Round table for "From satellite observation to national GHG inventories: inputs to the Global Stocktake of the Paris Agreement"

Summary Report

10 February 2022 13:00-15:00 (JST) | Zoom Online conference

Language: Russian and English simultaneous translation

1. Overview of the roundtable:

- A national GHG inventory is an important input for the Global Stocktake (GST), which began from COP26, aiming to assess the collective progress towards achieving the purpose of the Paris Agreement and its long-term goals. All Parties are required to submit a greenhouse gas (GHG) inventory as part of the Biennial Transparency Report (BTR) under the Enhanced Transparency Framework (ETF). Since 2018, the Ministry of the Environment of Japan (MOEJ) and Chuo University in cooperation with the Government of Mongolia has developed a model to estimate CO_2 emissions and absorption using GOSAT satellite data in Mongolia. The model results can be used to verify the estimates of GHG inventories.
- To replicate this experience in other countries, the Institute for Global Environmental Strategies (IGES) and Chuo University organised a roundtable entitled "From satellite observation to national GHG inventories: inputs to the Global Stocktake of the Paris Agreement", with the support from MOEJ and the Ministry of Foreign Affairs of Japan (MOFA).
- It aimed to enhance understanding of the GST, the ETF and their linkage; exchange experiences on how GOSAT satellite data contributed to the preparation of Mongolia's GHG inventory; and exchange views on how countries could utilise GOSAT satellite data to contribute to the development of GHG inventories.
- Around 20 participants from six countries (Mongolia, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan) participated in the roundtable, including government officials in charge of a national GHG inventory and climate change issues. Participating from Japan were representatives from MOEJ, MOFA, the Japan International Cooperation Agency (JICA), Chuo University and IGES.
- The roundtable consisted of the following sessions:
  - Opening remarks
  - Presentations and Q&A session
  - Discussion
  - Closing remarks

2. Presentations and discussion highlights:

- In the first part of the roundtable, three presentations were made to provide an understanding of how GOSAT satellite data can contribute to the development of GHG inventories under the Paris Agreement's ETF. Firstly, Ms. TSUKUI Akibi, a policy researcher from IGES, emphasised that developing national GHG inventories and making continuous improvements are critical to engage with the Paris Agreement. Secondly, Dr. Batjargal Zamba, Special Envoy for Climate Change, Ministry of Environment and Tourism of Mongolia shared experiences on the application of GOSAT data for Mongolia's GHG inventory verification and invited all participants to collaborate with the project. Lastly, Prof. WATANABE Masataka from Chuo University explained the details of the project in Central Asia and the expected outcomes.
- In the second part of the roundtable, participants from all countries discussed how the project utilising GOSAT satellite data to improve GHG inventories could be implemented in their own country. All participants showed interest in engaging with the project. Ms. Aliyeva Aida from Kazakhstan

mentioned that now is a good time to collaborate on the project to implement their updated environment code, which stipulates validation and verification of GHG inventory. Mr. Esentur Djamalov from the Kyrgyz Republic also gave a comment that the project can be a mechanism to correct any possible mistakes made in GHG inventories.

Mr. Ibodullo Mahmadullo from Tajikistan and Mr. Serdar Eyeberenov from Turkmenistan raised concerns about limited capacity and knowledge of satellite data. Prof. WATANABE Masataka explained that capacity development and technical support were also included as part of the project. Mr. Esentur Djamalov from the Kyrgyz Republic suggested creating a working group to deepen the understanding of the project, including technical aspects. Mr. Ibodullo Mahmadullo from Tajikistan supported the idea of the working group and emphasised its potential benefit in Central Asia. Dr. Bakhriddin Nishonov from Uzbekistan expressed expectations that the project would contribute to verification of removals from the AFOLU sector.

At the end of the discussion session, Dr. Batjargal Zamba from Mongolia explained that collaboration with other countries such as Japan is the key to fill gaps in capacity especially related to field measurements, and emphasised that the project can offer a good opportunity for Central Asian countries.

- As next steps, Chuo University proposed they will organise bilateral meetings with each country to discuss further arrangements. This could include the possibility of establishing a working group and organising knowledge-sharing workshops at the regional level, including Mongolia.

3. Proceedings of the roundtable:

The roundtable was moderated by MURUN Temuulen, Policy Researcher, Climate and Energy Area, Institute for Global Environmental Strategies (IGES):

Opening remarks by TAKEDA Yoshinori, Director, Central Asia and Caucasus Division, European Affairs Bureau, Ministry of Foreign Affairs of Japan:

- 2022 marks the 30th anniversary of the establishment of diplomatic relations between five Central Asian countries and Japan in 1992. Subsequently in 2004, these countries jointly launched "Central Asia plus Japan Dialogue". Sustainable development is one of key issues to be addressed under the Dialogue. Japan and Central Asian countries are fully aware that climate change is the most urgent issue facing the world and as such, it constitutes a new agenda for collaboration. Today's roundtable will open new cooperation between Japan and Central Asia. All countries reiterated their determination to support a free and open Central Asia aiming for sustainable development.

