

Climate change mitigation through the measurement, reporting and verification (MRV) of greenhouse gas emissions

Practicum on the implementation of the Paris Agreement

United Nations University (UNU-IAS)

July 22nd - August 1st 2024

Location: [Lecture room, 6th floor in the UNU building](#)

Time: 14:00-15:40 and 15:50-17:30¹

Lecturer: [Dr Akio Takemoto](#)²

Contact Information: atakemoto@unu.edu

Office Hours: 9:30-17:30 (by appointment)

Course Description

“Transparency” is regarded as a vital element to ensure the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) to function as a vehicle where government parties and stakeholders to implement their climate action committed. In a narrow interpretation, “transparency” means the set of rules and arrangement under Art.13 of the Paris Agreement. The Parties are responsible for reporting on the progress of the implementation of their nationally determined contributions (NDCs) together with the quantitative and qualitative information such as the national greenhouse gas (GHG) inventory, biennial transparency report (BTR) with common tabular format (CTF) under the Enhanced Transparency Framework (ETF)

At the same time, the concept of “transparency” can be found in many areas of work for practitioners of climate actions, and often, they are not explained how they are different, and related with each other. As to the measurement, report, and verification (MRV) or modalities, procedures and guidelines (MPGs), which are often used synonym for transparency, there are different sets of rules operated in layers, which are relevant with each other, i.e. international, national, sector, entity or facility-level, as well as project level.

¹ See Course Outline below for the exact time of each class

² The course is delivered in collaboration with Overseas Environmental Cooperation Centre (OECC) which participates in all the classes as a secretariat.

The course will provide an explanation on how these MRVs in layers work on climate actions of multiple stakeholders towards the implementation of the Paris Agreement. At the same time, the Course particularly shed a light on GHG emissions and climate action at entity or facility-level, bearing in mind that there are accelerated efforts to drive the private sector engagement in climate action while considering relevant articles of the Paris Agreement and its implementation and governance mechanism in detail.

The course is provided by lectures by professionals and practitioners in the field, demonstration/hands on training of GHG emissions calculation applying relevant methodologies, site visits to observe actual efforts by the private sector to reduce GHG emissions through installation of decarbonization technologies and their MRV, and group work/presentation. Participants are expected to develop an analytical essay for enhancement of transparency with their selected case studies.

Course Objectives and Learning Goals

This course will aim at enhancing the understanding of the participants on the theory and practices of transparency of climate action operated in different levels. At the completion of the course, participants are expected to build their capacity to integrate information and knowledge gained through lectures and hands-on practices on transparency and GHG MRV and to develop strategies to enhance and lead climate actions at various levels.

The course is comprised of the five Components as follows:

- *Component 1: An overview of relevant transparency will be provided, explaining function of MRV and institutional frameworks pertaining to stakeholders in actions in different levels.*
- *Component 2: Theory and practices of transparency at national level including policy measures, support and finance as well as methodological aspects of GHG inventory (e.g. data collection procedures sourced from national statistics in line with the Intergovernmental Panel on Climate Change (IPCC) guidelines) will be provided referring to the rules, modalities and procedures under the Paris Agreement.*
- *Component 3: Theory and practices of transparency at entity/facility level including policy measures, support and finance as well as methodological aspects of GHG inventory (e.g. scopes and data collection procedures incl. measurement and estimation) will be provided referring to requirements by standards (e.g. ISO and GHG protocol), legislations (e.g. EU-ETS) as well as initiatives (e.g. SBTi, TCFD).*
- *Component 4: Site visit is conducted to some facilities of the private sector to provide hands on experiences and dialogue with corporate practitioners on the efforts of transparency and GHG MRV at entity/facility level and on their GHG mitigation actions and initiatives.*
- *Component 5: Presentations and discussion on the roles of transparency and GHG MRV and relevant policy measures, support and finance as important driving forces towards strengthened climate actions.*

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 (40%)*
- *Assignment 1: Short report (10%)*
- *Assignment 2: Analytical essay (50%)*

Class Participation

The course requires students to attend all classes, to arrive on time, to complete the readings and to participate actively in class discussions³. 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 discourse and developments on climate change, as these will be reflected in the class discussions. Relevant news sites and reporting archives will be shared by the instructor during the class.

Assignment 1: Short report

Participants who will join the site visit per the Lecture 14 are requested to submit a short report on the site visit focusing on the practice of the private sector and how good practices on transparency and GHG MRV as well as mitigation actions can be replicated.

