendly version of the workshop report on engagement with the private sector was adopted.

- With regard to technical support and guidance on adaptation action, the AC gave further guidance to the secretariat on an information paper on linkages between mitigation and adaptation, as well as for a paper looking at data, taking into account short- medium- and long-term perspectives and linkages of data needs to various stages in the adaptation process.
- **In 2022, on the 21st meeting:** In the context of promoting overarching coherence, the AC strengthened its advice to, and engagement with, partners of the Nairobi work programme with a call to better align the NWP's thematic work areas to the work of the AC and other constituted bodies, and the potential creation of communities of practice within the NWP partners around core technical topics on adaptation, such as monitoring and evaluation, private sector engagement in adaptation, adaptation technologies, and others.
- The AC also reflected on how to enhance its strategy in the area of awareness-raising, outreach and sharing of information. One activity will be short, live streamed interviews that will inform a broad audience of not only the work of the AC, but also broader emerging topics related to adapting to a changing climate.

In COP27, Sharm El-Sheikh 2022

- COP27 Egyptian Presidency, with the High-Level Climate Champions and Marrakech Partnership, launched **the Sharm El-Sheikh Adaptation Agenda**, a joint action plan to accelerate transformative solutions through systems interventions and a set of adaptation outcome targets, rallying both state and non-state actors work towards achieving them by 2030.

Iraqi Position on AC

Iraq is one of the most vulnerable countries in the world to climate change, and it is important for Iraq to have a strong position on the adaptation committee reporting during COP28. Iraq should emphasize the need for financial support for adaptation measures, as well as the need for technology transfer and capacity building. Iraq should also highlight the importance of including adaptation in all aspects of climate policy, including mitigation and finance.

- Increased financial support for adaptation in developing countries, including Iraq.
- Technology transfer and capacity building to help Iraq implement adaptation measures.
- The inclusion of adaptation in all aspects of climate policy, including mitigation and finance.

Iraq should also work with other vulnerable countries to develop a common negotiating position on adaptation at COP28. This will help to ensure that the voices of vulnerable countries are heard and that their needs are taken into account in the negotiations.

- Calling for the development of a global adaptation goal, which would outline the specific steps that need to be taken to adapt to climate change.
- Promoting the sharing of best practices on adaptation.

41. COP28 AGENDA ITEM 7/ WARSAW INTERNATIONAL MECHANISM FOR LOSS AND DAMAGE ASSOCIATED WITH CLIMATE CHANGE IMPACTS

Background

The Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (WIM) was established by the Conference of the Parties (COP) at its 19th session in November 2013 in Warsaw, Poland. The WIM is designed to address loss and damage associated with impacts of climate change, including extreme events and slow onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change.

The WIM recognizes that loss and damage can result from both extreme weather events (such as hurricanes or floods) and slow onset events (such as sea-level rise or desertification). It aims to help countries, particularly developing ones that are most vulnerable to the adverse effects of climate change, to better understand and manage these risks.

However, it's important to note that the WIM does not provide compensation or liability for climate change impacts. Instead, it focuses on providing support for measures that can help vulnerable countries cope with loss and damage.

The WIM has three main functions

- Enhancing knowledge and understanding of comprehensive risk management approaches to address loss and damage associated with the adverse effects of climate change, including slow onset impacts.
- Strengthening dialogue, coordination, coherence and synergies among relevant stakeholders.
- Enhancing action and support, including finance, technology and capacity-building, to address loss and damage associated with the adverse effects of climate change.

COP21, Paris 2015:

The Paris Agreement was adopted during COP21. While the primary focus of this conference was mitigation and adaptation, it recognized the importance of addressing loss and damage associated with the impacts of climate change. The Paris Agreement mentioned loss and damage in the context of enhancing understanding, action, and support.

COP22, Marrakech 2016:

COP22 continued discussions about the WIM and loss and damage. Parties discussed ways to enhance the support for developing countries in dealing with loss and damage, including financial assistance and technology transfer.

COP23, Bonn 2017: during an emphasis on loss and damage was included. Parties at the conference discussed how to implement the recommendations from the WIM's Executive Committee to enhance the understanding and support for loss and damage issues.

COP24, Katowice 2018:

COP24 resulted the "Katowice Climate Package." This package included provisions related to loss and damage, enhancing the Warsaw International Mechanism, and ensuring that the issue of loss and damage is adequately addressed within the broader framework of the Paris Agreement.

COP25, Madrid 2019:

In COP25 the discussions continued on loss and damage. Parties focused on reviewing and strengthening the Warsaw International Mechanism to address the issue effectively.

COP26, Glasgow 2021:

COP26 saw discussions about loss and damage. Several announcements and initiatives related to addressing loss and damage, such as the "Glasgow Loss and Damage Facility," were made during this conference. Parties also discussed increasing financial support for loss and damage issues, which would have implications for countries like Iraq.

The outcomes of COP27, held in Sharm el-Sheikh, Egypt, are as follows:

Loss and Damage: Developing countries have been seeking financial assistance for loss and damage – money needed to rescue and rebuild the physical and social infrastructure of countries devastated by extreme weather – for nearly three decades. Finally achieving agreement on a fund is a major milestone.

1.5C Goal: The 2015 Paris agreement contained two temperature goals – to keep the rise “well below 2C” above pre-industrial levels, and “pursuing efforts” to keep the increase to 1.5C. At COP27, some countries tried to renege on the 1.5C goal, but they failed.

Gas: The final text of COP27 contained a provision to boost “low-emissions energy”. This could be interpreted to mean gas, which has lower emissions than coal, but is still a major fossil fuel.

Fossil Fuels: Last year at Glasgow, a commitment to phase down the use of coal was agreed. At COP27, some countries wanted to go further and include a commitment to phase down all fossil fuels.

World Bank Reform: A growing number of developed and developing countries are calling for urgent changes to the World Bank and other publicly funded finance institutions.

