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Dear Delegates,

Welcome to the 2018 National Model United Nations Galápagos Conference (NMUN•Galápagos)! We are pleased to introduce you to our committee, the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). This year's staff are: Director María del Carmen Iturralde and Assistant Director Francisco Avilés. María del Carmen obtained a BA in international relations from the Universidad San Francisco de Quito in 2017, and she is currently working as an intern at the International Organization for Migration. Francisco holds a degree in international relations from the Universidad San Francisco de Quito and an MA in international relations with a minor in security and human rights from FLACSO (Ecuador). He is currently working for a university in Quito.

The topics under discussion for the Conference of the Parties to the UNFCCC are:

1. Development and Transfer of Technologies to Support the Implementation of the Paris Agreement
2. Adapting to Sea Level Rise in Low-lying Areas and Small Islands

Adopted in 1992, the UNFCCC is at the forefront of international efforts to combat climate change, which constitutes a significant threat to peace, prosperity, and sustainable development. The COP serves as the UNFCCC's governing body.

This Background Guide serves as an introduction to the topics for this committee. However, it is not intended to replace individual research. We encourage you to explore your Member State's policies in depth and to use the Annotated Bibliography and Bibliography to further your knowledge on these topics. In preparation for the Conference, each delegation will submit a [Position Paper](#) by 11:59 p.m. (Eastern) on 1 December 2017 in accordance with the guidelines in the [NMUN Position Paper Guide](#).

On the [NMUN website](#), you will find two resources that are essential to your preparation for the Conference and as a reference during committee sessions.

1. [NMUN Delegate Preparation Guide](#): This document explains each step in the delegate process, from pre-Conference research to the committee debate and resolution drafting processes. Please take note of the information on plagiarism and the prohibition on prewritten working papers and resolutions. Delegates should not start discussion on the topics with other members of their committee until the first committee session.
2. [NMUN Rules of Procedure](#): This document includes the long and short form of the rules, as well as an explanatory narrative and example script of the flow of procedure in committee.

In addition, please review the mandatory [NMUN Conduct Expectations](#) on the NMUN website. They include the Conference dress code and other expectations of all attendees. We want to emphasize that any instances of sexual harassment or discrimination based on race, gender, sexual orientation, national origin, religion, age, or disability will not be tolerated.

If you have any questions concerning your preparation for the committee or the Conference itself, please contact info@nmun.org.

We wish you all the best in your preparations and look forward to seeing you at the Conference!

María del Carmen Iturralde, Director
Francisco Avilés, Assistant Director

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Committee Overview

Introduction

In December 1990, as part of a longer process in the international debate on the impact of human activities on the Earth's environment and climate, the United Nations (UN) General Assembly established an Intergovernmental Negotiating Committee to begin work on a treaty on climate change.¹ The resultant *United Nations Framework Convention on Climate Change* (UNFCCC) was opened for signature in 1992 at the UN Conference on Environment and Development in Rio de Janeiro, and it entered into force in 1994 after having received the required 50 ratifications.² As of August 2017, 197 parties have ratified the UNFCCC: all UN Member States, the State of Palestine, Niue, the Cook Islands, and the European Union.³ All parties to the UNFCCC are represented at the Conference of the Parties (COP), which meets annually and serves as “the supreme decision-making body of the Convention.”⁴

The **United Nations Framework Convention on Climate Change** (UNFCCC) is a treaty that provides a framework for international efforts to combat climate change. All 197 parties to the UNFCCC are represented at the Conference of the Parties (COP), which is the UNFCCC's decision-making body.

The ultimate objective of the UNFCCC is the “stabilization of greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous anthropogenic interference with the climate system.”⁵ This is to happen within a timeframe “sufficient to 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.”⁶ The UNFCCC was “remarkable for its time” in acknowledging a connection between climate change and human activities, as scientific evidence of climate change and its effects was still limited.⁷ Parties to the UNFCCC agreed that “lack of full scientific certainty should not be used as a reason” to postpone “precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects.”⁸

The UNFCCC recognizes that the responsibilities of parties would vary depending on their respective capacities, development priorities, and historical contribution to greenhouse gas concentrations in the atmosphere.⁹ This important principle is described in article 4 of the UNFCCC as “common but differentiated responsibilities,” and it informs the UNFCCC and all related agreements.¹⁰ As developed countries have more resources to commit and are the largest producers of greenhouse gas emissions, they “are expected to do the most to cut emissions on home ground” and to provide assistance to developing countries.¹¹ In contrast, as developing countries must prioritize socioeconomic development and poverty eradication, their ability to implement their UNFCCC commitments depends on the assistance they receive from developed countries.¹² Accordingly, Annex I of the UNFCCC lists developed countries, all of which are members of the Organisation for Economic Co-operation and Development (OECD), in addition to 12 countries with “economies in transition,” and assigns them additional responsibilities to “demonstrate that [they] are taking the lead in modifying longer-term trends in anthropogenic emissions.”¹³ Annex II of the UNFCCC lists certain Annex I countries that are further expected to support developing countries in the implementation of UNFCCC provisions, including by providing financial resources and promoting access to and transfer of technology.¹⁴

¹ UN General Assembly, *Protection of global climate for present and future generations of mankind (A/RES/45/212)*, 1990.

² UNFCCC, *Timeline*.

³ UNFCCC, *Status of Ratification of the Convention*.

⁴ UNFCCC, *Bodies*.

⁵ *United Nations Framework Convention on Climate Change*, 1992, art. 2.

⁶ *Ibid.*

⁷ UNFCCC, *First steps to a safer future: Introducing the United Nations Framework Convention on Climate Change*.

⁸ *United Nations Framework Convention on Climate Change*, 1992, art. 3.

⁹ UNFCCC, *First steps to a safer future: Introducing the United Nations Framework Convention on Climate Change*.

¹⁰ *United Nations Framework Convention on Climate Change*, 1992, art. 4.

¹¹ UNFCCC, *First steps to a safer future: Introducing the United Nations Framework Convention on Climate Change*.

¹² *United Nations Framework Convention on Climate Change*, 1992, art. 4.

¹³ *Ibid.*; UNFCCC, *First steps to a safer future: Introducing the United Nations Framework Convention on Climate Change*.

¹⁴ *United Nations Framework Convention on Climate Change*, 1992, art. 4.

On its own, the UNFCCC is non-binding.¹⁵ In 1995, during its first session, the COP agreed that the UNFCCC was therefore “inadequate” and commenced a negotiation process on “additional commitments.”¹⁶ These efforts resulted in the *Kyoto Protocol*, which was adopted by the COP in 1997 as an adjunct, binding agreement; it entered into force in 2005 and currently has 192 parties.¹⁷ In accordance with the principle of “common but differentiated responsibilities,” the *Kyoto Protocol* sets specific and measurable reduction targets for the emissions of 37 industrialized countries, as well as the European Union, to be achieved over the initial five-year commitment period of 2008 to 2012.¹⁸ In 2012, the parties to the *Kyoto Protocol* adopted the *Doha Amendment*, which specified further targets for certain countries over a second commitment period of 2013 to 2020.¹⁹ The *Doha Amendment* has yet to enter into force, having received only 80 of the required 144 ratifications.²⁰

In 2015, the 21st session of the COP adopted the *Paris Agreement*, which seeks “to strengthen the global response to the threat of climate change,” including by preventing global temperature rise from exceeding 2 degrees Celsius above pre-industrial levels.²¹ Opened for signature in April 2016, the *Paris Agreement* entered into force in November 2016 and has been ratified by 160 parties.²² All parties to the *Paris Agreement* are required to “prepare, communicate and maintain successive nationally determined contributions” to the overall goal and to implement domestic measures to achieve them.²³ The *Paris Agreement* also includes provisions on enhancing adaptation measures, promoting technology development and transfer, and raising public awareness of climate change.²⁴

Governance, Structure, and Membership

The UNFCCC created numerous bodies to oversee and facilitate its implementation.²⁵ Established by article 7, the COP is the governing body of the UNFCCC and includes all 197 parties; it meets once per year.²⁶ The COP also serves as the meeting of the Parties to the *Kyoto Protocol* and the meeting of the Parties to the *Paris Agreement*.²⁷ The 192 parties to the *Kyoto Protocol* are represented at the Conference of the Parties serving as the meeting of the Parties to the *Kyoto Protocol* (CMP), and the 160 parties to the *Paris Agreement* are represented at the Conference of the Parties serving as the meeting of the Parties to the *Paris Agreement* (CMA); non-parties have observer status.²⁸ The CMP and the CMA oversee implementation of the *Kyoto Protocol* and the *Paris Agreement*, respectively.²⁹ The Bureau of the COP, CMP, and CMA is comprised of 11 members elected to ensure equal representation among regional groups, including small island developing states; it is responsible for organizational duties and process management.³⁰

Other entities in the UNFCCC system support the work of the COP, the CMP, and the CMA.³¹ Article 8 of the UNFCCC establishes the Secretariat, which provides organizational and technical assistance to all UNFCCC bodies, including by compiling and transmitting reports, coordinating with secretariats of other international bodies, and facilitating the communication of information.³² Based in Bonn, Germany, the Secretariat is currently headed by Executive Secretary Patricia Espinosa Cantellano, who took office in July 2016.³³ Article 9 establishes the

¹⁵ UNFCCC, *Making those first steps count: An Introduction to the Kyoto Protocol*.

¹⁶ New Zealand, *United Nations Handbook 2016-2017*, 2016, p. 312.

¹⁷ UNFCCC, *Making those first steps count: An Introduction to the Kyoto Protocol*; UNFCCC, *Status of Ratification of the Kyoto Protocol*.

¹⁸ Conference of the Parties to the UNFCCC, *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, 1997.

¹⁹ UNFCCC, *Making those first steps count: An Introduction to the Kyoto Protocol*.

²⁰ UNFCCC, *Status of the Doha Amendment*, 2017.

²¹ Conference of the Parties to the UNFCCC, *Paris Agreement*, 2015, art. 2.

²² UNFCCC, *The Paris Agreement*.

²³ Conference of the Parties to the UNFCCC, *Paris Agreement*, 2015, art. 4.

²⁴ *Ibid.*

²⁵ *United Nations Framework Convention on Climate Change*, 1992.

²⁶ *Ibid.*, art. 7.

²⁷ UNFCCC, *Bodies*.

²⁸ *Ibid.*

²⁹ *Ibid.*

³⁰ UNFCCC, *Bureau of the COP, CMP, and CMA*.

³¹ UNFCCC, *Bodies*.

³² *United Nations Framework Convention on Climate Change*, 1992, art. 7; UNFCCC, *The Secretariat*.

³³ UNFCCC, *Executive Secretary*; UNFCCC, *Administrative and Financial Matters*.