Presentation by TSUKUI Akibi, Policy Researcher, Climate and Energy Area, Institute for Global Environmental Strategies (IGES):

- The Paris Agreement establishes a ratchet-up mechanism, which consists of nationally determined contributions (NDCs), the Enhanced Transparency Framework (ETF) and the Global Stocktake (GST). The ETF requests all Parties to develop a national GHG inventory report as part of their Biennial Transparency Reports (BTR) and to make continuous improvements. Conducting verification is a good practice to achieve this purpose, and thus GOSAT has potential to contribute to this process.
- Countries participating in the roundtable have the capacity to prepare inventories; however there is room to improve the quality of national inventories like many other countries including Japan. This will meet reporting requirements in BTRs over time.
- National GHG inventory report is one of the inputs to the GST, thus developing a national GHG inventory and continuously improving its quality is one of many ways to engage with the Paris Agreement.
- Considering the timeline for the second GST, there are two chances to submit BTR. Using satellite data for national GHG inventories requires strong collaboration with satellite specialists and inventory experts. The timeline for the second GST allows countries to establish a good relationship and expand opportunities to improve inventories and apply satellite data.

Presentation by Batjargal Zamba, Special Envoy for Climate Change, Ministry of Environment and Tourism of Mongolia:

- The annual total CO_2 emissions in 2018 estimated by inverse analysis were revised by about + 0.3%~+4.3% compared to the Mongolian National CO_2 emissions inventory in 2018 (GDP estimate) when the standard errors of XCO_2 by GOSAT observation and CO_2 emissions were 2ppmv and 200ton/h~ 800ton/h, respectively and a maximum error was 0.66% ~10.26% (1 sigma).
- A posteriori estimates of the 2018 Mongolian National CO_2 emissions in the energy sector were approximate +0.7% to +4.7% higher than the 2018 Mongolian National CO_2 inventory emissions in energy sector (20,293,779 CO_2 tons).
- Total NEE by WRF-VPRM in forest and grasslands were -176,930 Gg and -157,365 Gg, respectively lower than -30,215 Gg in the forest by the Mongolian National inventory 2018.
- Mongolia utilises the outcomes of joint research between Japan and Mongolia, in particular the information on emissions and sinks, in its BUR2, which will be finalised in June 2022 and submitted to the UNFCCC. This estimate could significantly contribute to efforts to improve GHG monitoring in all

participating countries from Central Asia. In addition, calibration of GOSTA satellite data could contribute to international joint efforts towards the Global Stocktake. Dr. Zamba extended an invitation to all participants to engage in cooperation with Japan and Mongolia.

Presentation by WATANABE Masataka, Professor, Chuo University Research and Development Initiative

- More than 50% of countries have not submitted their Biennial Update Reports (BUR) to the UNFCCC due to human resource limitations, internally long process for completing reports, and a lack of budget. Satellite-based estimations of GHG emissions and sinks can fill this gap of missing sources and sinks, thereby supporting accurate GHG inventories.
- The project in Central Asia has been funded by MOEJ and has been certified to commemorate the 30th anniversary of the establishment of diplomatic relations between Japan and Central Asia, which is being promoted by MOFA.
- From FY2022, participating countries will be able to jointly conduct a demonstration project with MOEJ for BTR1 preparation, which will provide support for CO_2 inventory preparation for BTR1, a satellite-based QA/QC plan, and GOSAT observation data. This will help countries to submit BUR/BTRs. The results of the project are expected to contribute to the first and second GST.
- There is sufficient GOSAT observation data for Central Asia for the period 2009-2019, and this data shows potential for estimation of satellite-based emissions.

Q and A session:

- Aliyeva Aida, Chief expert, Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan
  - We agree that satellite monitoring of emissions is more accurate and detailed. Will you share the data regularly with our government?
  - Response from Prof. Watanabe: GOSAT data is publically available, however we need more knowledge on how to convert the data when estimating emissions. Would it be possible to continue exchanging ideas and information to collaborate and develop a methodology for Kazakhstan?
  - Ms. Aida suggested holding a meeting with some research institutes (in Kazakhstan).
- Bakhriddin Nishonov, Head of Laboratory, Hydro meteorological Research Institute of the Centre of Hydro meteorological Service of the Republic of Uzbekistan
  - Is it possible to calculate removals from the land-use sector, especially from forestry?
  - Prof. Watanabe responded that currently Japan is installing the flux measurement equipment in Mongolia mainly for covering grassland. In the past, we utilised the data of flux installed in the forests in Mongolia. We are evaluating our models of CO_2 absorption of forests and grassland as a verification. The results show accurate estimations. We should be able to apply these results to the forestry sector.

Discussions with the five participating countries from Central Asia:

The discussion session was facilitated by UMEMIYA Chisa, Research Manager, Climate and Energy Area/Biodiversity and Forests Area, Institute for Global Environmental Strategies (IGES):

Guiding questions:

- What barriers or challenges do you have for making GHG inventories in your country?
- Do you think if the utilization of GOSAT can address the barriers and challenges?
- What benefits do you see in using GOSAT data?