The Iraqi Position on this Agenda Item, Loss and Damage:

Iraq will have a great opportunity to highlight the issues and effects of climate change, damages are very well portrayed in Iraq:

- **Shrinking water resources:** Iraq relies mainly in great deal on the Tigris and Euphrates Rivers for its water supply, these rivers are being depleted by

upstream dams and climate change. This resulted water scarcity in Iraq, and it will unfortunately deepen in time.

- **Desertification:** Iraq is losing agricultural land to desertification and degrading. Due to water scarcity, climate change, poor irrigation practices, and overgrazing.
- **Frequent and severe droughts:** Iraq is experiencing more frequent and severe droughts as a result of climate change.
- **Increased sand and dust storms:** Sand and dust storms are becoming more frequent and severe in Iraq. These storms can cause respiratory problems, damage crops, and disrupt transportation and other essential services.

These impacts are already having a significant impact on the Iraqi people causing internal migration to cities.

Few of the most important files of loss and damage from climate change in Iraq:

- **The Marshes:** Due to the sever effects of climate change from increasing heat, desertification and the upstream countries regulations, the marshes is been depleted heavily, and water shortage is increasing drastically, this causing very outstanding results, highlighting the Bio Diversity terrible loss in the marshes, as marshes considered to be the homeland of a large varied list of bio diversity from endemic species, the loss of this is severely impacting the livelihood of the marshland inhabitant and the loss of national heritage and wealth.

The Marshland loss will effect heavily the livelihood, the bio diversity, the heritage, the displacement of the original habited people of the marshland resulting the limiting and extinction of the wetland and its indigenous people.

- **Loss of agricultural land:** As a result of desertification, salinization, and water scarcity, Iraq is losing agricultural land at an alarming rate. This is having a devastating impact on the country's food security.
- **Reduced crop yields:** Due to droughts, heat waves, and other climate change impacts, crop yields in Iraq are declining. This is making it more difficult for farmers to make a living and is leading to higher food prices for consumers.
- **Livestock losses:** Climate change is also leading to livestock losses in Iraq. Heat waves, droughts, and water scarcity are making it difficult for livestock to survive.
- **Displacement:** Climate change is already forcing people to leave their homes in Iraq. Droughts, floods, and other extreme weather events are making it impossible for some people to live in their communities.

- **Health impacts:** Climate change is also having a negative impact on public health in Iraq. Heat waves, air pollution, and waterborne diseases are all on the rise.

The Iraqi government is working to address the challenges posed by climate change, but it needs more support from the international community. Developing countries like Iraq to cope with the impacts of climate change, which are largely caused by the emissions of developed countries, it needs for the support and funding of the COP to address the files more and support the solutions to limit the climate change effects.

This can help Iraq to address the loss and damage from climate change by:

- Providing financial assistance to help the Iraqi government invest in adaptation measures, such as water conservation projects, drought-resistant crops, and early warning systems for extreme weather events.
- Supporting the development of climate-resilient livelihoods for Iraqi farmers and other vulnerable communities.
- Investing in research on climate change and TNAs.

42. COP28 AGENDA ITEM 8/ MATTERS RELATING TO FINANCE

COP28 will discuss the following on the matters relating to finance.

(a) Long-term climate finance

Background:

COP 26 decided that continued discussions on long-term climate finance will conclude in 2027.

The fifth biennial high-level ministerial dialogue on climate finance, on the progress and fulfilment of the goal of mobilizing jointly USD 100 billion per year by 2020, was convened at COP 27. The Presidency of COP 27 prepared a summary of the deliberations at the dialogue.

Action:

The COP will be invited to continue the discussions on long-term climate finance. It will also be invited to consider the summary of the deliberations at the dialogue and to take any action it deems appropriate.

Suggested Iraq's position:

Iraq should support the discussions that increase the finance to the developing countries. In addition, Iraq may show the budget needed to establish the projects in climate change during the 5 coming years.

(b) Matters relating to the Standing Committee on Finance

Background:

COP 17 decided that the SCF shall report at each ordinary session of the COP and make recommendations for consideration by the COP on all aspects of its work.

COP 27 requested the SCF to prepare a report for consideration at COP 28, building on the Committee's work on definitions of climate finance, on clustering types of climate finance definitions in use that could be considered within the UNFCCC process, including with a view to updating the Committee's operational definition of climate finance, as appropriate, and supporting Parties in their national reporting efforts.

COP 27 requested SBI 59 to complete the work on the second review of the functions of the SCF with a view to recommending draft decisions on the matter for consideration and adoption at COP 28 and CMA 5. Accordingly, matters relating to the second review of the SCF are considered under the SBI.

Action:

The COP will be invited to consider the SCF report and to take any action it deems appropriate. It will also be invited to consider the recommendations of the SBI on the review of the functions of the SCF. The COP will further be invited to elect members of the SCF.

Suggested Iraq's position:

The SCF should ensure that the voices of developing countries are heard in its decision-making. Iraq should support a SCF that is responsive to the needs of developing countries and that helps to ensure that they have access to the climate finance they need.

(c) Report of the Green Climate Fund to the Conference of the Parties and guidance to the Green Climate Fund**Background:**

The Board of the GCF submits an annual report to the COP, as provided for in the arrangements between the COP and the GCF, including information on the implementation of the guidance provided at the previous session of the COP and in any other relevant decisions of the COP.

COP 17 decided that the SCF will provide draft guidance for the GCF for consideration by the COP based on the annual report of the GCF to the COP, inputs from UNFCCC constituted bodies and views submitted by Parties. Moreover, COP 17 requested the secretariat to provide information to it on the operation of the registry of nationally appropriate mitigation actions annually in order to inform the discussions on the Financial Mechanism.

Action:

The COP will be invited to provide guidance to the GCF on policies, programme priorities and eligibility criteria taking into consideration the reports of the GCF and the SCF, including views and recommendations on elements of guidance submitted by Parties, as well as the report on the operation of the registry of nationally appropriate mitigation actions.