Subsidiary Body for Scientific and Technological Advice (SBSTA), and article 10 establishes the Subsidiary Body for Implementation (SBI).³⁴

Pursuant to its mandate, the COP itself has created numerous subsidiary bodies. Among them are the Technology Executive Committee and the Climate Technology Centre and Network, which facilitate the implementation of the Technology Mechanism; the Adaptation Committee, which promotes “enhanced action on adaptation,” and the Standing Committee on Finance, which assists with the management of the financial mechanism and resources of the UNFCCC.³⁵

The UNFCCC budget is proposed by the Executive Secretary every two years and submitted to the SBI, which considers the proposal and forwards a recommended budget to the COP for approval and adoption by consensus.³⁶ Sources of financing for UNFCCC activities include both mandatory and voluntary contributions from parties to the UNFCCC, as well as “appropriations from previous financial periods and miscellaneous income.”³⁷ To provide support to developing countries, article 11 of the UNFCCC defines a “mechanism for the provision of financial resources on a grant or concessional basis, including for the transfer of technology,” to be entrusted by the COP to one or more entities.³⁸ The Global Environment Facility (GEF) has served as an operating entity of the Financial Mechanism since 1994, and the Green Climate Fund, which was created by the COP in 2010, also became an operating entity of the Financial Mechanism in 2011.³⁹

Mandate, Functions, and Powers

As set out in article 7 of the UNFCCC, the primary purpose of the COP is to review the implementation of the UNFCCC, including any related instruments, and to make “the decisions necessary to promote the effective implementation of the Convention.”⁴⁰ Its functions include examining the obligations of parties to the UNFCCC and assessing their progress towards implementation; facilitating the exchange of information; considering, adopting, and ensuring the publication of regular reports on implementation; and making “recommendations on any matters necessary for the implementation of the Convention.”⁴¹ The COP may establish subsidiary bodies as necessary, and it is also empowered to work with international organizations, intergovernmental organizations, and non-governmental organizations.⁴²

As the UNFCCC originated within the UN system, an institutional link remains between the Secretariat of the UNFCCC and the UN that is defined in decisions of the COP and in resolutions of the UN General Assembly.⁴³ The Secretariat, which is “administered under UN rules and regulations,” has the ability to “call on the Department of Economic and Social Affairs, the Office of Legal Affairs and other departments, programmes and agencies on substantive matters.”⁴⁴ The Secretary-General of the UN appoints the Executive Secretary of the UNFCCC, in consultation with the Bureau, and also serves as depositary for the UNFCCC and related instruments.⁴⁵

The UNFCCC relies on the work of the Intergovernmental Panel on Climate Change (IPCC), an intergovernmental body that was established in 1988 by the World Meteorological Organization and the UN Environment Programme.⁴⁶ The IPCC is an expert body that “reviews and assesses [...] the most recent scientific, technical and socioeconomic information produced worldwide.”⁴⁷ Key findings are regularly reported in major Assessment

³⁴ *United Nations Framework Convention on Climate Change*, 1992, arts. 9-10.

³⁵ UNFCCC, *Bodies*.

³⁶ UNFCCC, *Administrative and Financial Matters*.

³⁷ *Ibid.*

³⁸ *United Nations Framework Convention on Climate Change*, 1992, art. 11.

³⁹ UNFCCC, *Climate Finance*.

⁴⁰ *United Nations Framework Convention on Climate Change*, 1992, art. 7.

⁴¹ *Ibid.*

⁴² *Ibid.*

⁴³ UNFCCC, *Administrative and Financial Matters*;

⁴⁴ *Ibid.*; UNFCCC, *United Nations institutional linkage*.

⁴⁵ *Ibid.*

⁴⁶ IPCC, *History*.

⁴⁷ UNFCCC, *Intergovernmental Panel on Climate Change (IPCC)*.

Reports; the fifth and most recent edition was published in 2014, and the sixth edition will be published in 2022.⁴⁸ IPCC reports provide the COP with reliable data on which to base its decisions, and “the relationship between the UNFCCC and the IPCC [has become] a model for interaction between science and decision-makers.”⁴⁹

Recognizing the value of partnerships to the implementation of the UNFCCC, the Secretariat actively seeks opportunities to collaborate with diverse stakeholders, such as civil society organizations, private sector entities, and subnational authorities.⁵⁰ Examples of existing opportunities for partnerships with non-party stakeholders include Momentum for Change, a platform that recognizes successful climate action to raise awareness of ongoing initiatives, and Climate Neutral Now, which promotes climate action at the individual level.⁵¹ The UNFCCC also maintains Regional Collaboration Centres that “support national climate action through capacity-building, technical assistance and strategic networking.”⁵²

Recent Sessions and Current Priorities

The 22nd session of the COP was held from 15 to 18 November 2016 in Marrakech, Morocco.⁵³ Important outcomes included an “extended work program” on gender and climate policy that includes civil society and the private sector; a new framework under the Warsaw International Mechanism on Loss and Damage Associated with Climate Change Impacts that focuses on “impacts of climate change that are not addressed through planned adaptation,” such as displacement and migration; and further work on a platform for local communities and indigenous peoples to facilitate sharing of information and best practices.⁵⁴

The 46th sessions of the SBI and the SBSTA, as well as the third meeting of the first session of the Ad Hoc Working Group on the *Paris Agreement* (APA), took place from 8-18 May 2017 in Bonn, Germany. Topics addressed by the SBI and SBSTA included the impact of implementation of response measures, which refers to “social or economic effects that may result from climate activities taken by other countries.”⁵⁵ The APA continued work on a “rule book” to guide implementation of the *Paris Agreement*, which is scheduled for completion in 2018.⁵⁶

The 23rd session of the COP will take place from 6 to 17 November 2017 in Bonn, Germany.⁵⁷ Items on the provisional agenda include annual reports of subsidiary bodies, further preparations for the implementation of the *Paris Agreement*, conclusion of the sixth review of the Financial Mechanism, consideration of proposals to amend the text of the UNFCCC, and approval of the program budget for the biennium 2018-2019.⁵⁸

Conclusion

In 2015, the UN General Assembly adopted the *2030 Agenda for Sustainable Development* and the 17 Sustainable Development Goals (SDGs).⁵⁹ The 2030 Agenda acknowledged climate change as “one of the greatest challenges of our time,” and the threat it poses to sustainable development was highlighted by the inclusion of SDG 13: “take urgent action to combat climate change and its impacts.”⁶⁰ Despite ongoing efforts from the international community, global warming “continued in 2016, setting a new record of about 1.1 degrees Centigrade above the preindustrial period.”⁶¹ As climate change continues to threaten “the survival of many societies” and “the biological support systems of the planet,” the COP to the UNFCCC will continue to lead international climate action.⁶²

⁴⁸ IPCC, *History*.

⁴⁹ IPCC, *Understanding Climate Change: 22 years of IPCC assessment*, 2010, p. 5.

⁵⁰ Secretariat of the UNFCCC, *UNFCCC Secretariat Guidelines for Partnership*, 2017.

⁵¹ UNFCCC, *Partnerships with the United Nations Climate Change Secretariat*.

⁵² UNFCCC, *Call for Partnerships: The provision of support through UNFCCC’s Regional Collaboration Centres*, 2017.

⁵³ UN General Assembly, *Implementation of United Nations environmental conventions (A/72/152)*, 2017.

⁵⁴ *Ibid.*, pp. 2-3.

⁵⁵ *UN Climate Negotiators Work to Advance Paris Rulebook*, International Centre for Trade and Sustainable Development, 2017.

⁵⁶ *Ibid.*

⁵⁷ UNFCCC, *Meetings*, 2017.

⁵⁸ Conference of the Parties to the UNFCCC, *Provisional agenda and annotations (FCCC/CP/2017/1)*, 2017.

⁵⁹ UN General Assembly, *Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1)*, 2015, p. 5.

⁶⁰ *Ibid.*

⁶¹ UN ECOSOC, *Progress towards the Sustainable Development Goals: Report of the Secretary-General (E/2017/66)*, 2017, p.

14.

⁶² UN General Assembly, *Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1)*, 2015, p. 5.

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http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

Delegates should familiarize themselves with the Paris Agreement, which was adopted by the COP at its 21st session in December 2015. The landmark agreement has generated unprecedented global momentum on climate action and its implementation constitutes a priority for both the UNFCCC and the international community. The APA is continuing work on completing the rule book for the operationalization of the Paris Agreement.

United Nations Framework Convention on Climate Change. (n.d.). *Bodies* [Website]. Retrieved 31 August 2017 from: <http://unfccc.int/bodies/items/6241.php>

The UNFCCC system comprises a complex network of bodies. This website provides an overview of the functions of main UNFCCC bodies, which will help delegates understand the relationship between the COP and the rest of the UNFCCC system. Of particular importance are the Secretariat, the SBSTA, and the SBI.

United Nations Framework Convention on Climate Change. (n.d.). *Timeline* [Website]. Retrieved 31 August 2017 from: <http://unfccc.int/timeline/>

Through an interactive timeline, this website provides an overview of all significant developments in the history of the UNFCCC. Delegates should review the evolution of the UNFCCC and the genesis of the Kyoto Protocol and Paris Agreement as binding commitments from the international community to combat climate change by reducing emissions. This website also provides infographics as helpful illustrations of important concepts and process related to the UNFCCC.

United Nations Framework Convention on Climate Change. (1992). Retrieved 31 August 2017 from: http://unfccc.int/files/essential_background/convention/background/application/pdf/convention_text_with_annexes_english_for_posting.pdf

The UNFCCC was adopted on May 9, 1992, and entered into force on March 21, 1994. Currently, there are 197 parties to the UNFCCC, including the European Union. It aims to stabilize the concentration of greenhouse gases in the atmosphere at a level that prevents human activity from negatively interfering with the Earth's climate. This document serves as the foundation of international climate policy and should be at the core of further research. It is essential for delegates to be familiar with the structure and content of the UNFCCC. Article 7 establishes the COP and describes the functions that it may exercise in support of implementing the UNFCCC.

United Nations Framework Convention on Climate Change. (2017). *Meetings* [Website]. Retrieved 31 August 2017 from: <http://unfccc.int/meetings/items/6240.php>

This website collects all documents related to meetings of the COP and other UNFCCC bodies, including agendas, decisions, press releases, and outcomes. It lists all previous meetings and provides links to relevant archives. Delegates should review the documents associated with the upcoming 23rd session of the COP.

