Understanding the mechanism to implement the Paris Agreement to the UNFCCC

United Nations University (UNU-IAS)

Autumn 2025

Location: 6F Lecture Room
Time: 14:00 – 15:40

Lecturer: Dr Naoyuki Okano, Dr Himangana Gupta, and Dr Mahesti Okitasari,
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Office Hours: by appointment

Course Description

The climate negotiations process started in 1992 when countries signed the international treaty – United Nations Framework Convention on Climate Change (UNFCCC) during the Rio Earth Summit. This Convention was the result of the revelation that climate change was unequivocal and anthropogenic. The UNFCCC had put in place several principles through its 26 articles, laying the foundation for mitigation action, adaptation, finance, technology, and monitoring and reporting.

The first protocol under the UNFCCC, the Kyoto Protocol, agreed upon in 1997, furthered the objective of the Convention, with set timelines and targets. However, this protocol was not considered fully effective in abating global greenhouse gas emissions to the level needed. Therefore, the Paris Agreement (PA) was adopted in 2015 during the 21st Conference of the Parties to the UNFCCC. It commits all countries to climate action based on their capability and intent. The Agreement is being celebrated as a milestone in the history of climate negotiations as it is hoped that it will be key to implementing climate-positive solutions and also enhancing climate governance from local to national levels.

Even with the past efforts to abate climate change, human activities caused approximately 1.1°C of global warming above pre-industrial levels, which is likely to reach 1.5°C by 2040 if it continues to increase at the current rate as per the Sixth Assessment Report of the Intergovernmental Panel on Climate Change in 2021. Therefore, PA holds much more responsibility to tackle the global crisis in a shorter span of time. The impact of PA is expected to be more far-reaching, including on all domains of development, namely the economic, social and environmental, as well as on all countries. The world has already pledged to make the best of its efforts to do away with carbon intensive technology and be less dependent on non-renewable energy resources.

With increased complexities in the climate change regime, including new market mechanisms, transparency arrangements, reporting requirements, and global stocktake assessments, it has become much more important to understand the modalities under the Paris Agreement (PA) for

its effective implementation at the national level and achievement of global temperature and adaptation goals set under PA. Following the Common but Differentiated Responsibilities principle from the UNFCCC, PA provides some flexibility associated with finance, technology, and transparency to developing countries. This makes finance, capacity building, and technology transfer also relevant topics under the agreement. Therefore, beginning with an overview of the UNFCCC, and its Kyoto Protocol, this course will discuss each article of the Paris Agreement and its implementation and governance mechanism in detail.

Course Objectives and Learning Goals

This course will aim at enhancing the understanding of the students on the key climate agreements, and their modalities and relevance for the Paris Agreement. It will discuss the key articles of the agreement in detail, including that on climate change mitigation (Article 4), market mechanisms (Article 6), climate change adaptation (Article 7), Finance (Article 9), transparency (Article 13), and Global Stocktake (GST, Article 14). The course will also examine the enablers and barriers in the context of the science-policy interface in the current climate regime. First, the course will present an overview of the UNFCCC agreement and its Kyoto Protocol, discussing key modalities and goalposts. Second, it discusses each key article, as mentioned above, in the context of negotiations, rules and procedures agreed, and its relevant science-policy aspects. Third, the course will provide an opportunity to develop students' ability to explore information on climate change data and policy and measures which are necessary to consider solutions of different goals of the Paris Agreement for a common temperature goal. The course is comprised of the three components as follows:

- ***Component 1*** *Climate Science, Mitigation, and Reporting – Focuses on the unfolding of climate negotiation processes in the context of national commitments and mitigation mechanisms: What is the relevance of and science behind the calculation of national greenhouse gas inventories? What are the key elements of national commitments and transparency mechanisms in place to ensure effective mitigation? What is the scientific evidence of climate change?*

- ***Component 2*** *Adaptation, loss and damage, and global stocktake – Explains the basics of adaptation and its linkages with mitigation, NDCs, and SDGs: What is adaptation and loss and damage? What are the major climate impacts and adaptation challenges? What are the goals of Action for Climate Empowerment? What are the key elements of global stocktake?*