Suggested Iraq's position:

As a developing country that is particularly vulnerable to the adverse effects of climate change, Iraq has a strong interest in ensuring that the GCF is responsive to the needs of developing countries and that it is used to support effective climate action.

(d) Report of the Global Environment Facility to the Conference of the Parties and guidance to the Global Environment Facility

Background:

The memorandum of understanding between the COP and the Council of the GEF provides that the GEF shall report annually to the COP on the implementation of guidance received. The GEF is expected to report at COP 28 on actions taken to implement guidance provided at COP 27 and in any other relevant decisions of the COP.

COP 17 decided that the SCF will provide draft guidance for the GEF for consideration by the COP based on the annual report of the GEF to the COP, inputs from constituted bodies and views submitted by Parties.

Moreover, COP 17 requested the secretariat to provide information to it on the operation of the registry of nationally appropriate mitigation actions annually in order to inform the discussions on the Financial Mechanism.

Action:

The COP will be invited to provide guidance to the GEF on policies, programme priorities and eligibility criteria taking into consideration the reports of the GEF and the SCF as well as the report to the COP on the operation of the registry of nationally appropriate mitigation actions.

Suggested Iraq's position:

Iraq should submit its views and recommendations to the GEF Secretariat well in advance of COP28. This will ensure that Iraq's perspective is taken into account when the GEF Council develops new guidance for the Facility.

(e) Seventh review of the Financial Mechanism.

Background:

COP 4 decided that the Financial Mechanism will be reviewed every four years in accordance with Article 11, paragraph 4, of the Convention.

COP 17 decided that the SCF shall assist the COP in exercising its functions with respect to the Financial Mechanism by, inter alia, providing expert input, including through independent reviews and assessments, to the preparation and conduct of the periodic reviews of the Financial Mechanism by the COP.

COP 21 decided that the implementation of the Capacity-building Initiative for Transparency will be assessed in the context of the seventh review of the Financial Mechanism.

COP 27 was invited to agree on the guidelines for the seventh review of the Financial Mechanism taking into account the guidelines contained in the annex to decision 12/CP.22.

Parties could not conclude consideration of the matter and agreed to continue the discussions at COP 28.

Action:

The COP will be invited to agree on the guidelines for the seventh review of the Financial Mechanism taking into account the guidelines contained in the annex to decision 12/CP.22.

Suggested Iraq's position:

Iraq should work with other developing countries to develop a common position on the guidelines. This will strengthen Iraq's voice in the negotiations and help to ensure that the guidelines are fair and equitable.

(f) Compilation and synthesis of, and summary report on the in-session workshop on, biennial communications of information related to Article 9, paragraph 5, of the Paris Agreement

Background:

CMA 3 requested developed country Parties to submit their second biennial communications in 2022, in accordance with decision 12/CMA.1, paragraph 4, before 31 December 2022. It also requested the secretariat to prepare a compilation and synthesis of the biennial communications in accordance with decision 12/CMA.1, paragraph 7, and to organize, in 2023, an in-session workshop on information to be provided by Parties in accordance with Article 9, paragraph 5, of the Paris Agreement and prepare a summary report thereon for consideration at CMA 5.

The workshop took place during SB 58, on 6 June 2023, and the secretariat prepared a summary report on the workshop for consideration at CMA 5.

CMA 1 decided to consider, and invited the COP to consider, the compilations and syntheses of the information included in the biennial communications and the summary reports on the in-session workshops starting in 2021.

Action:

The COP will be invited to consider the compilation and synthesis of the second biennial communications in accordance with Article 9, paragraph 5, of the Paris Agreement and the summary report on the 2023 in-session workshop.

Suggested Iraq's position:

Iraq should advocate for a more ambitious and inclusive global climate agenda. This includes calling for increased financial support for developing countries, as well as for a more equitable distribution of the benefits of climate action.

(g) Operationalization of the funding arrangements for responding to loss and damage referred to in paragraph 2, including the fund referred to in paragraph 3, of decisions 2/CP.27 and 2/CMA.4

Background:

COP 27 and CMA 4 decided to establish new funding arrangements for assisting developing countries that are particularly vulnerable to the adverse effects of climate change, in responding to loss and damage, including with a focus on addressing loss and damage by providing and assisting in mobilizing new and additional resources, and that these new arrangements complement and include sources, funds, processes and initiatives under and outside the Convention and the Paris Agreement. In this context, they also established a fund for responding to loss and damage whose mandate includes a focus on addressing loss and damage.

To operationalize the new funding arrangements for responding to loss and damage and the associated fund, COP 27 and CMA 4 established the Transitional Committee that is to make recommendations on this matter for consideration and adoption at COP 28 and CMA 5.

Action:

The COP will be invited to consider the report by the Transitional Committee and to take any action it deems appropriate.

Suggested Iraq's position:

Iraq may suggest a standard for accounting the loss and damages. In addition, Iraq should show the damages occurred to Iraq due to climate change.

43. COP28 AGENDA ITEM 9/ DEVELOPMENT AND TRANSFER OF TECHNOLOGIES AND IMPLEMENTATION OF THE TECHNOLOGY MECHANISM: JOINT ANNUAL REPORT OF THE TECHNOLOGY EXECUTIVE COMMITTEE AND THE CLIMATE TECHNOLOGY CENTRE AND NETWORK

Background

The Technology Mechanism is the frame work for Tech, and it includes the TEC and the CTCN, working both under the UNFCCC and COP.

The Tec will be responsible mainly on the Policy, and the CTCN on process and implementation.

