KIIT INTERNATIONAL MODEL UNITED NATIONS

ipcc
INTERGOVERNMENTAL PANEL ON climate change

STUDY GUIDE- IPCC

INTRODUCTION

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change. Through its assessments, the IPCC determines the state of knowledge on climate change. It identifies where there is agreement in the scientific community on topics related to climate change, and where further research is needed. The reports are drafted and reviewed in several stages, thus guaranteeing objectivity and transparency. The IPCC does not conduct its own research. IPCC reports are neutral, policy-relevant but not policy-prescriptive. The assessment reports are a key input into the international negotiations to tackle climate change. Created by the United Nations Environment Programme (UN Environment) and the World Meteorological Organization (WMO) in 1988, the IPCC has 195 Member countries. In the same year, the UN General Assembly endorsed the action by WMO and UNEP in jointly establishing the IPCC.

The IPCC does not conduct its own original research. It produces comprehensive assessments, reports on special topics, and methodologies. The assessments build on previous reports, highlighting the latest knowledge. For example, the wording of the reports from the first to the fifth assessment reflects the growing evidence for a changing climate caused by human activity.

The IPCC has adopted and published "Principles Governing IPCC Work", [a] which states that the IPCC will assess:

- The risk of human-induced climate change,
- Its potential impacts, and
- Possible options for prevention.

This document also states that IPCC will do this work by assessing "on a comprehensive, objective, open and transparent basis

the scientific, technical and socio-economic information relevant to understanding the scientific basis" of these topics.

The Principles also state that "IPCC reports should be neutral with respect to policy, although they may need to deal objectively with scientific, technical and socio-economic factors relevant to the application of particular policies."

Korean economist Hoesung Lee has been the chair of the IPCC since 8 October 2015 [b], with the election of the new IPCC Bureau. Before this election, the IPCC was led by Vice-Chair Ismail El Gizouli, who was designated acting Chair after the resignation of Rajendra K. Pachauri in February 2015. The previous chairs were Rajendra K. Pachauri, elected in May 2002; Robert Watson in 1997; and Bert Bolin in 1988. The chair is assisted by an elected bureau including vice-chairs and working group co-chairs, and by a secretariat.

The Panel itself is composed of representatives appointed by governments. Participation of delegates with appropriate expertise is encouraged. Plenary sessions of the IPCC and IPCC Working Groups are held at the level of government representatives. Non-Governmental and Intergovernmental Organizations admitted as observer organizations may also attend. Sessions of the Panel, IPCC Bureau, workshops, expert and lead authors meetings are by invitation only. About 500 people from 130 countries attended the 48th Session of the Panel in Incheon, Republic of Korea, in October 2018, including 290 government officials and 60 representatives of observer organizations. The opening ceremonies of sessions of the Panel and of Lead Author Meetings are open to media, but otherwise IPCC meetings are closed.

There are several major groups:

• **IPCC Panel:** Meets in plenary session about once a year. It controls the organization's structure, procedures, and work programme, and accepts and approves IPCC reports. The Panel is the IPCC corporate entity.
• **Chair:** Elected by the Panel.
• **Secretariat:** Oversees and manages all activities. Supported by UNEP and WMO.
• **Bureau:** Elected by the Panel. Chaired by the Chair. 34 members include IPCC Vice-Chairs, Co-Chairs of Working Groups and the Task Force, and Vice-Chairs of the Working Groups. It provides guidance to the Panel on the scientific and technical aspects of its work.
• **Working Groups:** Each has two Co-Chairs, one from the developed and one from developing world, and a technical support unit. Sessions of the Working Group approve the Summary for Policymakers of special reports and working group contributions to an assessment report. Each Working Group has a Bureau comprising its Co-Chairs and Vice-Chairs, who are also members of the IPCC Bureau.

