

## S3 SLO1: IPCC assessment report 2 - 1995

### Kyoto Protocol

| Kyoto Protocol  |   |
|---|---|
|    | Was created in 1997 and ratified in 2005. Had two periods from 1997-2020. |
|    | Legally binding agreement to decrease GHG                                 |
|    | Original commitment to decrease overall emissions by 5% from 1990 levels  |
|   | Only required developed nations to reduce emissions                       |
|  | Targets are set but no determined time frame                              |

The Kyoto Protocol is an international treaty aimed at addressing global climate change by reducing greenhouse gas emissions. It was adopted on December 11, 1997, in Kyoto, Japan, and entered into force on February 16, 2005. The treaty was negotiated under the United Nations Framework Convention on Climate Change (UNFCCC) and represents one of the first major international efforts to combat climate change.

- The text is related to the IPCC assessment report 2 from 1995, which plays a key role in the adoption of the Kyoto Protocol and ongoing discussions at COP meetings.

- In response to an invitation from the 21st Conference of Parties of the United Nations Framework Convention on Climate Change, the IPCC agreed to prepare a Special Report in 2018 on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways. This report is in the context of addressing climate change, sustainable

development, and poverty eradication.

- Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, and it is likely to reach 1.5°C between 2030 and 2052 if the current rate of increase continues.
- The global mean surface temperature has risen significantly, reflecting a long-term warming trend, with a high level of confidence in the observations.
- Warming is more pronounced in land regions and seasons, especially in the Arctic, and generally higher over land than over the ocean.
- Some climate and weather extremes have been detected to increase in intensity and frequency with global warming, based on various lines of evidence.

- Warming caused by anthropogenic emissions will persist for centuries to millennia and lead to long-term changes in the climate system, including sea level rise.
- Anthropogenic emissions are unlikely to cause more than 0.5°C of additional warming in the next two to three decades or over a century.
- Halting global warming requires reaching and sustaining net zero global anthropogenic CO<sub>2</sub> emissions and declining net non-CO<sub>2</sub> radiative forcing, with the maximum temperature reached determined by cumulative CO<sub>2</sub> emissions.
- Climate-related risks are higher at 1.5°C of global warming compared to the present but lower than at 2°C, and these risks depend on factors such as the rate and magnitude of warming, geographic location, development levels, vulnerability, and mitigation and adaptation measures.
- Impacts on natural and human systems due to global warming have already been observed, affecting land and ocean ecosystems and services they provide.
- The future climate-related risks are influenced by the rate, peak, and duration of warming, with larger impacts if global warming exceeds 1.5°C before returning to that level by 2100.
- Adaptation and mitigation efforts are already taking place and are expected to reduce future climate-related risks if scaled up and accelerated.

### S3 SLO2: IPCC assessment report 3 - 2001

- 1. The Third Assessment Report of Working Group I of the Intergovernmental Panel on Climate Change (IPCC) builds upon past assessments and includes new research results on climate change over the past five years.
- 2. The global average surface temperature increased by about 0.6°C over the 20th century, with variations and fluctuations throughout that period.
- 3. The increase in temperature is larger when considering the years from 1995 to 2000 compared to earlier periods, partly due to improved data processing methods.

- 4. The record shows variability, with significant warming occurring during two periods in the 20th century: 1910 to 1945 and 1976 to 2000.
- 5. It is very likely that the 1990s was the warmest decade, and 1998 was the warmest year since 1861.
- 6. New analyses of proxy data for the Northern Hemisphere suggest that the 20th century had the largest increase in temperature in the past 1,000 years, especially during the 1990s and 1998.
- 7. Night-time daily minimum air temperatures over land increased more rapidly (0.2°C per decade) between 1950 and 1993 compared to daytime daily maximum air temperatures (0.1°C per decade), leading to a longer freeze-free season in some regions.
- 8. The increase in sea surface temperature was about half that of the mean land surface air temperature during the same period.
- 9. Some areas of the globe, mainly parts of the Southern Hemisphere oceans and Antarctica, have not experienced significant warming in recent decades.
- 10. There are no significant trends in Antarctic sea-ice extent since 1978.
- 11. Changes in tropical and extra-tropical storm intensity and frequency are dominated by inter-decadal to multi-decadal variations, with no significant trends observed over the 20th century.
- 12. There are no systematic changes in the frequency of tornadoes, thunder days, or hail events in the limited areas analyzed.

#### S4 SLO1: IPCC assessment report 4 -2007

- IPCC stands for Intergovernmental Panel on Climate Change, a group of scientists established in 1988 to study human-induced climate change.
- The IPCC's Fourth Assessment Report in 2007 is a comprehensive summary of the climate change situation, produced by thousands of authors from various countries and based on over 6,000 peer-reviewed scientific studies.
- The report is divided into four principal sections:
  - a. Contribution of Working Group I: Climate Change 2007 - Focused on the physical science basis.

- Contribution of Working Group II: Climate Change 2007 - Dealt with impacts, adaptation, and vulnerability.
  - Contribution of Working Group III: Climate Change 2007 - Addressed mitigation of climate change.
  - Contribution of Working Groups I, II, and III: The Synthesis Report - Summarized key findings.
- Working Group I's report discussed observations, radiative forcing, and climate sensitivity, highlighting changes in the atmosphere, global warming, and the impact of various gases on radiative forcing.
  - Working Group II's report discussed the impacts of climate change on natural systems, ground instability, rock avalanches, earlier spring events, heavy precipitation, water supplies, ecosystems, and coastal erosion.
  - Working Group III's report focused on the mitigation of climate change and concluded that greenhouse gas stabilization is possible at a reasonable cost, with specific concentration levels costing less than 3% of global GDP.
  - The Synthesis Report addressed various aspects, including observed changes in climate, causes of change, impacts in the near and long term, adaptation and mitigation options, and key uncertainties.

## S4 SLO2: IPCC assessment report 5

- The IPCC Fifth Assessment Report in 2014 confirmed that the Earth's climate is warming, with unprecedented global warming since the 1950s.
- The report highlights numerous observed changes worldwide, including a 0.85°C increase in the Earth's surface temperature and rising sea levels, with significant impacts felt in South Asia.
- Human activities and greenhouse gas emissions are identified as the dominant cause of observed warming since the mid-20th century, with 95% scientific certainty.
- Climate change will have wide-ranging effects on South Asian society, including flooding, heat-related deaths, and food and water shortages.
- The IPCC uses various confidence levels and percentages to describe the likelihood or certainty of climate change outcomes.
- The IPCC consists of three working groups focusing on different aspects of climate change and a Task Force on National Greenhouse Gas Inventories.

- The Synthesis Report, which integrates the contributions of the working groups, is scheduled for finalization in April 2022.
- Climate-related risks in South Asia, such as floods, extreme rainfall, and rising sea levels, are already impacting lives, food security, and health.
- The report discusses the effects of global warming of 1.5°C and emphasizes the importance of limiting warming to mitigate risks to natural and human systems.
- The report acknowledges that climate change impacts can be reduced by limiting warming to 1.5°C compared to 2°C and by maximizing mitigation and adaptation efforts.
- Contributions to the report came from researchers in 40 countries, with over 6,000 scientific references.
- Reactions to the report from various countries, including Australia, Canada, India, New Zealand, and the United States, are summarized, highlighting different perspectives on climate change and its impact.