- **11th meeting of the TEC:** The Technology Executive Committee (TEC) were asked to provide guidance on how the results of the technology needs assessments (TNAs), in particular the technology action plans (TAPs), can be developed into projects that can be ultimately implemented, and to provide an interim report on its preliminary findings to SB43.
- **Zero draft** joint annual report of the TEC and the CTCN for 2015 was developed during the 11th meeting of TEC.
- **12th meeting of the TEC:** Guidance on enhanced implementation of the results of technology needs assessments: interim report by the Technology Executive Committee submitted by the TEC to COP21. TEC members and observers provided comments on the guidance on TAPs.
- **COP21, Paris 2015:** The Paris Agreement speaks of the vision of fully realizing technology development and transfer for both improving resilience to climate

change and reducing GHG emissions. It establishes a technology framework to provide overarching guidance to the well-functioning Technology Mechanism. The mechanism is accelerating technology development and transfer through its policy and implementation arms:

- To incorporate the guidance contained in the technology framework into their respective workplan and programme of work, which should also include methods for the monitoring and evaluation of their activities.
- To include information in their joint annual report for 2019 on how they incorporated the guidance contained in the technology framework into their respective workplan and programme of work, as referred to in paragraph 3(a).
- **COP24, Katowice 2018:** the COP adopted the technology framework, deciding that it will tackle:
 - The innovation through new collaborative approaches to climate technology research, development and demonstration (RD&D)
 - Facilitate the implementation of mitigation and adaptation action identified using planning tools
 - Creation and enhancement of an enabling environment and capacity-building;
 - Enhanced engagement of stakeholders at the local, regional, national and global level
- The Paris Agreement states that support, including financial support, shall be provided to developing country Parties.
- **The Glasgow Climate Pact, agreed at COP26 in 2021,** called upon Parties to accelerate the development, deployment and dissemination of technologies to transition towards low emission energy systems. The pact also emphasized the importance of cooperative action on technology development and transfer, including accelerating and enabling innovation, and the importance of predictable, sustainable and adequate funding for the Technology Mechanism.

COP27, Sharm El-Sheikh 2022:

The TEC and CTCN launched a work programme **“to accelerate the deployment of transformative climate technologies that are urgently required to tackle climate change”**.

A new five-year work programme to promote climate technology solutions in developing countries. It covers work from 2023-2027 and foresees specific joint activities to be implemented by the TEC and CTCN, including technology roadmaps, work on women and technology, technology and NDCs and digitalization, and common areas of work for the two bodies, including national systems of innovation, industry, and the water-energy-food nexus.

The Sharm el-Sheikh implementation plan includes references to boosting “low emission” energy, as well as renewables. The text also supports the plans of many fossil fuel-producing countries to use fledgling carbon capture technology to curb emissions rather than scaling back production.

- **During the 27th meeting of the TEC, in Bon Sep 2023:**

- The TEC Chair and Vice-Chair presented a proposed prototype reporting tool for tracking and reporting information for addressing relevant mandates and invitations provided to the TEC by the COP and the CMA in the implementation of its rolling workplan.
- The TEC welcomed the prototype and provided guidance on further work on the matter. The TEC agreed that the joint annual report of the TEC and CTCN will include a footnote containing a link to the prototype tracking table.

The Iraqi Position on Development and Transfer of Technology, and the Work of the TEC and CTCN under the Technical Mechanism:

The Iraqi government recognizes the importance of technology transfer and development for its economic and social development. The government's position on this issue is outlined in the National Development Plan 2018-2022, which states that **"technology transfer and development are essential for Iraq to achieve its economic and social development goals."**

The government's specific priorities for technology transfer and development include:

- Increasing the use of technology in key sectors of the economy, such as oil and gas, agriculture, and manufacturing.
- Developing indigenous technological capacity through investment in research and development.
- Facilitating the transfer of technology from developed countries to Iraq through joint ventures, licensing agreements, and other forms of cooperation.

The government is also committed to creating an enabling environment for technology transfer and development. This includes measures such as:

- Protecting intellectual property rights.
- Promoting competition in the technology market.
- Investing in education and training to develop a skilled workforce.

As we have seen continuously Iraq have many interactions with the TEC and CTCN, and have hosted and participated in the Arab region conference on Technology and Development Transfer that was organized by the CTCN, but it is strongly advised that In addition to the TEC and CTCN, there are a number of other international organizations and initiatives that support developing countries in their efforts to develop and transfer technology. And Iraq can have support on widening the horizon on the technology enhancement to combat climate change effects. These include:

- The Global Environment Facility (GEF)
- The United Nations Industrial Development Organization (UNIDO)
- The World Intellectual Property Organization (WIPO)
- The World Trade Organization (WTO)
- The Technology Transfer Initiative (TTI)
- The Global Innovation Network (GIN)

These organizations and initiatives provide a range of support services to developing countries, such as funding, technical assistance, and capacity building.

The Iraqi government can access the support services provided by these organizations and initiatives to help it achieve its goals for technology development and transfer.

44. COP28 AGENDA ITEM 10/ CAPACITY-BUILDING UNDER THE CONVENTION

Background:

The PCCB prepares annual technical progress reports on its work for submission to the COP through the SBI

COP 25 requested SBI 58 to initiate the preparation of the terms of reference for the second review of the PCCB with a view to COP 28 agreeing on the final terms of reference. 48 Matters relating to this agenda item are considered under the SBI.

Action: The COP will be invited to take any action it deems appropriate on the basis of the recommendations of the SBI. It will also be invited to elect members of the PCCB.