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I. Development and Transfer of Technologies to Support the Implementation of the Paris Agreement

Introduction

The *Paris Agreement* (2015) is an international strategy for dealing with climate change mitigation, adaptation, and finance.⁶³ It was negotiated by representatives of 196 parties during the 21st session of the Conference of the Parties (COP) to the *United Nations Framework Convention on Climate Change* (UNFCCC) in Paris and adopted in December 2015.⁶⁴ It was adopted by consensus, which means that all parties involved in the negotiation process have agreed to work together to reduce the effects of climate change.⁶⁵ As of August 2017, 160 parties have ratified the *Paris Agreement*, which sets out guidelines in different areas to strengthen state capacity and reduce climate change effects.⁶⁶ Among these areas are development and transfer of technology, which are essential to international efforts to reduce greenhouse gas emissions.⁶⁷ Taking into consideration that developing countries have fewer resources and therefore more difficulties in fulfilling international commitments, technology transfer policies are important for helping these countries increase their local capacities and capabilities regarding climate change.⁶⁸ It is important for developing countries to work with states that have the technological means to create frameworks for cooperation and exchange.⁶⁹ Effective development and transfer of technology to reduce and mitigate greenhouse gas emissions will contribute to the success of the *Paris Agreement* through international cooperation for a common interest: combating climate change.⁷⁰

This Background Guide will give an overview of the role of technology development and transfer in the implementation of the *Paris Agreement*. It is important to consider the role of leading actors in the international system, as well as the key policies and frameworks for expanding new technologies and promoting climate change innovation and research. It is also important to consider processes for cooperation and exchange in relation to technology, as well as how different climate change policies and decisions are implemented.

International and Regional Framework

The UNFCCC was adopted in 1992 and opened for signature at the United Nations (UN) Conference on Environment and Development; it currently has 197 parties.⁷¹ The UNFCCC aims to mitigate anthropogenic impacts on the climate system by limiting greenhouse gas emissions.⁷² One of the central principles of the UNFCCC is that of “common but differentiated responsibilities,” which recognizes that while all parties are responsible for combating climate change, the manner in which they do so varies based on circumstances including their capacity and “national and regional development priorities.”⁷³ Developed and industrialized countries are held to a higher standard, as they have higher capacity and “are the source of most past and current greenhouse gas emissions.”⁷⁴ They are listed in Annex I of the UNFCCC and have more obligations than other parties, such as reporting on the measures they are taking to combat climate change and giving details on their greenhouse gas emissions.⁷⁵ Certain developed countries are also listed in Annex II of the UNFCCC; they are expected to provide financial resources and facilitate technology transfer to assist developing countries in combating climate change.⁷⁶ The UNFCCC thus

⁶³ Conference of the Parties to the UNFCCC, *Paris Agreement*, 2015.

⁶⁴ UNFCCC, *Historic Paris Agreement on Climate Change: 195 Nations Set Path to Keep Temperature Rise Well Below 2 Degrees Celsius*, 2015.

⁶⁵ Ibid.

⁶⁶ UNFCCC, *The Paris Agreement*; Conference of the Parties to the UNFCCC, *Paris Agreement*, 2015.

⁶⁷ Ibid.

⁶⁸ *United Nations Framework Convention on Climate Change*, 1992.

⁶⁹ Ibid.

⁷⁰ UNFCCC, *Historic Paris Agreement on Climate Change: 195 Nations Set Path to Keep Temperature Rise Well Below 2 Degrees Celsius*, 2015.

⁷¹ UNFCCC, *First steps to a safer future: Introducing the United Nations Framework Convention on Climate Change*.

⁷² Ibid.

⁷³ *United Nations Framework Convention on Climate Change*, 1992, art. 4.

⁷⁴ UNFCCC, *First steps to a safer future: Introducing the United Nations Framework Convention on Climate Change*.

⁷⁵ *United Nations Framework Convention on Climate Change*, 1992.

⁷⁶ Ibid.

encourages strong cooperation between parties to assist developing countries with meeting their obligations.⁷⁷ The COP, which meets each year, is the decision-making body of the UNFCCC.⁷⁸

The UNFCCC itself is not binding. Soon after the UNFCCC entered into force in 1994, the COP began discussing ways to strengthen efforts against climate change through binding agreements.⁷⁹ This led to the adoption of the *Kyoto Protocol* in 1997, which set out binding emissions reduction targets for developed countries, and subsequently to the adoption of the *Paris Agreement* in 2015.⁸⁰ Unlike the UNFCCC and the *Kyoto Protocol*, which both distinguish between Annex I and non-Annex I countries, the *Paris Agreement* requires all parties to submit emissions reduction plans.⁸¹ However, there is still “flexibility for countries’ differing capabilities,” thereby continuing the principle of “common but differentiated responsibilities” that was set out in the UNFCCC.⁸² As the world’s first comprehensive climate agreement, the *Paris Agreement* centers on voluntary and nationally determined targets that states develop through consensus-building and based on their individual capabilities, needs, and shortcomings.⁸³ The voluntary nature of the accord reflects the common interest of states in setting commitments and targets for protecting the environment.⁸⁴ Currently, there are 160 parties to the *Paris Agreement*, which entered into force in November 2016.⁸⁵

A key aspect of the *Paris Agreement* is the aim to increase international cooperation and exchange with regard to climate change technology.⁸⁶ The role of technology in the fight against climate change is the focus of article 10, which highlights “the importance of fully realizing technology development and transfer in order to improve resilience to climate change and to reduce greenhouse gas emissions.”⁸⁷ The article further cites the “importance of technology for the implementation of mitigation and adaptation actions” and calls on the parties to “strengthen cooperative action on technology development and transfer.”⁸⁸ Demonstrating the importance of this topic, article 10 establishes a technology framework to promote existing efforts under the UNFCCC framework on technology development and transfer.⁸⁹ In addition, it asserts that encouraging and accelerating innovation is crucial to the global response to climate change.⁹⁰ Finally, article 10 mentions the importance of providing financial support to developing countries to assist them with implementation.⁹¹ Specifically, it states that developing country parties will be provided with financial support to implement article 10, “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.”⁹²

Climate change poses a serious threat to sustainable development, and the international community has recognized this by including climate change in the *2030 Agenda for Sustainable Development* and the Sustainable Development Goals (SDGs).⁹³ SDG 13 focuses specifically on climate change: “Take urgent action to combat climate change and its impacts.”⁹⁴ Additionally, climate change has serious repercussions for all of the SDGs.⁹⁵ The 2017 report of the Secretary-General on the progress towards the SDGs asserts that “mitigating climate change and its impacts will require building on the momentum achieved by the Paris Agreement on Climate Change. ... Stronger efforts are

⁷⁷ Ibid.

⁷⁸ UNFCCC, *Bodies*.

⁷⁹ UNFCCC, *Making those first steps count: An Introduction to the Kyoto Protocol*.

⁸⁰ Ibid.; UNFCCC, *The Paris Agreement*.

⁸¹ UNFCCC, *Making those first steps count: An Introduction to the Kyoto Protocol*; Conference of the Parties to the UNFCCC, *Paris Agreement*, 2015.

⁸² UNFCCC, *Historic Paris Agreement on Climate Change: 195 Nations Set Path to Keep Temperature Rise Well Below 2 Degrees Celsius*, 2015.

⁸³ Ibid.

⁸⁴ Ibid.

⁸⁵ UNFCCC, *The Paris Agreement*.

⁸⁶ Conference of the Parties to the UNFCCC, *Paris Agreement*, 2015.

⁸⁷ Ibid., art. 10.

⁸⁸ Ibid.

⁸⁹ Ibid.

⁹⁰ Ibid.

⁹¹ Ibid.

⁹² Ibid.

⁹³ UN General Assembly, *Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1)*, 2015.

⁹⁴ Ibid.

⁹⁵ Ibid.

needed to build resilience and limit climate-related hazards and natural disasters.”⁹⁶ According to the report, many countries have been undertaking strategies for reducing disaster risk, both at the national and at the regional level.⁹⁷

Role of the International System

The COP is the governing body of the UNFCCC at which all parties are represented.⁹⁸ Meeting annually, the COP is responsible for reviewing the implementation of the UNFCCC, as well as of related instruments; it also serves as the meeting of the parties to the *Kyoto Protocol* (CMP) and as the meeting of the parties to the *Paris Agreement* (CMA).⁹⁹ The COP may make decisions as necessary to promote the effective implementation of the UNFCCC.¹⁰⁰ The COP is an important forum for promoting cooperation among states in relation to climate action, and technology development and transfer are regularly included on its agenda for discussion.¹⁰¹ In 2001, the COP established the technology transfer framework to enhance implementation of the technology transfer provisions of the UNFCCC.¹⁰² The technology transfer framework is based on five themes: technology needs and needs assessments, technology information, enabling environments, capacity-building, and technology transfer mechanisms.¹⁰³ The COP is supported by the Subsidiary Body for Scientific and Technological Advice (SBSTA), which provides “timely information and advice on scientific and technological matters as they relate to the Convention, its *Kyoto Protocol* and the *Paris Agreement*.”¹⁰⁴

In 2010, the COP created the Technology Mechanism, which consists of the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN).¹⁰⁵ As set out in article 10 of the *Paris Agreement*, the Technology Mechanism also works for the *Paris Agreement* and is supported by a technology framework.¹⁰⁶ The TEC, which reports to the COP and comprises 20 technology experts, is the policy arm of the Technology Mechanism; it provides analysis and policy recommendations “that support country efforts to enhance climate technology development and transfer.”¹⁰⁷ The current “rolling workplan” of the TEC is organized into three parts: providing analysis and policy recommendations; building support and promoting cooperation and partnerships for action on technology-related issues; and collaborating with the CTCN within the Technology Mechanism.¹⁰⁸ To implement the workplan, the TEC works in six thematic areas: adaptation; financing of climate technology; innovation, research, development, and demonstration; technology needs assessments; mitigation; and emerging and cross-cutting issues.¹⁰⁹ The CTCN is the implementation arm of the Technology Mechanism.¹¹⁰ Hosted by the UN Environment Programme (UNEP) and the UN Industrial Development Organization (UNIDO), the CTCN provides services in three main areas: providing technical assistance to developing countries; promoting access to and exchange of information on climate technology; and strengthening collaboration between stakeholders, whether governmental or non-governmental.¹¹¹

A key process under the UNFCCC is the technology needs assessment (TNA), which helps developing countries “assess their technology needs to address climate change.”¹¹² The main benefits of a TNA are that it allows developing countries to identify technology that will help them address climate change and promote development; to

⁹⁶ UN ECOSOC, *Progress towards the Sustainable Development Goals: Report of the Secretary-General (E/2017/66)*, 2017, p. 14.

⁹⁷ *Ibid.*

⁹⁸ UNFCCC, *Bodies*.

⁹⁹ *Ibid.*

¹⁰⁰ *United Nations Framework Convention on Climate Change*, 1992, art. 7.

¹⁰¹ UNFCCC, *Report of the Conference of the Parties on its twenty-second session, held in Marrakech from 7 to 18 November 2016 – Part one: Proceedings (FCCC/CP/2016/10)*, 2017.

¹⁰² UNFCCC SBSTA, *Mapping climate technology development and transfer activities and initiatives under and outside the Convention relevant to the implementation of the Paris Agreement (FCCC/SBSTA/2016/INF.9)*, 2016, p. 9.