- ***Component 3*** *Means of implementation: Finance and international cooperation – Covers key aspects of climate finance, technology, capacity building, and implementation of climate actions on the ground through international cooperation and domestic actions: How can climate finance be leveraged for mitigation and adaptation and what is the role of private sector? What are the examples and best practices of international cooperation and multistakeholder engagement? What is the role of market mechanisms under the Paris Agreement in spearheading mitigation?*

Requirements and Grading Policy

All students are expected to complete the required readings before each class. The course requirements also include active class participation and assignments:

- *Class participation and discussion (10%)*

- *Assignment 1: Class presentation 1 (20%)*
- *Assignment 2: Class Presentation 2 (30%)*
- *Assignment 3: Research paper (40%)*

Class participation and discussion

The course requires students to attend all classes, to arrive on time, to complete the readings and to participate actively in class discussions. This means speaking during each and every class. At the discretion of the instructor, frequent late arrivals or absences may result in a lower grade. Please note that the first session is of particular importance and cannot be missed. Students are also strongly encouraged to regularly follow the news to keep up with international developments, as these events will be reflected in the class discussions. Relevant news sites and reporting archives will be shared by the instructor during the class.

Assignment 1: Class presentation 1

Participants are requested to make a presentation on their analysis of national commitments, GHG emissions and removals, and key mitigation actions for a selected country. They are expected to carry out an analysis of NDCs and GHGs from national documents for preparation of their presentation. Each participant will be given 5 minutes for presentation and 3 minutes for discussion.

Assignment 2: Class presentation 2

Participants are requested to make a presentation building on the analysis made under Assignment 1, identifying the mitigation and adaptation actions needed to meet the NDCs, andimprove NDC and GHG reporting. They are expected to also identify key national circumstances, including vulnerability, adaptation, and loss and damage, etc. that may affect their ability to meet the national commitment under PA. Each participant will be given 10 minutes for presentation and 5 minutes for discussion.

Assignment 3: Research paper

Participants are requested to write a research paper based on Assignment 1 & 2 covering key analysis of GHG and NDCs, ways of improving transparency in GHG reporting, enablers and barriers to achieve the national targets, key mitigation and adaptation strategies, and role of finance, international cooperation, and stakeholder engagement, etc. in effective implementation of PA in the selected country.

Format:

- *Arial 12, 1.5 space, justified alignment, double side, cover page, references (in-text citation and bibliography can include both reports and academic articles)*
- *Harvard referencing style*
- *Maximum of 3,500 words (Excluding references and other relevant information which may be attached as an annex to the essay)*

Submission deadline of the Assignment 3: Friday, 6th February 2026

Course Outline

Lecture No.	Component	Title	Date	Instructors/Invited Speakers if any
1	1, 2, 3	Orientation and course overview & Introduction to the UNFCCC	Tuesday 7 October 2025, 14:00-15:40	Dr. Naoyuki Okano Dr. Mahesti Okitasari Dr. Atsushi Sato (MURC)
2	1,2,3	Overview of the Paris Agreement & climate science and IPCC	Tuesday 14 October 2025, 14:00-15:40	Dr. Atsushi Sato
3	3	International cooperation of climate change - Example of Japan International Cooperation Agency (JICA) - Article 10, 11 and 12	Tuesday 21 October 2025, 14:00-15:40	Mr. Toru Yoshida, Mr. Kotaro Taniguchi (JICA)
4	1	Mitigation rules and NDCs - GHG emissions and data sources - Transparency under Paris Agreement	Tuesday 28 October 2025, 14:00-15:40	Dr. Atsushi Sato
5	1	Mitigation - Characteristics of GHG emission - Sector specific issues including LULUCF/REDD+ accounting - MRV for National, local and private sector	Tuesday 4 November 2025, 14:00-15:40	Dr. Atsushi Sato
6	3	Climate Finance	Wednesday, 12 November 2025, 11:20-13:00	Dr. Kanako Morita (Keio Univ.)
7	1	Decarbonization and sustainable societies in the context of net-zero targets under the PA	Tuesday, 18 November 2025, 14:00-15:40	Dr. Tatsuya Hanaoka
8	1	Assignment 1 – Class presentation (mitigation)	Tuesday 25 November 2025, 14:00-15:40	Dr. Atsushi Sato Dr. Naoyuki Okano Dr. Mahesti Okitasari
9	2	Climate change adaptation - Overview of adaptation - Global goal on adaptation	Tuesday, 2 December 2025, 14:00-15:40	Dr. Naoyuki Okano
10	1	Just transition pathway for net-zero emissions	Tuesday 9 December 2025, 14:00-15:40	Dr. Mahesti Okitasari
11	2	Loss and Damage	Tuesday, 16 December 2025, 14:00-15:40	Dr. Naoyuki Okano
12	1, 2	Global Stocktake	Tuesday, 6 January 2026, 14:00-15:40	Dr. Naoyuki Okano
13	1	Market mechanisms under the Paris Agreement (Article 6)	Tuesday, 13 January 2026, 14:00-15:40	Mr. Supanut Chotevitayatarakorn (IGES)
14	1,2,3	Assignment 2 – Class Presentation: (Mitigation and adaptation)	Tuesday, 20 January 2026, 14:00-15:40	Dr. Naoyuki Okano Dr. Mahesti Okitasari