- The framework for capacity-building in developing countries was established by decision 2/CP.7 in 2001, and the framework for capacity-building in countries with economies in transition was established by decision 3/CP.7 in 20012. These frameworks identified the scope, guiding principles, and key factors for effective capacity-building, as well as the roles and responsibilities of different actors and stakeholders.
- The frameworks are subject to periodic reviews by the Conference of the Parties (COP) to assess their implementation and effectiveness, and to identify gaps and needs for further action². The first comprehensive review was conducted in 2005, the second in 2010, the third in 2016, and the fourth in 2019.
- The Paris Agreement, adopted in 2015, reaffirmed the importance of capacity-building for enhancing climate action and achieving the long-term goals of the Agreement. It also established a Paris Committee on Capacity-building (PCCB) to address gaps and needs, foster collaboration, enhance coherence, and promote best practices in capacity-building.
- **The PCCB was operationalized in 2016** and has been implementing its rolling workplans since then. The PCCB also organizes annual meetings of the Durban Forum on capacity-building, which is a platform for sharing experiences and lessons learned on capacity-building among various stakeholders.
- **In 2019, COP25** adopted a decision on enhancing the implementation of capacity-building under the Convention and the Paris Agreement. The decision recognized the progress made by the PCCB and requested it to continue its work in line with its mandate. The decision also urged developed country Parties and

other relevant actors to provide adequate resources and support for capacity-building activities in developing countries.

- **In 2020, COP26** adopted a decision on capacity-building under the Convention. The decision welcomed the report of the PCCB on its activities in 2020 and endorsed its annual focus area for 2021: enhancing capacities for engaging with indigenous peoples and local communities. The
- **In 2021, COP27** adopted a decision on capacity-building under the Convention. The decision adopted the terms of reference for the fifth comprehensive review of the implementation of the framework for capacity-building in developing countries. The decision also requested the Subsidiary Body for Implementation (SBI) to conduct the review at its forty-eighth session (May 2022) and recommend a draft decision for consideration by COP28.

Background

- Capacity-building is a key element of climate action, as it enables countries to enhance their knowledge, skills, institutions, policies, and practices to address climate change effectively.
- Capacity-building needs vary across countries and regions, depending on their level of development, vulnerability, mitigation potential, adaptation priorities, and national circumstances.
- Capacity-building activities cover various areas such as mitigation, adaptation, technology development and transfer, finance, transparency, education, training, awareness-raising, public participation, and stakeholder engagement.
- Capacity-building is a cross-cutting issue that involves multiple actors and stakeholders at different levels, such as governments, international organizations, financial institutions, civil society organizations, private sector entities, academia, research institutions, and local communities.
- Capacity-building is an ongoing process that requires continuous monitoring, evaluation, learning, and improvement to ensure its effectiveness, sustainability, and responsiveness to changing needs and circumstances.

Outcomes of COP27 regarding capacity-building under the Convention for Iraq

Loss and damage fund: This fund could also support capacity-building activities related to loss and damage assessment, prevention, preparedness, response, recovery, rehabilitation, and resilience. Iraq could access this fund to enhance its capacities for coping with the adverse effects of climate change and reducing its vulnerability.

1.5°C goal: This outcome is challenging for Iraq, as it implies that it needs to enhance its capacities for implementing ambitious mitigation actions and adapting to unavoidable impacts of climate change.

Gas: this outcome is ambiguous for Iraq, as it could have both positive and negative implications for its capacity-building. On one hand, Iraq has significant gas resources, which could provide an opportunity for economic development and energy security. On the other hand, Iraq may need to balance its energy needs with its climate commitments, and ensure that its gas development is sustainable and compatible with the 1.5°C goal.

Fossil fuels: Reducing the reliance on fossil fuels is essential for achieving the 1.5°C goal, but it also requires capacity-building for transitioning to low-carbon and renewable energy sources.

World Bank reform: The conference also urged developed countries to fulfill their pledge of providing \$100 billion per year in climate finance by 2025. This outcome is favorable for Iraq, as it could benefit from more financial resources and support for capacity-building activities in various areas such as mitigation, adaptation, technology development and transfer.

Iraq is committed to capacity building in line with the objectives of the United Nations Framework Convention on Climate Change (UNFCCC):

Climate Change Adaptation: Iraq is particularly vulnerable to the impacts of climate change, including increased temperatures, reduced rainfall, and rising sea levels. Capacity building efforts should therefore focus on enhancing resilience to these changes, particularly in sectors such as agriculture, water management, and urban planning.

Transition to Renewable Energy: Iraq has significant potential for solar and wind energy production. Capacity building can help harness these resources, reducing dependence on fossil fuels and contributing to global efforts to mitigate climate change.

Education and Awareness: Raising awareness about climate change and its impacts among the general public and policymakers is crucial. This could involve incorporating climate change into school curriculums, conducting public awareness campaigns, and training government officials.

Technology Transfer: Access to the latest climate-friendly technologies can play a key role in Iraq's transition to a low-carbon economy. This could involve partnerships with developed countries and international organizations.

International Cooperation: Climate change is a global problem that requires global solutions. Iraq is committed to working with other nations under the UNFCCC framework to address this challenge.

45. COP28 AGENDA ITEM 12/ REPORT OF THE FORUM ON THE IMPACT OF THE IMPLEMENTATION OF RESPONSE MEASURES

Background:

COP 24, CMP 14 and CMA 1 acknowledged that a single forum on the impact of the implementation of response measures covers the work of the COP, the CMP and the CMA on

all matters relating to the impact of the implementation of response measures and affirmed that the forum shall report to the COP, the CMP and the CMA.

CMA 1 decided that the forum shall provide recommendations for consideration by the subsidiary bodies with a view to them recommending actions for consideration and adoption by the COP, the CMP and the CMA.

Matters relating to this agenda item are considered under the SBSTA and the SBI.

Action:

The COP will be invited to take any action it deems appropriate on the basis of the recommendations of the SBSTA and the SBI.

Probable Iraq Position

Iraq should take note of the country-driven strategies for just transition and economic diversification, since Iraq is currently undertaking that path. Iraq should also capitalise on opportunities and considering the lessons-learned of countries' challenges.

46. COP28 AGENDA ITEM 13/ GENDER AND CLIMATE CHANGE

Background

- **COP21, Paris 2015:** during COP21, all parties called for the Paris Agreement to be in the language of Human Rights and Male and Female Equality, to be secured and implemented in this manner.
- **COP24, Katowice 2018:** COP24 marked the half-way point of the Gender Action Plan (GAP) established at COP 23 under the Lima Work programme on Gender and there were many events and activities highlighting action in support of the GAP.
- **COP 25** Parties adopted the five-year enhanced **Lima work programme** on gender (Women) and its gender action plan (GAP).