¹⁰³ *Ibid.*

¹⁰⁴ UNFCCC, *Bodies*.

¹⁰⁵ UNFCCC, *Technology Mechanism*.

¹⁰⁶ Conference of the Parties to the UNFCCC, *Paris Agreement*, 2015, art. 10.

¹⁰⁷ UNFCCC, *Technology Mechanism*.

¹⁰⁸ UNFCCC, *Joint annual report of the TEC and the CTCN for 2016*, 2016, p. 5.

¹⁰⁹ *Ibid.*, p. 6.

¹¹⁰ UNFCCC, *Technology Mechanism*.

¹¹¹ *Ibid.*

¹¹² UNFCCC, *Technology Needs Assessment: Pathways for climate tech implementation – History*.

build capacity; and to create a technology action plan (TAP) to implement technology-related goals.¹¹³ A TNA has several steps that must be followed before a state can implement a TAP; it involves identifying priorities and analyzing barriers and obstacles with a view to capacity-building.¹¹⁴ Successful actions at a national level can then be scaled up to the international level, so that other states can replicate existing models in an efficient and cooperative way.¹¹⁵ In 2017, the UNFCCC collaborated with UNEP DTU Partnership to release *Stories from the Technology Needs Assessments*; this document compiles several examples and efforts of developing countries to combat climate change with technology-related strategies.¹¹⁶ The document is the result of research on the results and practices of different states in various regions of the world in conducting TNAs and implementing the resulting TAPs.¹¹⁷ It demonstrates the ways in which technology can contribute to climate change adaptation and mitigation; examples include field contouring, boiler economizers, biomass and other renewable energy technologies, and intelligent transport systems that result in reduced emissions.¹¹⁸

Outside of the UNFCCC, various entities within the UN system are also working on technology development and transfer. In 2016, the UN General Assembly adopted resolution 71/251, which establishes the Technology Bank for the Least Developed Countries.¹¹⁹ This institution, which will be financed through voluntary contributions, will assist developing countries with building capacity in technology-related areas, as well as facilitating technology transfer.¹²⁰ The Bank is expected to begin operations in 2017.¹²¹ Other UN agencies working on this topic include UNEP, UNIDO, the UN Educational, Scientific and Cultural Organization (UNESCO), and the UN Development Programme (UNDP).¹²² Relevant coordinating mechanisms include the UN Environment Management Group, which promotes coordination and cooperation among UN bodies that address issues related to environment and human settlements.¹²³

Non-state parties are important to technology development and transfer. For example, private-sector entities working on clean technology (commonly referred to as *cleantech*) may seek to expand operations and markets by collaborating with governments of developing states on development and transfer of technologies.¹²⁴ As the private sector is based on markets and for-profit opportunities, during the collaboration process between governments and companies, the development and transfer of technologies in many instances “is supported by trade, business, and industry ministries as well as various public- and private-sector bodies that promote domestic private enterprises abroad.”¹²⁵ Other non-state parties involved in technology-related activities include subnational authorities, actors from the academic sector, non-governmental organizations (NGOs), and leaders of philanthropic initiatives.¹²⁶

Technology Development

Technology is an increasingly powerful resource in today's world.¹²⁷ The speed with which it is able to spread around the world to both connect and meet the needs of different societies has transformed it into a tool that is not only useful, but necessary for sustainable development.¹²⁸ Regarding the problems of climate change that are the subject of the *Paris Agreement*, technology development is fundamental to the implementation of the agreement and

¹¹³ Ibid.

¹¹⁴ UNFCCC TEC & UNEP DTU Partnership, *Enhancing Implementation of Technology Needs Assessments: Guidance for Preparing a Technology Action Plan*, 2016.

¹¹⁵ Ibid.

¹¹⁶ UNEP DTU Partnership & UNFCCC, *From needs to implementation: Stories from the Technology Needs Assessments*, 2016.

¹¹⁷ Ibid.

¹¹⁸ Ibid.

¹¹⁹ UN General Assembly, *Establishment of the Technology Bank for the Least Developed Countries (A/RES/71/251)*, 2016.

¹²⁰ UN-OHRLLS, *Technology Bank for Least Developed Countries established by UN General Assembly*, 2016.

¹²¹ Ibid.

¹²² UNFCCC SBSTA, *Mapping climate technology development and transfer activities and initiatives under and outside the Convention relevant to the implementation of the Paris Agreement (FCCC/SBSTA/2016/INF.9)*, 2016.

¹²³ UN Environment Management Group, *About EMG*.

¹²⁴ UNFCCC SBSTA, *Mapping climate technology development and transfer activities and initiatives under and outside the Convention relevant to the implementation of the Paris Agreement (FCCC/SBSTA/2016/INF.9)*, 2016, p. 44.

¹²⁵ Ibid.

¹²⁶ Ibid., p. 46.

¹²⁷ World Bank, *Information & Communication Technologies*, 2017.

¹²⁸ UN General Assembly, *Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1)*, 2015; Dahlman, *Technology, globalization and international competitiveness: Challenges for developing countries*, 2007.

achievement of its objectives.¹²⁹ Successfully fighting climate change through such means as reducing greenhouse gas emissions, halting global warming, or limiting negative effects on the ozone layer becomes feasible through the application of new and better clean technologies.¹³⁰ Technology development to combat climate change is based on the policies, good practices, and resources that developed countries have been able to create and use to reduce their environmental impact.¹³¹ However, not all countries have full access to technology or the capacity to develop it; reasons can include economic factors, institutional weaknesses, or more urgent development priorities.¹³² Based on this, technology development has been characterized by improving state capabilities in relation to the production of mechanisms, systems, industries, and processes.¹³³ Technology development refers not only to the creation of machinery and systems that improve processes in industries or public and private services, but also to the production of software, networks, and capabilities based on advanced technology that is normally accessible to developed countries, but that developing countries do not have the capabilities or the resources to develop on their own.¹³⁴

To enhance technology development, it is important to promote mechanisms and bridges of collaboration between developed states and developing states, as well as with non-governmental actors, including private companies and NGOs.¹³⁵ Such mechanisms and bridges may be based on collaboration and cooperation in relation to elements including economic funds, financial loans, technology exchange, and providing goods and services, depending on the interests and needs of involved states.¹³⁶ In this way, the needs and interests of all stakeholders on various issues are addressed.¹³⁷ Large private companies may increase participation in multilateral collaboration if they are able to increase their profits or expand their brand products.¹³⁸

Financing remains a significant barrier for the development of climate technology, particularly in developing countries.¹³⁹ The TEC has observed that attracting financing for climate technology requires governmental policies that are “(i) long-lasting: sustained for a duration that reflects the financing time frame of a project; (ii) loud: establish policies and provide incentives that make a difference to the bottom line and improve the bankability of projects; (iii) legal: Provide a clear, legally established regulatory framework to build confidence that the regime is stable and can provide the basis for capital-intensive investments.”¹⁴⁰

Technology development has advanced furthest in the transportation, agriculture, energy, and waste management industries.¹⁴¹ These cross-cutting areas of technology development have developed with large economic investments and financial programs.¹⁴² In some cases, however, technology development has increased economic inequalities between different states.¹⁴³ For example, developing countries that are agricultural producers cannot always compete with developed countries that implement subsidies and lower tariffs, taxes, and costs on the products and technology used by their farmers to produce agricultural products.¹⁴⁴ In addition, inequalities are also evident in terms of climate change or combating environmental problems; for example, some developing countries are further disadvantaged by a high incidence of natural disasters.¹⁴⁵

¹²⁹ UNFCCC TEC, *Enhancing financing for the research, development and demonstration of climate technologies*, 2017.

¹³⁰ *Ibid.*

¹³¹ *Ibid.*

¹³² *Ibid.*

¹³³ Dahlman, *Technology, globalization and international competitiveness: Challenges for developing countries*, 2007.

¹³⁴ *Ibid.*

¹³⁵ UNFCCC TEC, *Enhancing financing for the research, development and demonstration of climate technologies*, 2017.

¹³⁶ *Ibid.*

¹³⁷ *Ibid.*

¹³⁸ *Ibid.*

¹³⁹ *Ibid.*

¹⁴⁰ UNFCCC, *Policies: TEC recommendations for climate tech action*.

¹⁴¹ UNFCCC SBSTA, *Mapping climate technology development and transfer activities and initiatives under and outside the Convention relevant to the implementation of the Paris Agreement (FCCC/SBSTA/2016/INF.9)*, 2016.

¹⁴² *Ibid.*

¹⁴³ *Ibid.*

¹⁴⁴ UNFCCC, *Climate Change: Impacts, vulnerabilities and adaptation in developing countries*, 2007.

¹⁴⁵ *Ibid.*

Technology Transfer

Technology transfer is important for ensuring that developing countries have the tools required to contribute to the battle against climate change.¹⁴⁶ Traditionally, technology transfer has referred to the exchange of machinery and equipment for manufacturing, agriculture, or industry, especially vis-à-vis developing countries; at present, it also refers to the networks of commerce, licensing, intellectual property rights, foreign direct investment, and interconnected computer systems for better access to information, among other things.¹⁴⁷ In addition to fulfilling the physical needs of more advanced machinery or more advanced information technology plans and projects, technology transfer can also contribute to areas such as institutional development, capacity-building, business assessments, information systems, and patenting for states to use as strategies to combat the effects of climate change and implement the *Paris Agreement*.¹⁴⁸ It is because of this breadth and variety of areas in which technology transfer applies that it becomes essential for states and other actors to improve their networks of collaboration and to apply policies of exchange and cooperative work for the well-being of the environment and people all over the planet.¹⁴⁹ Cooperation is particularly important in relation to lowering the costs of technology transfer.¹⁵⁰

International agencies, including the TEC, have developed policies and working plans that set out actions and possible collaborations between states depending on the priorities, interests, and barriers they have in relation to technology and its implementation to combat climate change.¹⁵¹ States and other actors therefore have guidelines, road maps, and suggested processes of implementation for technology transfer in different zones.¹⁵²

Considering that most transfer of technology occurs in the private sector, the channels for the transfer of technology can be market-based or informal.¹⁵³ Market-based channels include trade, foreign direct investment, and technology licenses and rights; informal channels are based on imitation and the mobility of technical and managerial personnel.¹⁵⁴ However, the participation of the public sector is also essential because of the government's role in adapting local frameworks and policies to ensure an environment conducive to technology transfer and market participation.¹⁵⁵ Considering that transfer of technology is neither automatic nor free of costs, legal and policy incentives are generally required to achieve the most effective rate and approach for transfer of technology in relation to national and international needs and objectives.¹⁵⁶ The TEC has recommended that the "Technology Mechanism and other international instruments used to promote technology transfer to developing countries should be clearly aligned with the enabling frameworks that facilitate private- and public-sector investment."¹⁵⁷

One key area to address with respect to technology transfer relates to intellectual property.¹⁵⁸ The TEC has identified intellectual property rights as "an area for which more clarity would be needed on their role in the development and transfer of climate technologies."¹⁵⁹ In fact, intellectual property rights are both an incentive and an obstacle to the transfer of technology.¹⁶⁰ They protect innovation and aim to protect against losing control of "information in technology-related transactions"; in this sense, intellectual property rights are designed to facilitate the transfer of

¹⁴⁶ International Centre for Trade and Sustainable Development, *Climate Change, Technology Transfer and Intellectual Property Rights*, 2008.