				Dr. Himangana Gupta
15	1,3	Land-based mitigation - REDD+/ NbS - Case examples of implementation	Tuesday, 27 January 2026, 14:00-15:40	Dr. Himangana Gupta

Course Readings

Participants are expected to actively contribute to class discussions based on the reading material provided. The lecturer reserves the right to update the reading list throughout the course and will alert participants to the changes in class. If any required readings from academic journals or e-books are added to the course, these can be accessed through the public work stations at the UNU library, using your UNU student login and password. Additional readings from web based content will also be included.

Lecture No.	Recommended Readings
1	Orientation and course overview & Introduction to the UNFCCC
	Outline: This lecture provides an overview of the international climate policy, particularly the UNFCCC and its Kyoto Protocol. It discusses the major international climate priorities, and their relevance in the contemporary context. This lecture will form the foundation for further lectures on the context and specificities of the Paris Agreement. **Recommended readings** 1. UNFCCC. (1992). *United Nations Framework Convention on Climate Change.* United Nations. http://unfccc.int/resource/docs/convkp/conveng.pdf 2. UNFCCC (1997). Kyoto Protocol to the UNFCCC. https://unfccc.int/resource/docs/convkp/kpeng.pdf 3. A record of climate negotiations summaries from 1992 to 2022 is available at Earth negotiations bulletins: https://enb.iisd.org/enb/vol12/
2	Overview of the Paris Agreement & climate science and IPCC
	Outline: This lecture broadly outlines the structure and elements of the Paris Agreement. It also highlights the latest scientific findings on climatic change available from IPCC assessment report, including the information on the possible pathway following the Paris Agreement. **Recommended readings** 1. Science in the UNFCCC negotiations: How does science connect to policy under the UNFCCC? https://unfccc.int/topics/science/the-big-picture/science-in-the-unfccc-negotiations 2. IPCC. (2021). Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 3–32. 3. United Nations. (2015). *Paris Agreement*. United Nations Framework Convention on Climate Change. http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf
3	International cooperation of climate change - Example of Japan International Cooperation Agency (JICA) - Article 10, 11 and 12
	Outline: This lecture explains finance and investment, grant aid, and technical cooperation, in the context of climate change mitigation and adaptation. It sheds light on multiple