COP27, Sharm El Sheikh 2022:

Adopted the intermediate review of the implementation of the gender action plan and amendments to the GAP contained in the annex (Decision 24/CP.27).

- **SBI59, Sep 2023 Dialogue among the Chairs of UNFCCC constituted bodies on progress in integrating a women perspective into their processes.**
- Dialogue among the Chairs of constituted bodies to exchange views and best practices on how to strengthen the integration of women perspectives into their work (Decision 3/CP. 25, activity C2).
- Dialogue on how the work of UN Women contributes to the achievement of the objectives of the gender action plan (Decision 3/CP. 25, activity A2 and amendment as per Decision 24/CP.27).
- Expert meeting to share experience and support capacity-building on women budgeting, including on the integration of women-responsive budgeting into national budgets to advance women-responsive climate policies, plans, strategies

and action, as appropriate (Decision 3/CP. 25, activity D1 and amendment as per Decision 24/CP.27).

- The secretariat also published the report on the Joint dialogue on advancing the leadership and highlighting the solutions of local communities and indigenous women in climate policy and action.

COP28, Dubai 2023:

The secretariat is preparing the following reports:

- Biennial synthesis report on progress in integrating a gender perspective into constituted body processes (Decision 3/CP. 25, para 15.b) available here.
- Annual gender composition report (Decision 3/CP. 25, para 15.b) available here.

The Iraqi Position Gender and Climate Change: Women Participation in the Climate Action:

- Recognizing the intersectionality of Women and climate change. Climate change disproportionately impacts women and girls, due to factors such as social norms, access to resources, and decision-making power. Iraq should acknowledge this intersectionality in its COP28 position and ensure that its climate change policies and programs are women-responsive.
- Promoting the participation of women in climate change decision-making. Women and girls should be present and very involved in all aspects of climate change decision-making, from local to national to international levels. Iraq should support the capacity building of women's climate change organizations and advocate for women parity in climate change decision-making bodies.
- Integrating women considerations into climate change policies and programs. Iraq should integrate women considerations into all of its climate change policies and programs, from mitigation to adaptation to finance. This means ensuring that climate change interventions address the specific needs and vulnerabilities of women and girls, and that they promote gender equality and empowerment.

Specifically, Iraq could take the following actions at COP28:

- Submit a women and girls-responsive plan, in the NDC Iraq's national climate change plan, and it is an opportunity to outline its commitments to reducing greenhouse gas emissions and adapting to climate change. Iraq should ensure that its plan is women and girls -responsive by integrating women considerations into all of its targets and actions.
- Advocate for women-responsive climate finance. Iraq should advocate for increased and accessible climate finance for women-responsive climate change programs. This could include supporting the establishment of a women fund for climate change, and promoting the use of women budgeting in climate finance.

- Share best practices. Iraq could share its best practices in promoting Male and Female equality and women's empowerment in climate change action at COP28. This could include its experiences in developing and implementing women-responsive climate change policies and programs, and its efforts to support the participation of women in climate change decision-making.
- Iraq with the support of UN organizations and international facilities, should demonstrate a plan of women empowerment and accessibility, targeting leading women in the Agri-business and environmental areas, such as the Marshes and Farming areas in Iraq including Southern and middle parts in Iraq.
- Capacity building for women in all sectors, and additionally highlighting Climate Change Effects, due to the nature of awareness women possess, dealing with lives in work and home.

By taking these actions, Iraq can demonstrate its leadership on women and climate change at COP28 and help to advance a more just and equitable transition to a low-carbon future.

47. COP28 AGENDA ITEM 14/ CONSIDERATION OF PROPOSALS FROM PARTIES FOR AMENDMENTS TO THE CONVENTION UNDER ARTICLE 15

(a) Proposal from the Russian Federation to amend Article 4, paragraph 2(f), of the Convention **Background:**

This agenda sub-item was held in abeyance at COP 27. In accordance with rules 10(c) and 16 of the draft rules of procedure being applied, this sub-item has been included in the provisional agenda for this session.

The Russian Federation proposes to make the following amendment to the Convention: in article 4, paragraph 2 (f), after the words “with the approval of the Party concerned”, to insert the sentence ***“A further review of amendments to the lists in annexes I and II shall be conducted on a periodic basis, as determined by the Conference of the Parties, until the objective of the Convention has been achieved.”***

Action:

The COP will be invited to consider the proposal and to take any action it deems appropriate.

Suggested Iraq's position

Iraq may not support this amendment because the standard is the historical base for determining the level of countries and their responsibilities towards the climate change.

(b) Proposal from Papua New Guinea and Mexico to amend Articles 7 and 18 of the Convention.

Background:

This agenda sub-item was held in abeyance at COP 27. In accordance with rules 10(c) and 16 of the draft rules of procedure being applied, this sub-item has been included in the provisional agenda for this session.

Action:

The COP will be invited to consider the proposal and to take any action it deems appropriate.

Suggested Iraq's position

Iraq may accept the amendment to Article 18 as it will provide more flexible method to agree on the matters under the convention as the proposal provides that “a decision shall, as a last resort, be adopted by a three-fourths majority vote of the Parties present and voting”. That may be in favor of the developing countries. However, in regard to the amendment to article 7, Iraq may not accept because it remove the rules of procedures to conduct the COP. That may make the arrangements and procedures complex.

48. COP28 AGENDA ITEM 15/ SECOND REVIEW OF THE ADEQUACY OF ARTICLE 4, PARAGRAPH 2(A–B), OF THE CONVENTION**Background:**

Article 4, paragraphs 2(a–b), of the United Nations Framework Convention on Climate Change (UNFCCC) refer to the commitments of developed country Parties and other Parties included in Annex I to the Convention. Specifically, these paragraphs address the need for these Parties to adopt policies and take measures on the mitigation of climate change by limiting their anthropogenic emissions of greenhouse gases and protecting and enhancing their greenhouse gas sinks and reservoirs.