¹⁴⁷ *Ibid.*

¹⁴⁸ *Ibid.*

¹⁴⁹ *Ibid.*

¹⁵⁰ UNFCCC SBSTA, *Mapping climate technology development and transfer activities and initiatives under and outside the Convention relevant to the implementation of the Paris Agreement (FCCC/SBSTA/2016/INF.9)*, 2016.

¹⁵¹ *Ibid.*

¹⁵² *Ibid.*

¹⁵³ International Centre for Trade and Sustainable Development, *Climate Change, Technology Transfer and Intellectual Property Rights*, 2008, p. 7.

¹⁵⁴ *Ibid.*

¹⁵⁵ *Ibid.*

¹⁵⁶ *Ibid.*

¹⁵⁷ UNFCCC, *Policies: TEC recommendations for climate tech action*.

¹⁵⁸ International Centre for Trade and Sustainable Development, *Climate Change, Technology Transfer and Intellectual Property Rights*, 2008.

¹⁵⁹ UNFCCC, *Policies: TEC recommendations for climate tech action*.

¹⁶⁰ International Centre for Trade and Sustainable Development, *Climate Change, Technology Transfer and Intellectual Property Rights*, 2008.

technology.¹⁶¹ More specifically, intellectual property rights are an instrument that links patent rights, trade flows, foreign direct investment, and productivity.¹⁶² However, these rights alone do not “guarantee or suffice for effective transfer of technology.”¹⁶³ They “need to be buttressed by appropriate infrastructures, governance and competition systems in order to be effective.”¹⁶⁴ Further, intellectual property rights can allow owners “to limit the availability, use, or development of a process or product,” which may then “result in prices that exceed the socially optimal level” and act as a barrier to effective transfer of technology.¹⁶⁵

Conclusion

Technology development and technology transfer are essential to the implementation of the *Paris Agreement* and to the overall fight against climate change.¹⁶⁶ The development and transfer of new technologies are expected to “improve efficiency in energy use, introduce less carbon-intensive sources of energy, and further develop renewable energy sources.”¹⁶⁷ Accordingly, it is necessary for states to work collaboratively on this issue, and the COP presents an ideal forum for negotiations.¹⁶⁸ There are existing frameworks for technology development and transfer that delegates may consider as a basis for further discussions. It is important to promote the exchange of good practices and efforts to scale up programs that have proven successful at the local or regional level, as well as to identify and address barriers preventing successful implementation.¹⁶⁹

Further Research

How can the COP further strengthen and support the work of the Technology Mechanism? How can the TNA process and the resulting TAPs be improved? How can the COP promote more effective implementation of TAPs? How can public-private partnerships contribute to technology development and transfer? How can the international community increase overall engagement of the private sector in technology development and transfer? What is the role of the international trade market? How can the COP contribute to resolving issues concerning intellectual property rights?

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http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

It is essential for delegates to be familiar with the Paris Agreement, which is the foundation of the topic at hand. The Paris Agreement notes the need for a technology framework (article 10) to guide the effective implementation of the Paris Agreement. Proposals for enhancing development and transfer of technology will have to be related or synchronized with the objectives of the Paris Agreement and focused on their achievement.

Secretariat of the United Nations Framework Convention on Climate Change. (2017). *Progress tracker: Work Programme resulting from the requests contained in decision 1/CP.21*. Retrieved 31 August 2017 from:

http://unfccc.int/files/paris_agreement/application/pdf/pa_progress_tracker_200617.pdf

This document provides up-to-date data on the implementation of the Paris Agreement (decision 1/CP.21). For this, the document shows the responsible body, mandate, timelines, status of implementation, and future steps towards the topics of the Paris Agreement (Decision 1/CP.21). The progress tracker provides different links to documents, web pages, and information on bodies

¹⁶¹ Ibid.

¹⁶² Ibid.

¹⁶³ Ibid.

¹⁶⁴ Ibid.

¹⁶⁵ Ibid.

¹⁶⁶ UNFCCC SBSTA, *Mapping climate technology development and transfer activities and initiatives under and outside the Convention relevant to the implementation of the Paris Agreement (FCCC/SBSTA/2016/INF.9)*, 2016.

¹⁶⁷ International Centre for Trade and Sustainable Development, *Climate Change, Technology Transfer and Intellectual Property Rights*, 2008, p. 6.

¹⁶⁸ UNFCCC SBSTA, *Mapping climate technology development and transfer activities and initiatives under and outside the Convention relevant to the implementation of the Paris Agreement (FCCC/SBSTA/2016/INF.9)*, 2016.

¹⁶⁹ Ibid.

that are continuing work on the topic. Having the up-to-date information on the implementation of the Paris Agreement will help delegates create strategies and draft-resolutions based on actual timing and actions.

United Nations Framework Convention on Climate Change, Subsidiary Body for Scientific and Technological Advice, Forty-fifth session. (2016). *Mapping climate technology development and transfer activities and initiatives under and outside the Convention relevant to the implementation of the Paris Agreement (FCCC/SBSTA/2016/INF.9)* [Report]. Retrieved 27 May 2017 from: <http://unfccc.int/resource/docs/2016/sbsta/eng/inf09.pdf>

Prepared by the SBSTA, this document maps the current situation of climate technology development and transfer activities. It thus provides guidelines and data about all activities related to this topic. This document is important because it shows activities and initiatives being carried out by different UN bodies, agencies, multilateral and bilateral organizations, and civil society groups related to climate technology development and transfer.

United Nations Framework Convention on Climate Change, Technology Executive Committee. (2017). *Enhancing Financing for the Research, Development and Demonstration (RD&D) of climate technologies* [Working Paper]. Retrieved 31 May 2017 from: http://unfccc.int/ttclear/docs/TEC_RDD%20finance_FINAL.pdf

Frameworks for development and transfer of technology include researching, developing, and demonstrating (RD&D) climate technologies as main solutions for problems resulting from climate change. There are international guidelines, frameworks, and plans for translating these plans into action, but one of the main barriers is the high financial cost of implementation. Most developing countries lack the economic capacity to implement all the frameworks and guidelines to combat climate change, especially with respect to technology research. This document is important because it provides a clear look at the contributions, programs, and national capacities necessary to support technology development and transfer.

United Nations Framework Convention on Climate Change, Technology Executive Committee & United Nations Environment Programme DTU Partnership. (2016). *Enhancing Implementation of Technology Needs Assessments: Guidance for Preparing a Technology Action Plan*. Retrieved 31 May 2017 from: http://unfccc.int/ttclear/misc/_StaticFiles/gnwoerk_static/TEC_column_M/33933c6ccb7744bc8fd643feb0f8032a/82af010d04f14a84b9d24c5379514053.pdf

The TAP guidance developed by the TEC provides complete information about the current work of this body related to the development of TNAs. The TNA process helps identify developing countries' priorities and developments regarding technology needs. This guidance shows how TNAs can be effectively implemented to account for varying sectors, areas, and priorities of different countries with respect to climate action.

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II. Adapting to Sea Level Rise in Low-lying Areas and Small Islands

Introduction

During the last few decades, climate change has been one of the most important topics on the United Nations (UN) agenda, leading to the creation of different institutional mechanisms such as the *United Nations Framework Convention on Climate Change* (UNFCCC) (1992).¹⁷⁰ The UNFCCC was born “as a framework for international cooperation to combat climate change by limiting average global temperature increases” and to cope with its impacts.¹⁷¹ Climate change represents a tangible issue due to the fact that its effects have an impact on livelihoods and well-being, forcing individuals to adapt to new realities, limited resources, and complex social contexts.¹⁷² This is the case of sea level rise in low-lying areas and small islands, given that territory and biodiversity are being affected, as well as daily human activities.¹⁷³

Sea level rise is mainly caused by global warming and all that contributes to mankind’s vast ecological footprint, including pollution, environmentally abusive practices, and lack of awareness.¹⁷⁴ The emission of greenhouse gases and the burning of fossil fuels have caused the Earth’s temperature to increase substantially; heat-trapping gases are released into the atmosphere, causing surface temperatures to rise, and the oceans to absorb 80% of this heat.¹⁷⁵ Rising temperatures absorbed by glacier surfaces leads to melting ice, which adds water to the oceans and consequently raises the level of the seas.¹⁷⁶ Among the consequences of global warming and sea level rise are changes to ecosystems, which are forced to adapt, leading to loss of species and new environmental equilibriums.¹⁷⁷ In other words, climate variation can affect the way ecosystems work because the living and non-living things that inhabit them are exposed to different conditions, which compel them to react and interact differently.¹⁷⁸ Environmental consequences are extremely concerning, but human security, too, is being threatened by sea level rise, especially in relation to small islands and low-lying areas.¹⁷⁹ According to Climate Central, an independent organization of scientists who report on climate change, if sea levels continue to rise, there are between 147 million and 216 million people worldwide who are currently living in areas that will either be submerged or at risk of regular flooding by 2100.¹⁸⁰ Sea level rise is a complex issue that affects all low-lying areas, including in developed cities, but populations with less resilience and fewer resources are at a higher risk.¹⁸¹ In this context, it is the responsibility not only of global leaders to face the issue and analyze all possible solutions, but also of all people to change environmentally unfriendly practices in order to preserve the equilibrium of our ecosystems.¹⁸²

This text will introduce delegates to the main causes and consequences of sea level rise to help them envision possible solutions to the issue. This guide will provide delegates with details on international and regional agreements, organs, and frameworks dealing with the issue, as well as various tools necessary for understanding the problem and creatively analyzing different outcomes. This guide will also discuss how sea level rise threatens low-lying areas and small islands and the mitigating mechanisms currently in place.

International and Regional Framework

Adopted in 1992 at the UN Conference on Environment and Development in Rio de Janeiro, *Agenda 21* defines small islands, coastal areas, and low-lying areas as fragile and vulnerable ecosystems that need special attention from Member States and global citizens.¹⁸³ It notes that global warming has economic consequences on small

¹⁷⁰ UNFCCC, *Background of the UNFCCC: The International response to climate change*, 2014.

¹⁷¹ *Ibid.*

¹⁷² *Ibid.*

¹⁷³ *Ibid.*; Sadat, *Small Islands, Rising Seas*, *UN Chronicle*, 2009.