◦ Working Group I: Assesses scientific aspects of the climate system and climate change. Co-Chairs: Valérie Masson-Delmotte and Panmao Zhai.
◦ Working Group II: Assesses vulnerability of socio-economic and natural systems to climate change, consequences, and adaptation options. Co-Chairs: Hans-Otto Pörtner and Debra Roberts.
◦ Working Group III: Assesses options for limiting greenhouse gas emissions and otherwise mitigating climate change. Co-Chairs: Priyadarshi R. Shukla and Jim Skea.

• **Task Force on National Greenhouse Gas Inventories**. Co-Chairs: Kiyoto Tanabe and Eduardo Calvo Buendía

◦ Task Force Bureau: Comprises the two Co-Chairs, who are also members of the IPCC Bureau, and 12 members.
• Executive Committee: Comprises the Chair, IPCC Vice-Chairs and the CoChairs of the Working Groups and Task Force. Its role includes addressing urgent issues that arise between sessions of the Panel.

The IPCC receives funding through the IPCC Trust Fund, established in 1989 by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), Costs of the Secretary and of housing the secretariat are provided by the WMO, while UNEP meets the cost of the Depute Secretary. Annual cash contributions to the Trust Fund are made by the WMO, by UNEP, and by IPCC Members. Payments and their size are voluntary. The Panel is responsible for considering and adopting by consensus the annual budget. The organization is required to comply with the Financial Regulations and Rules of the WMO.

IPCC and Working Group Plenary Sessions:
The Intergovernmental Panel on Climate Change (IPCC) is a panel of 195 member countries. The Panel meets in Plenary Sessions at least once a year. The Sessions are attended by hundreds of officials and experts from relevant ministries, agencies and research institutions from member countries and from Observer Organizations. The Panel works by consensus to decide on the organization's budget and work programme; the scope and outline of its reports; issues related to principles and procedures of the IPCC; and the structure and mandate of IPCC Working Groups and Task Forces. The Panel also approves and adopts IPCC reports and elects the IPCC Chair and members of the IPCC Bureau and the Task Force Bureau. IPCC Working Groups hold Plenary Sessions to approve the Summary for Policymakers of Assessment and Special Reports before they are considered by the Panel.

Projected risks of extreme events due to change in Ocean and Cryosphere with Special Focus on Small Island Developing Nations

Important terms:

1. **Extreme Events**: An extreme event is a time and place in which weather, climate, or environmental conditions—such as temperature, precipitation, drought, or flooding—rank above a threshold value near the upper or lower ends of the range of historical measurements [1]. Extreme events occur on meteorological to inter-annual timescales, from minutes to decades. They are governed on shorter timescales by prevailing weather systems and on longer timescales by modes of climate variability acting on the background state, with the background state changing because of rising Greenhouse Gas (GHG) concentrations [2].
2. **Cryosphere**: The cryosphere is the part of the Earth system that includes solid precipitation, snow, sea ice, lake and river ice, icebergs, glaciers and ice caps, ice sheets and ice shelves, and permafrost and seasonally frozen ground. The cryosphere is global, existing not just in the Arctic, Antarctic and mountain regions, but at all latitudes and in approximately one hundred countries [3].

Small Island Developing States (SIDS): SIDS is a group of developing countries which face specific social, economic and environmental vulnerabilities. They are so recognized by the United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States [4]. SIDS display a certain level of similarity in terms of sustainable development and they have also formed a cohesive group for addressing environmental issues.

The OCEAN AND THE CRYOSPHERE IN A CHANGING CLIMATE

The United Nations Intergovernmental Panel on Climate Change's Special Report on the Ocean and the Cryosphere in a changing climate, approved at IPCC's 51st session in 2019, was the third and the last of its special reports to be published as a part of its 6th assessment cycle. The report comprehensively covers the impacts of climate change on the oceans and the cryosphere, how these changes affect the ecosystem and what governance, mitigation and adaptation pathways can be achieved to lessen future risks.