The adequacy of the commitments laid out in Article 4, paragraphs 2(a–b), has been subject to periodic reviews to assess their effectiveness and sufficiency in achieving the Convention's objective. The second review of the adequacy of these commitments would involve an evaluation of the progress made by developed country Parties in mitigating climate change, as well as an assessment of whether these commitments remain adequate for meeting the Convention's long-term objectives.

Article 4, Paragraphs 2(a–b) of the UNFCCC:

- **Paragraph 2(a):** This paragraph calls on developed country Parties to adopt national policies and take corresponding measures on the mitigation of climate change, by limiting their anthropogenic emissions of greenhouse gases and protecting and enhancing their greenhouse gas sinks and reservoirs.
- **Paragraph 2(b):** This paragraph emphasizes that the developed country Parties should individually or jointly aim to return their greenhouse gas emissions to 1990 levels.

Action:

The COP will be invited to consider this matter and to take any action it deems appropriate.

Probable Iraq Position:

- Iraq, like many other developing countries, should call for stronger commitments from developed countries to reduce greenhouse gas emissions and to provide financial and technical support to developing countries.

- We could emphasize the need for developed countries to fulfill their financial obligations under the Convention, providing necessary support to developing countries for climate mitigation and adaptation efforts.
- Iraq might highlight its vulnerability to the impacts of climate change, pointing out the challenges it faces in terms of water scarcity, desertification, and other climate-related issues, to underscore the urgency of taking effective climate action.
- We could stress the importance of technology transfer and capacity-building support from developed countries to enhance its ability to address climate change.
- Given our economic structure and dependency on fossil fuels, Iraq might advocate for flexibility in implementing climate commitments, emphasizing the principle of common but differentiated responsibilities.
- Iraq could also highlight the importance of regional cooperation in addressing climate change, given the interconnected nature of climate-related challenges in the Middle East.

49. COP28 AGENDA ITEM17/ HIGH-LEVEL SEGMENT

Background

(a) Statements by Parties

The first part of the high-level segment will take place from Friday, 1 December, to Saturday, 2 December, in the presence of Heads of State and Government, when national statements will be heard in the joint plenary of the governing bodies.

The high-level segment will resume on Saturday, 9 December, to hear statements from groups or Parties who's Head of State or Government did not speak in the first part.

In keeping with recent practice, there will be one list of speakers for the high-level segment. Each Party, including Parties to the Convention, the Kyoto Protocol and the Paris Agreement, will speak only once. Parties may wish to take note that as per SBI guidance urging Parties and presiding officers to conclude conferences in a timely manner, statements must not exceed three minutes. Statements on behalf of groups, where other members of the group do not speak, are strongly encouraged, and will be accorded additional time. Time limits will be strictly enforced. Following United Nations practice, a mechanism will be in place to signal to speakers when the time limit has been exceeded.

(b) Statements by observer organizations

Representatives of intergovernmental and non-governmental organizations will be invited to make statements during the resumed high-level segment after group and Party statements. The time limit of two minutes per statement will be strictly enforced.

Iraq's Probable Position

A just transition should be under the principle of CBDR, especially since Iraq is still relying on oil revenues. Iraq needs a steady pace of transitioning towards clean energy as well as ensuring energy security and economic diversification.

Iraq should find the balance regarding innovative climate financing between the public and private sector. As a developing country, Iraq is still looking to further develop its capacity to deal with the impacts of climate change.

50. COP28 AGENDA ITEM 18/MOUNTAINS AND CLIMATE CHANGE: HIGHLIGHTING THE NEED FOR THE PROTECTION OF VULNERABLE MOUNTAIN ECOSYSTEMS WHILE BUILDING THE RESILIENCE OF MOUNTAIN PEOPLES AND ECONOMIES TO REDUCE LOSS AND DAMAGE

Background:

On 23 March 2023, the secretariat received a request from Andorra to include this matter in the provisional agenda for COP 28. 64 In accordance with rule 10(d) of the draft rules of procedure being applied, this matter has been included in the provisional agenda for this session.

Action: The COP will be invited to consider this matter and to take any action it deems appropriate.

The Mountain Partnership, a global alliance of governments, civil society, and private sector organizations, launched a four-year strategy in 2016 to support the implementation of the 2030 Agenda in mountain regions. The strategy focused on advocacy, joint action, knowledge management and communication, and capacity development and technology transfer. The partnership organized regional meetings in 2019 to review the achievements and challenges of its members in implementing the 2030 Agenda. The IMD theme for 2020 was 'Mountain Biodiversity', which aimed to raise awareness of the importance of conserving and enhancing the diversity of life in mountains. The Mountain Partnership launched a new four-year strategy for 2021-2024, which aimed to increase global recognition of mountains as vital systems for life, enhance regional cooperation for sustainable mountain development, and strengthen the capacities of mountain stakeholders for resilience and adaptation.

- Mountains are vital systems for life, as they provide essential ecosystem services, host rich biodiversity, and support the livelihoods of millions of people.
- However, mountains are also among the most vulnerable regions to climate change and natural disasters, as they face multiple threats such as rising temperatures, melting glaciers, landslides, floods, droughts, and erosion.
- Climate change and natural disasters can have severe impacts on mountain ecosystems and their downstream areas, affecting water availability, food security, energy production, biodiversity conservation, and human health.