¹⁷⁴ UN DPI, *Global Issues: Climate Change*, 2017.

¹⁷⁵ National Geographic, *Sea-Level Rise*, 2016.

¹⁷⁶ *Ibid.*

¹⁷⁷ *Ibid.*

¹⁷⁸ *Ibid.*

¹⁷⁹ *Ibid.*

¹⁸⁰ Sutter, 15 facts about sea level rise, *CNN*, 2015.

¹⁸¹ *Ibid.*

¹⁸² *Ibid.*

¹⁸³ UNCED, *Agenda 21*, 1992.

islands, given that “their small size, limited resources, geographic dispersion and isolation from markets, place them at a disadvantage economically and prevent economies of scale.”¹⁸⁴ In terms of security, “they are considered extremely vulnerable to global warming and sea level rise, with certain small low-lying islands facing the increasing threat of the loss of their entire national territories.”¹⁸⁵ Chapter 17 of *Agenda 21* mentions various uncertainties about climate change and sea level rise, given that even “small increases in sea level have the potential of causing significant damage to small islands and low-lying coasts,” which is why it is fundamental to create responsive strategies based on sound data.¹⁸⁶ *Agenda 21* suggests a long-term cooperative research commitment “to provide the data required for global climate models and to reduce uncertainty.”¹⁸⁷ It urges nations to cooperate “with a view to adopting special measures to cope with and adapt to potential climate change and sea level rise, including the development of globally accepted methodologies for coastal vulnerability assessment, modelling and response strategies particularly for priority areas, such as small islands and low-lying and critical coastal areas.”¹⁸⁸ It also proposes different adapting approaches to be taken into account by Member States, such as coastal area management techniques, which may include “planning, siting and environmental impact assessments, using Geographical Information Systems (GIS), suitable to the special characteristics of small islands, taking into account the traditional and cultural values of indigenous people of island countries.”¹⁸⁹

In terms of international frameworks regarding the dangers of sea level rise, it is fundamental to mention the importance of the *Johannesburg Plan of Implementation*, adopted at the 2002 Earth Summit.¹⁹⁰ Chapter VII suggests that small island developing states (SIDS) are “a special case both for environment and development,” because they continuously strive towards sustainable development but “are increasingly constrained by the interplay of adverse factors,” including the physical changes they face in their territories and the impact that this has on their citizens.¹⁹¹ The *Johannesburg Plan of Implementation* urges Member States to assist SIDS, when elaborating specific initiatives to cope with the issue, “in delimiting and managing in a sustainable manner their coastal areas and exclusive economic zones and the continental shelf, as well as relevant regional management initiatives within the context of the *United Nations Convention on the Law of the Sea* and the regional seas programmes of the United Nations Environment Programme.”¹⁹² It also encourages states to reduce, prevent, and control waste and pollution, in addition to assisting SIDS in technology transfer, health-related solutions, and raising awareness of environmental issues.¹⁹³

The UNFCCC has the objective of combating climate change by stabilizing greenhouse gas concentrations.¹⁹⁴ In order to address climate change from a global and integrative perspective, the Conference of the Parties (COP) to the UNFCCC adopted the *Paris Agreement* at its 21st session in 2015.¹⁹⁵ The agreement includes the commitment of States Parties to reduce emissions in an effort to prevent global temperatures from rising by more than 2°C above pre-industrial levels.¹⁹⁶ The *Paris Agreement* notes that “given current concentrations and on-going emissions of greenhouse gases, it is likely that by the end of this century, the increase in global temperature will exceed 1.5°C.”¹⁹⁷ Consequently, the world’s oceans will warm and ice melt will continue, while “average sea level rise is predicted as 24-30 cm by 2065 and 40-63 cm by 2100.”¹⁹⁸

¹⁸⁴ Ibid.

¹⁸⁵ Ibid.

¹⁸⁶ Ibid.

¹⁸⁷ Ibid.

¹⁸⁸ Ibid.

¹⁸⁹ Ibid.

¹⁹⁰ UN World Summit on Sustainable Development, *Plan of Implementation of the World Summit on Sustainable Development*, 2002.

¹⁹¹ Ibid.

¹⁹² Ibid.

¹⁹³ Ibid.

¹⁹⁴ *United Nations Framework Convention on Climate Change*, 1992.

¹⁹⁵ Conference of the Parties to the UNFCCC, *Paris Agreement*, 2015.

¹⁹⁶ Ibid.

¹⁹⁷ Ibid.

¹⁹⁸ Ibid.

One concern expressed about the international framework on this topic is that there is a lack of binding laws that account for the effects of climate change on the planet.¹⁹⁹ The *United Nations Convention on the Law of the Sea* (UNCLOS) (1982) is one of the most complete pieces of international law, as well as the most important in the regulation of sea matters.²⁰⁰ However, UNCLOS does not address possible changes in marine ecosystems, physical alterations due to environmental phenomena, or the possible effects of climate change.²⁰¹ UNCLOS fails to explain what happens to borders once sea levels have gone up, or who is responsible for environmental disasters caused by greenhouse gases.²⁰² Accordingly, although climate change is already significantly affecting low-lying areas and small islands, current legal frameworks do not reflect this reality.²⁰³

SIDS have shown their support for achieving the 17 Sustainable Development Goals (SDGs) by 2030; their current needs regarding sea level rise indicate that special attention must be given to Goals 13, 14, and 17.²⁰⁴ Goal 13 specifies the need to take urgent action to combat climate change and its impacts, as “climate change is a global challenge that does not respect national borders,” which means that everyone is affected by pollution and carbon emissions, independently of where they are produced, and that solving the issue is not merely the responsibility of the affected countries, but also a global concern that should be solved at a global level.²⁰⁵ Goal 13’s targets include “strengthen[ing] resilience and adaptive capacity to climate-related hazards and natural disasters in all countries”; “integrat[ing] climate change measures into national policies, strategies and planning,”; and “improv[ing] education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.”²⁰⁶ Another important target of Goal 13 is to promote “mechanisms for raising capacity for effective climate change–related planning and management in least developed countries and Small Island Developing States, including focusing on women, youth and local and marginalized communities.”²⁰⁷ Goal 14 is to conserve and sustainably use the oceans, seas, and marine resources, which goes hand in hand with dealing with sea level rise.²⁰⁸ Some of the targets of Goal 14 are to “increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources” and to increase “scientific knowledge, develop research capacity and transfer marine technology in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries.”²⁰⁹ Finally, Goal 17 focuses on creating partnerships in order to achieve the SDGs, as “a successful sustainable development agenda requires partnerships between governments, the private sector and civil society,” and they are vital to dealing with an issue that has been created by human activity and that is affecting some countries more than others.²¹⁰

Framework Documents Related to SIDS

In 1994, Member States adopted the *United Nations Programme of Action for the Sustainable Development of Small Island Developing States*, also known as the Barbados Programme of Action.²¹¹ The main reason to protect SIDS is that their population, agricultural land, and infrastructure are generally concentrated in coastal zones, and changes in sea level could significantly affect a country’s economy, well-being, and even survival.²¹² As stated in the Barbados Programme of Action, SIDS “require all available information concerning those aspects of climate change, as it may affect their ability to enable appropriate response strategies to be developed and implemented,” putting special emphasis on information and transfer of knowledge.²¹³ It is also necessary to explore innovative initiatives and projects that permit citizens to manage, monitor, and “improve predictive capacity for climate change, climate

¹⁹⁹ Boyle, *Law of the Sea Perspectives on Climate Change*, 2012.

²⁰⁰ UN Division for Ocean Affairs and the Law of the Sea, *The United Nations Convention on the Law of the Sea: A historical perspective*, 1998.

²⁰¹ *United Nations Convention on the Law of the Sea*, 1982.

²⁰² *Ibid.*

²⁰³ Boyle, *Law of the Sea Perspectives on Climate Change*, 2012.

²⁰⁴ UN General Assembly, *Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1)*, 2015.

²⁰⁵ UN DPI, *Goal 13: Take urgent action to combat climate change and its impacts*, 2017.

²⁰⁶ *Ibid.*

²⁰⁷ *Ibid.*

²⁰⁸ UN DPI, *Goal 14: Conserve and sustainably use the oceans, seas and marine resources*, 2017.

²⁰⁹ UN DPI, *Goal 17: Revitalize the global partnership for sustainable development*, 2017.

²¹⁰ *Ibid.*

²¹¹ UN Global Conference on the Sustainable Development of Small Island Developing States, *Report of the Global Conference on the Sustainable Development of Small Island Developing States*, 1994.

²¹² *Ibid.*

²¹³ *Ibid.*

variability and sea level rise, and to assess the impacts of climate change on marine resources, freshwater and agricultural production.”²¹⁴ Five years later, in 1999, Member States conducted a review of the Barbados Programme of Action (BPoA+5) and identified six areas in need of urgent attention in SIDS: adapting to climate change and rising sea levels, which could leave nations completely submerged and displace their citizens; improving preparedness and recovery from natural and environmental disasters; preventing shortages and pollution of freshwater; protecting coastal ecosystems and coral reefs from pollution and overfishing; treating solar and renewable energy as a means of replacing oil; and managing sustainable tourism with the objective to protect the environment and keep cultural traits intact.²¹⁵ In 2005, during the 10-year review of the Barbados Programme of Action (BPOA+10), the Mauritius Strategy for the further implementation of the Barbados Programme of Action was created and Member States once again committed to focusing on SIDS issues regarding sea level rise, arguing that they were “already experiencing major adverse effects of climate change” and that adapting to these effects should constitute a main priority for them and on the international agenda.²¹⁶

At the Third International Conference on Small Island Developing States in September 2014, the *SIDS Accelerated Modalities of Action (SAMOA) Pathway* was adopted with the aim of responding to various issues affecting the development of SIDS.²¹⁷ Member States stated the following in an outcome document: “We also reaffirm that climate change is one of the greatest challenges of our time, and we are deeply concerned that all countries, particularly developing countries, are vulnerable to the adverse impacts of climate change and are already experiencing an increase in such impacts,” which include drought, extreme weather, sea level rise, erosion, water acidification, and threats to food security.²¹⁸ They affirmed that “adaptation to climate change represents an immediate and urgent global priority.”²¹⁹ The issues discussed during the Conference revealed alarming facts. For example, Member States concluded that their resources were “insufficient to ensure their capacity to respond effectively to multiple crises.”²²⁰ As a result, they have failed to succeed “in building capacity, strengthening national institutions, gaining access and developing renewable energy and other environmentally related technologies, and fully integrating the Barbados Programme of Action and the Mauritius Strategy into national plans and strategies.”²²¹

Role of the International System

The international system, and everything that it comprises, is now confronted with the responsibility of mitigating the effects of global warming in terms of sea level rise and the damage that it causes to small islands and low-lying areas.²²² The Secretariat of the UNFCCC is an important part of the international system; it was created in 1992 along with the Convention, and initially, its main goal was to support intergovernmental climate change negotiations.²²³ Today, most of the work of the Secretariat involves providing support to UNFCCC bodies and conducting “the analysis and review of climate change information and data reported by Parties.”²²⁴ The COP is “the supreme decision-making body of the Convention” where States Parties review the implementation of the Convention and make the decisions necessary to promote the effective implementation of the Convention.²²⁵ Another important body of the UNFCCC is the Subsidiary Body for Scientific and Technological Advice (SBSTA), which supports the work of the COP by providing information and recommendations on scientific and technological matters relating the Convention, the Kyoto Protocol, and the Paris Agreement.²²⁶ The COP has also created an

²¹⁴ Ibid.