	benefits that can be achieved through climate action, including SDGs. Various examples from JICA's implementation in developing countries are presented. **Recommended readings:** 1. JICA's efforts to combat climate change: https://www.jica.go.jp/Resource/english/publications/reports/annual/2021/fp4rrb000000sky0-att/2021_25.pdf
4	Mitigation rules and NDCs: - GHG emissions and data sources - Transparency under Paris Agreement
	Outline: This lecture provides an understanding of climate change mitigation objectives under the Paris Agreement, including Nationally Determined Contributions (NDCs). It talks about GHG emissions, and procurement of related data from national reports to international database. It discusses how Paris Agreement has setup transparency rules to enhance mitigation estimations. **Recommended readings:** 1. All about the NDCs: https://www.un.org/en/climatechange/all-about-ndcs 2. Moving towards implementing an Enhanced Transparency Framework. https://unfccc.int/enhanced-transparency-framework 3. Unpacking Provisions Related to Transparency of Mitigation and Support in the Paris Agreement. https://www.oecd.org/environment/cc/Unpacking-transparency-provisions-Paris-Agreement-CCXG-May2016.pdf
5	Mitigation: - Characteristics of GHG emission - Sector specific issues including LULUCF/REDD+ accounting - MRV for National, local and private sector
	Outline: This lecture provides details on the types of GHGs, various type of GHG emission profiles, their estimation needs, and accounting. It also describes the concept of monitoring, reporting, and verification. **Recommended readings:** 1. FAQs of Task Force on National Greenhouse Gas Inventories - IPCC https://www.ipcc-nggip.iges.or.jp/faq/faq.html 2. GHG data interface - UNFCCC https://unfccc.int/topics/mitigation/resources/registry-and-data/ghg-data-from-unfccc 3. GHG protocol – about us https://ghgprotocol.org/about-us
6	Climate finance (Article 2.1.(c) and 9)
	Outline: Climate finance is one of the most highly debated agenda items in climate negotiations. This lecture will shed light on finance related concerns under the Paris Agreement, and opportunities that can spearhead climate action. It covers climate finance discussions focused on international cooperation for developing countries, such as the GCF and GEF funding, and broader discussions on climate finance under Paris Agreement 2.1(c). **Recommended readings:** 1. Introduction to climate finance: https://unfccc.int/topics/introduction-to-climate-finance 2. Biennial Assessment and Overview of Climate Finance Flows: https://unfccc.int/topics/climate-finance/resources/biennial-assessment-and-overview-of-climate-finance-flows 3. Climate Policy Initiative - Global Landscape of Climate Finance: A Decade of Data: https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-a-decade-of-data/

7	Decarbonization and sustainable societies in the context of net-zero targets under the PA
	Outline: This lecture sheds light on decarbonization and its relevance for sustainability. **Recommended readings:** 1. Decarbonization and sustainable development: https://journals.sagepub.com/doi/full/10.1177/09749101241251618 2. Determinants of decarbonization: https://www.mdpi.com/1996-1073/14/9/2640 3. Roadmap for rapid decarbonization: https://www.science.org/doi/full/10.1126/science.aah3443
8	Assignment 1 – Class presentation (Mitigation)
9	Climate change adaptation - Overview of adaptation - Global goal on adaptation
	Outline: This lecture explains the basics of adaptation. It discusses climate impacts and adaptation success as per the latest IPCC report. It further talks about adaptation under the UNFCCC and the Paris Agreement including key negotiation outcomes. It briefly introduces the recent development on the Global Goal on Adaptation. **Recommended readings:** 1. IPCC AR6 WGII, Summary for Policy Makers: https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf 2. Adaptation to climate change: Key terms. https://www.oecd.org/environment/cc/36736773.pdf 3. Adaptation and resilience: https://unfccc.int/topics/adaptation-and-resilience/the-big-picture/introduction#adaptation)
10	Just transition pathway for net-zero emissions
	Outline: The lecture introduces the concept of a just transition and the work programme on just transition pathways in UNFCCC and under the Paris Agreement. It discusses the coverage of just transition in nationally determined contributions and long-term low-emission development strategies, implementation within key sectors, tracking its progress and financing mechanisms. **Recommended readings:** 1. Denton et al. (2022). Accelerating the transition in the context of sustainable development. In IPCC, Climate Change 2022: Mitigation of climate change. Contribution of WG III to AR6 Report of the IPCC. https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter17.pdf 2. UNFCCC. KCI (2025). Just transitions in national climate frameworks and climate policies: Experiences in alignment, planning and progress tracking. https://unfccc.int/documents/645834 3. UNFCCC. SCF (2023) Financing just transitions. https://unfccc.int/sites/default/files/resource/UNFCCC_SCF_2023_web.pdf
11	Loss and Damage
	Outline: This lecture explains the basics of loss and damage. It discusses the history of the agenda item of loss and damage and its conceptual development over time, especially under the Warsaw International Mechanism. Then it details the recent development on implementation mechanism of loss and damage. **Recommended readings:**