- To address these challenges, there is a need for the protection of vulnerable mountain ecosystems while building the resilience of mountain peoples and economies to reduce loss and damage.
- This requires integrating mountain issues into the 2030 Agenda for Sustainable Development, especially the SDGs related to poverty, environmental sustainability, water, energy, climate change and natural disasters.
- It also requires enhancing regional cooperation, strengthening capacities, promoting best practices, fostering partnerships, mobilizing resources, and generating political commitment for sustainable mountain development.
- The Mountain Partnership is a global alliance of governments, civil society, and private sector organizations dedicated to advancing sustainable mountain development. It has launched two four-year strategies (2016-2019 and 2021-2024) to support the implementation of the 2030 Agenda in mountain regions.
- The International Mountain Day (IMD), celebrated every year on December 11, is an occasion to raise awareness and action on sustainable mountain development at all levels. It has had different themes over the years, such as “Mountains under Pressure: climate, hunger, migration” in 2017 and “Mountain Biodiversity” in 2020.
- The United Nations has declared 2022 as the International Year of Sustainable Mountain Development (IYMSD), which aims to promote awareness and action on sustainable mountain development at all levels. It will also showcase best practices, foster partnerships, mobilize resources, and generate political commitment for mountains.

The COP 28 of the UNFCCC will take place in Iraq from November 30 to December 12 in 2023. One of the agenda items for COP 28 is “Mountains and climate change: highlighting the need for the protection of vulnerable mountain ecosystems while building the resilience of mountain peoples and economies to reduce loss and damage”. This item will seek to raise awareness of the impacts of climate change on mountains and their downstream areas; recognize mountains as early warning indicators of climate change; consider approaches to address loss and damage associated with climate change impacts in mountains; strengthen the sustainable use of natural resources and ecosystem management in mountain areas; enhance data availability and accessibility related to climate change and natural disasters in mountain regions; create and improve adequate policies and frameworks for sustainable development in mountain countries; support the development of sustainable solutions and practices in water, food security, renewable energy and energy efficiency in mountain areas; support the establishment of mountain-related targets and indicators for SDGs related to poverty, environmental sustainability.

Iraq Position

Raising awareness of the impacts of climate change on mountains and their downstream areas: Iraq supports this clause, as it recognizes the importance of mountains as vital systems for life, providing essential ecosystem services, hosting rich biodiversity, and supporting the livelihoods of millions of people. Iraq is one of the country's most vulnerable to climate change, facing multiple threats such as heat waves, sand and dust storms, flash floods, droughts, land degradation, inundation due to sea level rise and water scarcity. Iraq also has several mountain ecosystems, such as the Zagros Mountains, the Sinjar Mountains, and the Hamrin Mountains, which are home to diverse flora and fauna, as well as cultural and historical significance. Iraq believes that raising awareness of the impacts of climate change on mountains and their downstream areas is essential for mobilizing action and resources for adaptation and mitigation measures.

Recognizing mountains as early warning indicators of climate change: Iraq supports this clause, as it acknowledges the scientific evidence that mountains are experiencing faster warming than the global average and are already facing severe impacts of climate change on their ecosystems and livelihoods. Iraq also understands that mountains can provide valuable information on the state of the climate and the environment, such as changes in snow cover, glacier retreat, water availability, biodiversity loss, and natural disasters. Iraq believes that recognizing mountains as early warning indicators of climate change can help inform decision-making and policy-making at all levels.

Considering approaches to address loss and damage associated with climate change impacts in mountains: Iraq supports this clause, as it reflects the need for climate justice and solidarity for developing countries that suffer from the impacts of climate change, such as extreme weather events, sea level rise, and biodiversity loss. Iraq also appreciates that mountains are among the most vulnerable regions to loss and damage due to climate change and natural disasters, as they face multiple risks such as rising temperatures, melting glaciers, landslides, floods, droughts, and erosion. Iraq believes that considering approaches to address loss and damage associated with climate change impacts in mountains can help enhance resilience and reduce vulnerability of mountain communities and ecosystems.

Strengthening the sustainable use of natural resources and ecosystem management in mountain areas: Iraq supports this clause, as it promotes the conservation and restoration of mountain ecosystems, which provide essential services such as water regulation, soil protection, carbon sequestration, and biodiversity maintenance. Iraq also recognizes that mountains are rich in natural resources such as minerals, forests, hydropower, tourism potential, and cultural heritage. Iraq believes that strengthening the sustainable use of natural resources and ecosystem management in mountain areas can help balance development needs with environmental protection.

Enhancing data availability and accessibility related to climate change and natural disasters in mountain regions: Iraq supports this clause, as it emphasizes the importance of data collection, analysis, sharing, and dissemination for improving knowledge and understanding of climate change and natural disasters in mountain regions. Iraq also realizes that mountains pose specific challenges for data collection due to their remoteness, complexity

51. COP28 AGENDA ITEM 19/ OPERATIONALIZATION OF THE PRINCIPLES OF EQUITY AND COMMON BUT DIFFERENTIATED RESPONSIBILITIES AND RESPECTIVE CAPABILITIES, IN ACCORDANCE WITH ARTICLE 2.2 OF THE PARIS AGREEMENT

Background

Equity and common but differentiated responsibilities and respective capabilities (CBDR-RC) are and will always remain a central element to governing climate action. The entire implementation of the Paris Agreement will be considered in the context of equity and CBDR-RC.

The Principles of the United Nations Framework Convention on Climate Change (UNFCCC) are established in its article 3, and in particular article 3.1 states that: "The Parties should protect the climate system for the benefit of present and future generations, on the basis of equity and in accordance with their common but differentiated responsibilities and their respective capabilities. Consequently, developed country Parties should take the lead in combating climate change and its adverse effects."

Article 2.2 of the Paris Agreement states: "This Agreement shall be applied in a manner that reflects equity and the principle of common but differentiated responsibilities and respective capabilities, in light of different national circumstances."

Actions

The COP will be invited to consider this matter and to take any action it deems

Iraq's Probable Position

Iraq should align with the request of the State of Bolivia, affirming on the operationalization of the principles of Equity and Common but Differentiated Responsibilities and Respective Capabilities, since Iraq is a developing country. Iraq should join the State of Bolivia as a fellow developing-country.