For online participants who will not participate in the Lecture 14 will be assigned to submit a short report on a good practice of the GHG MRV and mitigation action by a company in their country and how such climate action can be replicated.

Format:

- *Arial 12, 1.5 space, justified alignment, double side, references (in-text citation and bibliography can include both reports and academic articles)*
- *Harvard referencing style*
- *Maximum of 800 words (excluding references)*

Submission deadline of the Assignment 1: Thursday, August 8th, 2024

Assignment 2: Analytical essay:

Participants are requested to analyse status quo and gaps in performance of mitigation actions including aspects of policy and measures, capacity, finance and incentives at national, sectoral, or entity/facility level and propose recommendations for measures including technology, finance and capacity building for enhanced transparency and GHG MRV towards strengthened climate actions.

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)*

Submission deadline of the Assignment 2: Thursday, August 15th, 2024

³ Participation to the site visit is exempted for online participants, if any.

Course Outline

Lecture No.	Frame work	Title	Date	Instructors/Invited Speakers if any
1	Introduction	Introduction to the concept of transparency, its objectives, essential elements and functions	Monday, July 22nd, 2024 ~ 14:00-15:40	Dr. Akio Takemoto and Dr. Atsushi Sato
2	Transparency at national level	Overview of the National GHG Inventory System and Transparency Reporting and Assessment	Monday, July 22nd, 2024 ~ 15:50-17:30	Dr. Atsushi Sato
3		Methodological aspects of national inventory system – Energy sector	Tuesday, July 23rd, 2024 ~ 14:00-15:40	Dr. Atsushi Sato
4		Methodological aspects of national inventory system – Industrial Process and Product Use (IPPU), and Waste sectors	Tuesday, July 23rd, 2024 ~ 15:50-17:30	Dr. Atsushi Sato
5		Methodological aspects of national inventory system – Agriculture, and Land Use, Land-Use Change and Forestry (LULUCF) sectors	Wednesday, July 24th, 2024 ~ 14:00-15:40	Dr. Atsushi Sato
6		Policy measures for mitigation and adaptation, support and finance related to transparency and reporting under the UNFCCC	Wednesday, July 24th, 2024 ~ 15:50-17:30	Dr. Atsushi Sato
7		Transparency at entity/facility level	Basics of entity/facility level transparency and GHG MRV including Scope 1, 2 and 3 emissions	Thursday, July 25th, 2024 ~ 15:50-17:30
8	Details of entity/facility level transparency and GHG MRV including mandatory reporting system of GHG emissions		Friday, July 26th, 2024 ~ 14:00-15:40	Mr. Makoto Kato, and Mr. Akihiro Tamai, OECC
9	The incentive mechanisms and carbon disclosure - Task force on Climate-related Financial Disclosures(TCFD), Science Based Target Initiative (SBTi) and International Sustainability Standards Board (ISSB) – Part 1		Friday, July 26th, 2024 ~ 15:50-17:30	Mr. Kimihiro Kuromizu, and Mr. Kunihiko Kobayashi, OECC
10	The incentive mechanisms and carbon disclosure - Task force on Climate-related Financial Disclosures(TCFD), Science Based Target Initiative (SBTi) and International Sustainability Standards Board (ISSB) – Part 2		Monday, July 29th, 2024 ~ 14:00-15:40	Mr. Kazuo Takayama, OECC and Invited speaker(s) from financial institutions (TBD) ⁴

⁴ Bio of the invited speakers will be shared with the participants upon confirmation of availability during the course.

11		Linkage of transparency and GHG MRV to carbon markets - Part 1: ETS and crediting mechanisms	Monday, July 29th, 2024 ~ 15:50-17:30	Mr. Makoto Kato and Jun Watanabe, OECC
12		Linkage of transparency and GHG MRV to carbon markets - Part 2: Integrity standards Core Carbon Principle, VCMI's code of practice, and the SBTi's Corporate Net-Zero Standard	Tuesday, July 30th, 2024 ~ 14:00-15:40	Mr. Jun Watanabe, OECC
13		Incorporation of GHG MRV into practice towards enhanced climate action and expanded business profile	Tuesday, July 30 th , 2024 ~ 15:50-17:30	Mr. Kimihiro Kuromizu, and Ms. Kisato Nagakuro, OECC
14	Site visit	Observing corporates' efforts to GHG MRV and enhanced mitigation actions ⁵	Wednesday, July 31st, 2024 ~ 14:00-15:40	OECC
15	Transparency for climate action and growth	Discussion and presentation - Transparency and MRV as driving forces for enhanced climate action will be explained discussed	Thursday, August 1st, 2024 ~ 14:00-15:40	Dr. Akio Takemoto and Dr. Atsushi Sato

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.