²¹⁵ UN DESA, *BPoA+5 (1999) - Five-year review of the Barbados Programme of Action*, 2017.

²¹⁶ UN International Meeting to Review the Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States, *Report of the International Meeting to Review the Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States (A/CONF.207/11)*, 2005.

²¹⁷ Ibid.

²¹⁸ UN General Assembly, *SIDS Accelerated Modalities of Action (SAMOA) Pathway (A/RES/69/15)*, 2014.

²¹⁹ Ibid.

²²⁰ Ibid.

²²¹ Ibid.

²²² UN General Assembly, *Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1)*, 2015.

²²³ UNFCCC, *The Secretariat*, 2014.

²²⁴ Ibid.

²²⁵ Ibid.

²²⁶ Ibid.

Adaptation Committee in order “to promote the implementation of enhanced action on adaptation in a coherent manner under the Convention through various functions.”²²⁷

The Intergovernmental Panel on Climate Change (IPCC) is an advisory body to the UNFCCC that “reviews and assesses the most recent scientific, technical and socioeconomic information produced worldwide, relevant to the understanding of climate change.”²²⁸ The IPCC was created in 1988 by the World Meteorological Organization and the United Nations Environment Programme; comprising 195 members, it is open to all Member States.²²⁹ The panel prepares scientifically based assessments analyzed by leading scientists, which are policy-relevant but not policy-prescriptive, meaning that a large group of scientists are in charge of presenting the facts about climate change and making projections concerning future scenarios and risks, but they do not suggest or oblige Member States to comply with the recommendations.²³⁰ In the IPCC *Fifth Assessment Report* (2014), scientists observed that, on average, from 1880 to 2012, global temperature had increased by 0.85°C.²³¹ As a consequence of global warming, ocean temperatures have risen, snow levels have diminished, and ice masses have melted, augmenting the amount of water in the oceans, and raising sea levels by 19 cm – all of which affects stable ecosystems, given that their inhabitants must face new realities and challenges.²³² Sea ice has also shrunk in every decade since 1979.²³³ According to the National Aeronautics and Space Administration (NASA), ice has been melting at an average annual rate of 35,000 km² since 1979, which is the equivalent of losing an area of sea ice larger than the state of Maryland every year.²³⁴ This ice becomes seawater that subsequently increases sea levels in coastal areas.²³⁵

Recognizing that the effects of climate change on the ocean are not an isolated issue, many organs and institutions in the UN system have emphasized approaching this topic from different perspectives. As an example, the UN General Assembly has adopted several resolutions that attempt to deal with the issue in a tangible way. The General Assembly was established in 1945 under the Charter of the UN.²³⁶ Its main role is to provide its 193 Member States with an important space for multilateral discussion regarding international issues, as well as possible solutions, which may later be translated into regulations under international law.²³⁷ As an integrative forum for all UN members, the General Assembly has developed into a place where Member States can share their main concerns.²³⁸ As a result, SIDS representatives have discussed the relevance of treating matters related to sea level rise and climate change.²³⁹ General Assembly resolution 44/206 (1989) established the “possible adverse effects of sea-level rise on islands and coastal areas, particularly low-lying coastal areas,” and resolution 63/281 (2009) noted that climate change has possible security implications that have to be addressed before they cause more damage.²⁴⁰ It also requested that the Secretary-General submit a report to the General Assembly about the possible security implications of climate change.²⁴¹ General Assembly resolution 70/235 (2015) on “Oceans and the law of the sea” focused on the importance of capacity-building, technology transfer, and financial aid for SIDS and African coastal areas in order to mitigate the negative effects of climate change.²⁴²

Other UN system entities working on climate change include the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (IOC-UNESCO), which was created in 1960 and promotes international cooperation on projects dealing with marine research, ocean hazard mitigation, and

²²⁷ Ibid.

²²⁸ Intergovernmental Panel on Climate Change, *IPCC Factsheet: What is the IPCC?*, 2013.

²²⁹ Ibid.

²³⁰ Ibid.

²³¹ UN DPI, *Global Issues: Climate Change*, 2017.

²³² Ibid.

²³³ Ibid.

²³⁴ NASA, *NASA Study Shows Global Sea Ice Diminishing, Despite Antarctic Gains*, 2015.

²³⁵ Ibid.

²³⁶ UN General Assembly, *Functions and Powers of the General Assembly*, 2017.

²³⁷ Ibid.

²³⁸ Ibid.

²³⁹ Ibid.

²⁴⁰ UN General Assembly, *Possible adverse effects of sea-level rise on islands and coastal areas, particularly low-lying coastal areas (A/RES/44/206)*, 1989; UN General Assembly, *Climate change and its possible security implications (A/RES/63/281)*, 2009.

²⁴¹ Ibid.

²⁴² UN General Assembly, *Oceans and the law of the sea (A/RES/70/235)*, 2015.

capacity development.²⁴³ The World Meteorological Organization (WMO) is a specialized agency of the UN that manages several projects related to climate change, such as the Hydrology and Water Resources Programme (HWRP).²⁴⁴ The HWRP focuses on the sustainable management of freshwater as a limited resource and the mitigation of the effects of water-related disasters.²⁴⁵

Non-governmental organizations are key actors in international efforts against climate change. The World Wildlife Fund (WWF), for example, an independent organization that aims to protect nature and endangered species, has also expressed its concern regarding sea level rise in coastal zones.²⁴⁶ Sea level rise affects not only human activities, but also animal species.²⁴⁷ According to WWF, some species will be unable to adapt to sea level rise, which threatens their land habitats.²⁴⁸

With the objective of taking inclusive measures towards climate change and sea level rise in low-lying areas, the UN organized the UN Conference to Support the Implementation of SDG 14, also known as the Ocean Conference, which took place in June 2017.²⁴⁹ Uniting UN Member States and diverse stakeholders, the conference sought a comprehensive approach to implementing SDG 14 on conserving and sustainably using the oceans, seas, and marine resources.²⁵⁰ The conference ended with the adoption of the outcome document *Our ocean, our future: call for action* (2017), which strongly encourages stakeholders to take bolder measures to prevent, mitigate, and respond to the negative effects of climate change on oceans and to implement SDG 14.²⁵¹

Sea Level Rise: Threats and Effects

As a response to the request contained in General Assembly resolution 63/281 (2009), the UN Secretary-General issued a report expressing that climate change could represent a profound threat to human well-being, partly due to sea level rise.²⁵² It argues that “rising sea levels could make entire areas uninhabitable, and that coastlines are particularly vulnerable to inundation and shoreline erosion.”²⁵³ These issues have the potential to create bigger problems, such as “freshwater shortages and disease outbreaks.”²⁵⁴ The problem is even more serious given that “over a third of the world’s population lives in coastal zones within 100 km of the shore,” meaning that “the effects on human settlements could be highly disruptive.”²⁵⁵ The report further establishes that human vulnerability to climate change has increased because of rapid urbanization in coastal cities: “The new migrants from rural areas are usually poor and many live in substandard housing in informal settlements, often on fragile hillsides or riverbanks which are highly exposed to extreme weather events; the most direct risks are from flooding and landslides due to increases in rainfall intensity and from sea-level rise and storm surges in coastal areas.”²⁵⁶ Another significant threat is the possible loss of territory by SIDS that are consumed by rising sea levels, given that there are no laws that consider the possible effects of loss of territory due to environmental disasters of this nature.²⁵⁷ The report mentions that for SIDS, “sea-level rise presents perhaps the ultimate security threat, jeopardizing the very existence of small low-lying countries such as the Maldives, where 80 percent of land is less than one meter above sea level.”²⁵⁸ Dealing with population relocation, statelessness, and disputes over territory can be some of the side effects that SIDS will have to face if sea levels continue to rise and no solutions are found.²⁵⁹

²⁴³ UNESCO, *Intergovernmental Oceanographic Commission*.

²⁴⁴ World Meteorological Organization, *Hydrology and Water Resources Programme*, 2017.

²⁴⁵ *Ibid.*

²⁴⁶ World Wildlife Fund, *Climate*, 2017.

²⁴⁷ *Ibid.*

²⁴⁸ *Ibid.*

²⁴⁹ UN Ocean Conference, *Our ocean, our future: call for action (A/CONF.230/11)*, 2017.

²⁵⁰ *Ibid.*

²⁵¹ *Ibid.*

²⁵² UN General Assembly, *Climate change and its possible security implications: Report of the Secretary-General (A/64/350)*, 2009.

²⁵³ *Ibid.*

²⁵⁴ *Ibid.*

²⁵⁵ *Ibid.*

²⁵⁶ *Ibid.*

²⁵⁷ *Ibid.*

²⁵⁸ *Ibid.*

²⁵⁹ *Ibid.*

The report of the Secretary-General incorporated extensive input from the Pacific Small Islands Developing States (PSIDS).²⁶⁰ The PSIDS stated that “sea-level rise has serious implications such as inundation, erosion, saltwater intrusion and intensified storm impacts, threatening the viability and existence of small island nations.”²⁶¹ In terms of public health, the document declares that the side effects of climate change include malnutrition, poor sanitation, and increased incidence of water-borne, vector-borne, and airborne diseases, putting citizens in vulnerable situations.²⁶² Physical infrastructure is also jeopardized, and it is possible that “the death toll and number of people injured will increase as floods and cyclones strike areas with dense population and weak housing and infrastructure,” which also means there is a low probability of rapid rebuilding and recovery.²⁶³ The PSIDS recommended that the UN and Member States consider the security threats of climate change as a reality, not as a possibility, and that they consider this topic in an annual agenda, as the implications continue to affect them.²⁶⁴ This idea is shared by the Alliance of Small Island States (AOSIS), which has stressed that climate change is already affecting small island states through ocean acidification and sea level rise, but that there is still hope in the international community that new agreements will be reached and that the real issues will be addressed.²⁶⁵ The AOSIS has called for Member States to “support adaptation projects, and to break barriers to access for capacity-constrained countries” that are facing these difficulties.²⁶⁶