In addition to their role within the climate system, such as the uptake and redistribution of natural and anthropogenic carbon dioxide (CO2) and heat, as well as ecosystem support, services provided to people by the ocean and/or cryosphere include food and water supply, renewable energy, and benefits for health and well-being, cultural values, tourism, trade, and transport. The state of the ocean and cryosphere interacts with each aspect of sustainability reflected in the United Nations Sustainable Development Goals (SDGs) [5]. However, it also causes hazards to the ecosystem. Rise in sea levels, increase in marine heatwaves, ocean acidification, ocean deoxygenation, permafrost thawing, ice sheet mass loss and decrease in snow cover are some of the many on the list. The communities habituated in the coastal regions are especially vulnerable to these hazards. With the growing changes in the ocean and the cryosphere due to human-induced climate change and its adverse effects on the ecosystem, the study and discussion of the same has become of prime importance. As many as 1.9 billion people live in the coastal areas, including 65 million people living SIDS. If the changes are not kept in check, the consequences can be dire, both in financial and environmental terms.

Even so, the societies will be challenged to adapt to the changing scenarios even if current and future efforts to reduce GHG emissions to keep the global warming well below 2 degree Celsius.

Sea Level Rise (SLR): The report suggests that human induced climate change has been the dominant reason behind the SLR since 1970. Global average sea levels rose by 3.6mm a year from 2005-2015, some 2.5 times faster than the rate seen during the 20th century. There are several factors behind it. These are "thermal expansion" as the ocean warms, changes in the amount of water stored on land in reservoirs and groundwater, and the melting of glaciers and ice sheets. At the local and the regional levels, these contributions can be counteracted or amplified. For example, subsidence to excess water extraction can cause land to sink, increasing the relative rate of SLR [6]. The report also suggests that the acceleration in the recent SLR has been due to increasing melt from Greenland and Antarctica ice sheets. The ice sheets will continue to melt, thus causing SLR, irrespective of whether GHG emissions are reduced or not.

It is important to note, w.r.t the agenda, that SIDS face a potential risk of submerging under water due to the rising global sea levels. Today, the world experiences extreme events disguised as heatwaves, cold waves or tropical cyclones. If measures taken to control global warming, which will consequently also control SLR across the globe, are not successful, a small island nation might go under water by the end this century or so. The question that arises here is whether such a phenomenon then would be termed as an "extreme event" or not, and if yes, then what can be done to prevent it.

IMPACT ON SIDS- An Overview

For SIDS, sea level rise is arguably the most certain and potentially devastating climate change impact. Several SIDS are expected to lose significant proportions of their land due to sea level rise, including Tuvalu, Tonga, Kiribati, Marshall Islands, Tokelau, and the Maldives. Even larger SIDS with much land area well above potential sea level rise—such as Fiji, Puerto Rico, and Samoa—could have problems since most settlements and infrastructure are in the coastal zone while the hilly, inland regions would experience severe ecological changes in settling all the migrants. Geomorphological changes are also likely. An example of a significant geomorphological change occurred on Tuvalu, then the Ellice Islands, during Cyclone Bebe on 21 October 1972. The storm surge which inundated Funafuti Atoll created a coral rubble wall 18-19 km long and 30-40 m wide with a mean height of 3.5 m —larger than some of the atoll's islets. Continual, similar events might increase island area but reduce island habitability. [7]

Chemical, rather than geomorphological changes, could also reduce low-lying islands' inhabitability. Oceanic absorption of atmospheric carbon dioxide is leading to ocean acidification which is likely to harm coral reefs and to have detrimental effects on coral islands, including shingle beaches. [8]

Events like coral bleaching have the potential to wipe out 90% of corals on a reef, destroying the ecosystem, leaving islands exposed to ocean waves and storms, and eliminating many SIDS livelihoods. Increases to, decreases to or changes in the nature of freshwater will affect SIDS too. These may occur through precipitation changes and sea water intrusion into freshwater lenses and aquifers. Examples of potentially affected SIDS are Aruba, Barbados, Kiribati, the Maldives, and Tokelau. Over the long-term, some SIDS receive up to 25% of their

annual freshwater supply during tropical cyclones. If the cyclone regimes change to decrease the precipitation, then SIDS such as Puerto Rico and Jamaica might also experience freshwater shortages. [9]