Course Readings by major framework components

Frame work	Recommended Readings
1	Introduction

⁵ The exact place(s) of the site visit will be announced upon confirmation of availability during the course. Participation to the site visit is exempted for online participants, if any.

	<ul style="list-style-type: none"> • UNFCCC – History of the Conventions: https://unfccc.int/process/the-convention/history-of-the-convention#Climate-Change-in-context • UNFCCC – What is transparency? https://unfccc.int/process-and-meetings/transparency-and-reporting/about-transparency/what-is-transparency
2	<p>Transparency at national level</p> <ul style="list-style-type: none"> • All about the NDCs https://www.un.org/en/climatechange/all-about-ndcs • Moving towards implementing an Enhanced Transparency Framework https://unfccc.int/enhanced-transparency-framework • FAQs of Task Force on National Greenhouse Gas Inventories - IPCC https://www.ipcc-nggip.iges.or.jp/faq/faq.html
3	<p>Transparency at entity/facility level</p> <ul style="list-style-type: none"> • Partnership to Strengthen Transparency for Co-Innovation (PaSTI) https://www.env.go.jp/earth/ondanka/pasti/en/index.html • MRV Information Platform for ASEAN Member States https://mrv-info.com/index.html • GREEN HOUSE GAS PROTOCOL https://ghgprotocol.org/ • Task Force on Climate-related Financial Disclosures https://www.fsb-tcfd.org/ • The International Financial Reporting Standards Foundation https://www.ifrs.org/

Important Information

Class Conduct & Etiquette

Participants are expected to arrive on time and not to engage in disruptive behavior during class. This includes, among other things, private side conversations, the use of cell-phones and other electronic devices, or the reading of newspapers. Cell-phones 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 participants to recognize every individual's right to have an opinion. The lecturer and other participants should be treated with dignity and respect, in particular 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.

Any disruption of the class by cell phones, instant messaging programs or other communication devices will not be tolerated. The lecturer reserves the right to revoke this permission if a student is found using a computer for any non-course related activities.

Plagiarism & Academic Misconduct

Please be aware that the consequences of plagiarism are severe and participants 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 assignments should be found, they will receive a failing grade. In case of repeated violations of academic conduct, the participants may receive a failing grade for the entire course and will be reported to the appropriate authorities for disciplinary action.

Invited Speakers/Lecturers Bio

Kato Makoto (Lecture 7, 8 & 11)

Member, Board of Directors

Overseas Environmental Cooperation Center, Japan

Makoto Kato has engaged in international cooperation on climate change and sustainable development in developing countries through programmes and projects under ministries and agencies of the Government of Japan, UN agencies and international financial institutions. Key areas of his work include capacity development of formulation of laws and policies, and plans related to climate change mitigation, greenhouse gas (GHG) accounting, private sector engagement etc. In parallel with his work at OECC, he has participated in UN climate change negotiation since 2004 as part of the Delegation of Japan and taken the lead for the agenda item of capacity-building in developing countries. He has taught international students as a visiting lecture at the Graduate School of Media and Governance, Keio University. He holds a Master of Laws in International Law from the Kobe University, Graduate School of International Cooperation.

Akihiro Tamai (Lecture 7 & 8)

Senior Researcher

Overseas Environmental Cooperation Center, Japan

Mr. Akihiro Tamai has engaged in capacity development support on measurement, report, and verification (MRV) of GHG emissions and mitigation actions at national and sectoral level, which contributes to nationally determined contributions (NDCs). He has extensive knowledge on GHG accounting on GHG accounting, including national GHG inventory. Prior to joining in OECC, he has worked as a member of the GHG Inventory Office, National Institute for Environmental Studies (NIES), Japan, as the JICA Expert in the Project for National GHG Inventory in Vietnam, Project to Support for Planning and Implementation of Nationally Appropriate Mitigation Action (SPI-NAMA) in Viet Nam, Project for capacity development to establish a national GHG inventory cycle of continuous improvement in Mongolia. He holds a Master of Science in Environment from the University of Tokyo, Graduate School of Frontier Sciences, and a Certificate of the Team of Technical Experts under International Consultation and Analysis, form UNFCCC.