Solutions and Adaptations

Delegates are encouraged to consider new approaches to sea level rise affecting small islands and low-lying areas, taking into account technological advances in mapping, predicting, and adapting to climate change.²⁶⁷ For example, in the Caribbean, the Coastal Resource Information System (CRIS) was created with the purpose of providing “a standardized repository for monitoring data pertinent to natural resources with an emphasis on impacts of global climate change, especially for summary data.”²⁶⁸ Information and communications technology (ICT) is contributing to adaptation efforts in countries such as Tonga, Samoa, Vanuatu, and Papua New Guinea.²⁶⁹ Various experts collaborating with the UNFCCC have developed innovative ICT solutions by mapping possible effects of sea level rise in 3D maps and sharing that information with local communities in order for them to be aware of the danger and participate in the solution process.²⁷⁰ These solutions “are helping Pacific Island countries prepare for and adapt to sea level rise brought about by climate change,” given that they provide “the fundamental data, skills and tools at-risk communities need to make planning decisions.”²⁷¹ In addition, “programmes such as the South Pacific Sea Level and Climate Monitoring project (SPSLCM) and Caribbean Planning for Adaptation to Climate Change (CPACC) have created monitoring and observation networks for Pacific SIDS and Caribbean SIDS, respectively.”²⁷² This is important because the information they provide is fundamental for understanding the issues to be addressed and the priorities of each state when tackling climate change.²⁷³

SIDS have developed different strategies regarding adaptation measures with the aim of helping increase resilience when facing the negative impacts of climate change. Some of these projects focus on strengthening relevant institutions, policy-making, local regulations on sea level rise, and other areas such as building water storage and drought-resistant crops.²⁷⁴ According to the UNFCCC Secretariat and the recommendations of Dr. Graham Sem, “there are a multitude of possible adaptation options for SIDS which include engineering solutions, such as sea defences, hurricane-resistant buildings and the provision of water storage; legislative solutions such as revised

²⁶⁰ Pacific Small Islands Developing States, *Views on the Possible Security Implications of Climate Change to be included in the report of the Secretary-General to the 64th Session of the United Nations General Assembly*, 2009.

²⁶¹ Ibid.

²⁶² Ibid.

²⁶³ Ibid.

²⁶⁴ Ibid.

²⁶⁵ Ibid.

²⁶⁶ AOSIS Reaffirms Climate Platform at UNGA, Alliance of Small Island States, 2015.

²⁶⁷ Secretariat of the United Nations Framework Convention on Climate Change, *Climate Change: Small Island Developing States*, 2005.

²⁶⁸ Deeb, *Lessons learned from Caribbean: Planning for Adaptation to Global Climate Change (CPACC)*, 2002.

²⁶⁹ UNFCCC, *Mapping Exposure to Sea Level Rise | Tonga, Samoa, Vanuatu and Papua New Guinea*, 2014.

²⁷⁰ Ibid.

²⁷¹ Ibid.

²⁷² Secretariat of the UNFCCC, *Vulnerability and Adaptation to Climate Change in Small Island Developing States*, 2007.

²⁷³ Ibid.

²⁷⁴ Ibid.

building codes, land zoning around coasts and rivers and updating water policy; and technological solutions such as using more resilient crops.²⁷⁵ However, physically adapting to sea level rise will not necessarily be a permanent solution, as the Earth's temperatures will continue to rise, meaning that considerable measures will have to be taken in order to address the underlying issue of climate change itself.²⁷⁶

Effective solutions when dealing with sea level rise in low-lying areas and small islands may include finding community-based approaches that integrate whole societies.²⁷⁷ Local communities in low-lying areas and small islands are most familiar with the area they inhabit, so when facing changes to their homeland, they may also have different ideas on how best to adapt.²⁷⁸ Community-based approaches may include local authorities, local communities, indigenous peoples, women, and youth who are directly affected by sea level rise.²⁷⁹ Participants at the UN Ocean Conference called upon nations to ensure success of the measures implemented by involving all relevant stakeholders, which include local communities and civil society organizations.²⁸⁰

Conclusion

Climate change is a fact; its effects are real and they are leaving a troubling, at times devastating, impact on the planet.²⁸¹ It has been scientifically proven that global warming has increased the negative effects on ecosystems and that some of them, such as sea level rise, may already be irreversible.²⁸² However, the impact of these effects in low-lying areas and small islands can be reduced and mitigated with the correct approach from Member States.²⁸³ It is therefore important for delegates to take into account the recommendations supported by empirical and scientific data, such as the IPCC *Fifth Assessment Report* and recommendations from the Secretariat, the UN General Assembly, and regional organs of affected Member States. Delegates are encouraged to consider possible innovative solutions for the issue at hand, as well as viable projects that might resolve the issues discussed.

Further Research

It is crucial for delegates to take into account some of the elements that the international community may not have fully addressed. These elements include funding, given that SIDS are the least-polluting states in the world, yet are hardest hit by the effects of climate change. How can the international community contribute to financing projects in SIDS when it comes to mitigating and adapting to the negative effects of climate change and sea level rise? How can international and regional organizations adapt to the lack of a legal framework for issues concerning sea level rise and its impacts? In terms of technology, how can tools that have been successful in fighting climate change be transferred to SIDS and low-lying areas? It is also crucial for delegates to consider all the physical and cultural implications when adapting to new realities. How can sea level rise be addressed without affecting local communities' cultural activities? How can these endangered communities increase their resilience to future changes?

Annotated Bibliography

Sadat, N. (2009). Small Islands, Rising Seas. *UN Chronicle*. Retrieved 8 June 2017 from: <https://unchronicle.un.org/article/small-islands-rising-seas>

This text discusses the consequences that sea level rise will create for small islands. It shows negotiations between representatives of small islands in addition to their agendas in 2009. Climate change is treated as a matter of international security, given that natural disasters are jeopardizing livelihoods for residents of small islands, and solutions appear to be lacking. When reading this text, delegates will learn about some of the greatest concerns surrounding climate change, most notably its impact on the future of the human race. According to this article,

²⁷⁵ Ibid.

²⁷⁶ Ibid.

²⁷⁷ Jamero et al., *Small-island communities in the Philippines prefer local measures to relocation in response to sea-level rise*, 2017.

²⁷⁸ Ibid.

²⁷⁹ Ibid.; UN Ocean Conference, *Our ocean, our future: call for action (A/CONF.230/11)*, 2017.

²⁸⁰ Ibid.

²⁸¹ Intergovernmental Panel on Climate Change, *Climate Change 2013 – The Physical Science Basis: Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2013.

²⁸² Ibid.; UN Ocean Conference, *Our ocean, our future: call for action (A/CONF.230/11)*, 2017.

²⁸³ Ibid.

“humanitarian issues facing the people of small island States who are internally displaced or evacuating their island are being ignored by the international community.” This is due to the recent changes on ecosystems, including the lack of fresh sources of water and even the unpredictability of natural hazards.

Secretariat of the United Nations Framework Convention on Climate Change. (2005). *Climate Change: Small Island Developing States* [Report]. Retrieved 8 June 2017 from: http://unfccc.int/resource/docs/publications/cc_sids.pdf

This UNFCCC guide provides delegates with relevant information about the vulnerability of SIDS in relation to productivity and identity as a result of rising sea levels. It also emphasizes different adapting mechanisms and their limitations to give the reader a general idea of possible solutions to sea level rise. This document is important for understanding the negative effects that sea level rise could have on human health and well-being, making it clear that resilience requires the ability to adapt. Additionally, delegates will find information on the main limitations that SIDS face when dealing with the negative effects of climate change, including financial issues, limited technological resources, and even weak legal frameworks in some cases. Understanding these problems may be helpful for devising possible solutions.

United Nations, Department of Public Information. (2014, June 5). *Sea-Level Rise in Small Island Nations to Cost US\$ Trillions: Shift to Green Policies and Investment Critical* [News Article]. Retrieved 8 June 2017 from: <http://www.un.org/climatechange/blog/2014/06/sea-level-rise-in-small-island-nations-up-to-four-times-the-global-average-to-cost-us-trillions-in-annual-economic-loss-and-impede-future-development-shift-to-green-policies-and-investment-criti/>

This text discusses the real economic costs of sea level rise on small islands and low-lying areas. The information is fundamental to understanding the impacts and indicators of climate change, as well as real challenges, impacts, and tangible examples of the outcomes of climate change. This text will give delegates a clear idea of possible ways for SIDS to take on the issue at hand. This includes transitioning to an inclusive green economy, “implementation of renewable energy, sustainable exploration of unexploited resources, [and] developing an ocean-based green economy.”

United Nations Framework Convention on Climate Change. (2014). *Elements of Adaptation* [Website]. Retrieved 8 June 2017 from: <http://unfccc.int/adaptation/items/7006.php#Observation>

This UNFCCC document suggests different elements of adaptation to climate change that must be taken into account when establishing possible solutions for any climate change event, including sea level rise. Problems have to be observed and analyzed, and solutions have to be planned, implemented, and ultimately monitored and evaluated. Adapting to new realities comprises changing a whole system into a new reality, which means that normal activities will be affected. This is why it is fundamental for delegates to understand this suggested framework of decision-making and adaptation in order for their own ideas to be well developed.

United Nations Framework Convention on Climate Change. (2014). *Mapping Exposure to Sea Level Rise | Tonga, Samoa, Vanuatu and Papua New Guinea* [Web Page]. Retrieved 8 June 2017 from:

http://unfccc.int/secretariat/momentum_for_change/items/9260.php

This is a key web page from the Secretariat of the UNFCCC regarding rising seas in small islands and low-lying areas. It covers problems and solutions pertaining to rising sea levels, as well as different technological mechanisms that can empower citizens and help them adapt to new environmental conditions. The project it describes has been implemented in some SIDS; it promotes innovative ICT solutions as viable mechanisms for helping Pacific Island countries prepare for the negative impacts of climate change and especially of sea level rise. This project provides communities with technological tools to help them make informed decisions. It also “trains government decision makers to use online tools and flood maps to understand and mitigate the risks of sea level rise.”

Intergovernmental Panel on Climate Change. (2013). *Climate Change 2013 – The Physical Science Basis: Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Retrieved 8 June 2017 from: http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf

Chapter 13 of the Fifth Assessment Report provides background information on the scientific record of sea level change, the historical context of sea level rise, various contributions of mean sea level rise, future contributions to global mean sea level rise, and long-term scenarios and consequences of climate change in small islands and low-lying areas. In addition to providing data on regional sea level changes, it covers topics such as the loss and contamination of fresh water, the regional consequences of rising sea levels, environmental and economic uncertainties, and future projections for changes in ocean waves. Scientists involved in this report state that “it is virtually certain that sea level will continue to rise during the 21st century and beyond,” meaning that it is everyone’s responsibility to cope with the facts and adapt to new realities. Chapter 13 of the Fifth Assessment Report may help delegates with understanding the global implications of sea level rise and is an excellent source of scientific facts to incorporate into working papers.

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