	1. What is loss and damage?: https://www.chathamhouse.org/2022/08/what-loss-and-damage 2. Loss and damage: https://unfccc.int/topics/adaptation-and-resilience/the-big-picture/introduction#loss-and-damage
12	Global Stocktake
	Outline: This lecture explains the ratchet mechanism of the Paris Agreement cantering around Global Stocktake. It covers the basic idea behind the idea of Global Stocktake and details the outcome of the first Global Stocktake which took place in 2023 at COP28. **Recommended readings:** Global Stocktake: https://unfccc.int/topics/global-stocktake Reflections on the first Global Stocktake of the Paris Agreement: https://doi.org/10.1016/j.esg.2024.100212
13	Market mechanisms under the Paris Agreement (Article 6)
	Outline: This lecture presents an overview of the market mechanisms under the Paris Agreement, carbon pricing, and standards such as VERRA, Gold Standard, and others. It sheds light on operationalization of new mechanisms under Article 6 of PA, and trends of carbon credits trading. Covering key negotiations under this article, it presents its relevance for bringing down emissions. **Recommended readings:** 1. A guide to UN market-based mechanisms: https://unfccc.int/blog/a-guide-to-un-market-based-mechanisms 2. What you need to know about Article 6 of the Paris Agreement: https://www.worldbank.org/en/news/feature/2022/05/17/what-you-need-to-know-about-article-6-of-the-paris-agreement
14	Assignment 2 – Class presentation (Mitigation and adaptation)
15	Mitigation: Characteristics and - Land-based mitigation through REDD+/ NbS - Case examples of implementation
	Outline: This lecture discusses some key mechanisms under the UNFCCC which are beneficial for the achievement of NDCs. This includes Reducing Emissions through Deforestation and Forest Degradation in Developing countries (REDD+), Ecosystem-based mitigation, and Nature-based solutions. Some best practices of implementation around the world will be discussed. **Recommended readings:** 1. What is REDD+? https://unfccc.int/topics/land-use/workstreams/redd/what-is-redd 2. Warsaw framework for REDD+: https://unfccc.int/topics/land-use/workstreams/redd/redd-resources#Warsaw-Framework-for-REDD IUCN. 2016. 'WCC-2016-Res-069-EN. Defining Nature-Based Solutions'. International Union for Conservation of Nature. https://portals.iucn.org/library/sites/library/files/resrecfiles/WCC_2016_RES_069_EN.pdf

Important Information

Class Conduct & Etiquette

Students are expected to arrive on time and not to engage in disruptive behaviour during class. This includes, among other things, private side conversations, the use of cellphones and other electronic devices, or the reading of newspapers. Cellphones should be switched off and stored in the bag. We wish to create an atmosphere of open and tolerant discussion in the classroom and request students to recognize every individual's right to have an opinion. The lecturer and other students should be treated with dignity and respect in discussions on contentious political issues where a diversity of opinion is likely to arise. However, we also recognize that there are limits to tolerance and the lecturer reserves the right to request disciplinary action against any student who violates this policy or repeatedly shows disruptive behavior in class.

Plagiarism & Academic Misconduct

Please be aware that the consequences of plagiarism are severe, and students found guilty of academic misconduct will be punished in accordance with UNU's academic honesty policies. The lecturer reserves the right to run all assignments through an anti-plagiarism software provided by the UNU. If evidence of academic misconduct on the assigned presentations, the mid-term exam or the final essay should be found, the assignment will receive a failing grade. In case of repeated violations of academic conduct, the student may receive a failing grade for the entire course and will be reported to the appropriate authorities for disciplinary action.

Invited Speakers/Lecturers Bio

To be provided before the lecture