Jun Watanabe (Lecture 11 & 12)

Senior Researcher

Overseas Environmental Cooperation Center, Japan

Mr. Jun Watanabe has focused on research & analysis, as well as information dissemination of carbon market mechanisms under the Paris Agreement, such as the Joint Crediting Mechanism (JCM), as well as voluntary carbon crediting schemes. He has also engaged development of JCM project in Indonesia, Sri Lanka and others, and provided project formulation, mobilization of carbon finance, as well as quantification of GHG emissions reductions from methodological perspectives. He has an extensive knowledge also about carbon market situations and project development in Japan. He worked as a member of secretariat of the Carbon Offset Network, Japan (CO-Net). Currently, he is the OECC's focal point of the Green Transformation League (GX League), Japan. He holds a Master of Science in Environment Engineering from Tokyo University of Marine Science and Technology.

Kunihiko Kobayashi (Lecture 9)

Researcher

Overseas Environmental Cooperation Center, Japan

Mr. Kunihiko Kobayashi has engaged in cooperation with Southeast Asian Countries in development of GHG measurement, report and verification system. He took the lead in publication of the Guidelines for Development and Implementation of Facility Level Monitoring and Reporting (M&R) Framework for Greenhouse Gas (GHG) Emissions in ASEAN Member States (AMS) in 2022. He has been also working on research and analysis of recent development of information disclosure requirements in the finance sector, such as those issued by International Financial Reporting Standards (IFRS). He also has extensive knowledge in the international framework provided by the Convention on Biological Diversity (CBD). He has participated in the CBD COP and UNFCCC COP as part of the Delegation of Japan and supported the negotiation. Prior to joining in OECC, he worked as a Researcher, at Research Institute for Humanity and Nature, Japan, Special Lecturer, Gifu University, and Assistant Administrative Staff at the Nature Conservation Bureau of the Ministry of the Environment, Japan. He holds a Master of Environmental Studies at Sophia University, Japan.

Kazuo Takayama (Lecture 10)

Finance and Investment Specialist

Overseas Environmental Cooperation Center, Japan

Mr. Kazuo Takayama has advised on mobilization of finance on climate change mitigation projects and technology transfer, such as through the Joint Crediting Mechanism (JCM). He also worked on capacity development activities in development of policy framework on introducing incentive mechanisms through ESG finance in development countries. Prior to joining in OECC, he has worked in financial industry for approximately 40 years, as Director of International Finance, Barclays Bank (London Headquarters and Tokyo Branch), Chief Manager at HSBC Midland Bank (Tokyo Branch) and Vice President & Director at Toronto Dominion Bank (Tokyo Branch) etc. He holds Diploma at Foundation for Advanced Studies on International Development and Master of Arts in Economics at the Graduate School of Economics, Hosei University.

Kimihiro Kuromizu (Lecture 9 & 13)

Specialist in Climate Change Planning and Cities

Overseas Environmental Cooperation Center, Japan

Mr. Kimihiro has been engaged in developing country support in development and implementation of climate change mitigation plans and projects, in particular at local government level. Also, he support Japanese privates sectors operation overseas in GHG accounting and disclosure, including supply chain management. Prior to joining in OECC, he was a local government official for the City of Yokohama, as Director General of the Policy Bureau (International Cooperation), Director-General of the Transportation Bureau. Also, he was dispatched as a JICA Expert of the Project on Strengthening Capacity of Planning and Implementation of the Bangkok Master Plan on Climate Change 2013-2023, in Bangkok, Thailand.

Kisato Nagakuro (Lecture 13)

Researcher

Overseas Environmental Cooperation Center, Japan

Ms. Kisato Nagakuro has engaged in development cooperation on GHG accounting under the Partnership to Strengthen Transparency for Co-Innovation (PaSTI) in ASEAN countries, including international dissemination of relevant information. Also, she devoted the launch of the Programme for the model project for international supply chain GHG management for Japanese companies operating in Southeast Asia. She has also worked on technology transfer and mobilizing climate finance through implementing the projects of the Climate Technology Centre & Network (CTCN), such as the Pre-Feasibility Project on Low Emission Land Transport Sector in Vanuatu and the Project on Feasibility study of a combined heat and power supply using green hydrogen.