Vulnerability and Adaption of SIDS to Climate Change.
A critical review of SIDS and climate change work can help to establish a base for continuing research, policy, and practice on dealing with SIDS, with climate change, with wider climate change issues, and with SIDS-related development other than climate change. There have been concerted efforts on the part of SIDS themselves to tackle with climate change and rising sea level issues. SIDS centers dealing with climate change already exist, like the Caribbean Community Climate Change Center (CCCCC), Pacific Regional Environment Programme (SPREP) and International Global Change Institute (IGCI) in Hamilton, New Zealand. [10]

One common adaptation document across many SIDS is a National Adaptation Programme of Action (NAPA). NAPAs provide a UNFCCC-endorsed process for least developed countries (LDCs) to identify priorities for addressing the most urgent needs for climate change adaptation by using existing information, to present suggestions in an easily-understood format and language. [11] **Use of other kinds of literature like indigenous knowledge or local understanding of the ecosystem is also of importance**. Minority Rights Group International and IUCN highlight that although climate change is disproportionately affecting indigenous groups around the world, which includes those on SIDS, their capacities and demonstrated abilities for dealing with past environmental changes are resources that should be respected and used on the people's own terms.

The above piece of information on vulnerability and adaptation of SIDS is important, although not exhaustive, while discussing probable ways to reduce the risks of extreme events on SIDS due to changing ocean and cryosphere.

Climate Extremes [12].

Over the 21st century, the ocean is projected to transition to unprecedented conditions with increased temperatures, greater upper ocean stratification, further acidification, and oxygen decline. Marine heatwaves and extreme El Niño and La Niña events are projected to become more frequent. The Atlantic Meridional Overturning Circulation (AMOC) is projected to weaken [13]. Increases in tropical cyclone winds and rainfall, and increases in extreme waves, combined with relative sea level rise, will exacerbate extreme sea level events and coastal hazards. The following table has been provided to give an overview of the extreme events that may take place if the changes are not kept in check.

Atlantic Meridional Overturning Circulation (AMOC) collapse	Unknown	Widespread; increased winter storms in Europe, reduced Sahelian rainfall and agricultural capacity, variations in tropical storms, increased sea levels on Atlantic coasts
Sub-polar gyre cooling	Irreversible within decades	Similar to AMOC impacts but considerably smaller.
Marine heatwave increase	Reversible within decades to centuries	Coral bleaching, loss of biodiversity and ecosystem services, harmful algal blooms, species redistribution

Ocean deoxygenation and hypoxic events	Reversible at surface, but irreversible for centuries to millennia at depth	Major changes in ocean productivity, biodiversity and biogeochemical cycles
CO2 and Methane release from permafrost	Irreversible for millennia due to long lifetime of CO2 in the atmosphere	Further increased global temperatures through climate feedback
Greenland Ice sheet decay	Irreversible for Millennia	Significant contribution to sea-level rise, shipping (icebergs)
Ocean acidification	Reversible at surface, but irreversible for centuries to millennia at depth	Changes in growth, development, calcification, survival and abundance of species; e.g., from algae to fish

Note from the Executive Board

Rules of Procedure: Whichever procedure we follow as the EB, we shall not refrain from bending slightly beyond the conventional Rules of Procedure to facilitate debate and help the delegates interact. Hence, we request you all to not worry about the RoP but rather focus upon understanding your roles as countries in this committee and where the debate lies.

Research: The research should, in no way, be restricted to the study guide for it is not exhaustive. The study guide has been provided to give you an idea regarding the focus areas of debate that you should not miss. We strongly encourage you to delve deep into research by using our guide as a starting point and for references.

References

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