- What are the potential challenges in applying GOSAT data?

Inputs made by:

- Aliyeva Aida, Chief expert, Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan
  - Lack of transparent data has been a challenge for the country. For instance, the Ministry of Environment and the Committee of Statistics have inconsistent data. Engagement of private companies is also a challenge, as well as non-transparent data for verification.
  - The process for verification has been updated under the recently updated environmental code. Given this, the GOSAT project will be beneficial for the country, and we are ready to collaborate with the team led by Chuo University.
- Esentur Djamalov, Deputy Director, Climate Finance Center under the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic
  - The GOSAT project can be a mechanism to correct any possible mistakes made in GHG inventories. We think this project will help us to move forward.
  - We are open to communication via email. We can also create working groups to discuss further collaboration.
- Ibodullo Mahmadullo, Specialist, Department of State Control over the Use and Protection of Atmospheric Air of the Committee of Tajikistan
  - Satellite observation can play an important role in the country's GHG inventory development, especially because Tajikistan is a mountainous country. Setting up working groups would be a good idea for the region.
  - There are challenges to using remote sensing techniques. Often finding data which are useful and freely available is not easy. We are interested in collaborating with the project for climate change issues.
- Serdar Eyeberenov, Deputy Head, Hydrometeorology and Environmental Protection Department, Ministry of Agriculture and Environmental Protection of Turkmenistan
  - As Prof. Watanabe mentioned earlier, lack of human resources is a challenge for making GHG inventories. Training is required to utilise GOSAT data because we currently do not use satellite data much. We believe the GOSAT project can be beneficial for improving the accuracy of GHG inventories.
  - Response from Prof. Watanabe: Capacity building is crucial for the achievement of the targeted goals of this project. The project will include training opportunities to address human resource limitations.
- Bakhriddin Nishonov, Head of Laboratory, Hydro meteorological Research Institute of the Centre of Hydro meteorological Service of the Republic of Uzbekistan
  - Uzbekistan submitted a BUR to the UNFCCC in June 2021. Use of GOSAT data will be beneficial for verification of the country's GHG inventories. We are also interested in verification of removals from the AFOLU sector. This will be helpful when preparing the country's next BUR.

Responses made by:

- Batjargal Zamba, Ministry of Environment and Tourism of Mongolia
  - Mongolia is a relatively small country, and collaboration with other countries, such as Japan, is key to fill gaps in capacity, especially related to field measurements. We think this project can offer a good opportunity for Central Asian countries.
- WATANABE Masataka, Chuo University
  - We highly appreciate your participation in this roundtable today. I am confident that joint development of estimation using GOSAT data is possible. We are very happy to respond to each country's requests as much as possible.

- I think while bilateral exchange and collaboration can be made individually, working together with the five countries and even including Mongolia will be useful. By sharing knowledge and experience, we can conduct more effective training. We will try to set up individual meetings, then organise joint workshops. We will continue communicating with the countries via email and on-line meeting systems.

Closing remarks by KAWAMURA Reo, Director, Office Global Environment and Decarbonizing Innovation Research, MOEJ:

- Mr. Kawamura thanked all the participants for joining this roundtable and for the very fruitful discussions. He stated that improved GHG inventories for transparency are essential for undertaking the Global Stocktake under the Paris Agreement. He expressed his hope that through this workshop, participants were able to share and deepen their understanding on GOSAT and realise its usefulness for estimation of GHG inventories not only for Mongolia, but also for other countries in Central Asia. He concluded by stating that, based on the comments received, MOEJ will improve technologies to estimate GHG inventories using GOSAT data and continue to support countries to improve the verification of their GHG inventories.

(End)

Annex I. Agenda

Round table for "From satellite observation to national GHG inventories: inputs to the Global Stocktake of the Paris Agreement"

Date and time: 10 February 2022, 13:00-15:00 (JST, UTC+9) | Online

Language: Russian and English simultaneous translation

Background

A national GHG inventory (GHGI) is an important input for the Global Stocktake (GST), which has started from COP26 and aims to assess the collective progress towards achieving the purpose of the Paris Agreement and its long-term goals. All Parties to the agreement are required to submit a GHGI as a part of the Biennial Transparency Report (BTR) under the Enhanced Transparency Framework (ETF). Since 2018, the Ministry of the Environment, Japan (MOEJ), Chuo University in cooperation with the Government of Mongolia has developed a model to estimate CO_2 emission and absorption using GOSAT satellite data in Mongolia. The model results can be used to validate the estimates of GHGIs. This approach could be applied to other countries and support them in improving the quality of their GHGIs.

Objectives

- Enhance understanding of the GST, the ETF and their linkage
- Exchange experiences on how GOSAT satellite data contributed to the preparation for Mongolia's GHG inventory
- Exchange views on how countries could utilise GOSAT satellite data for contributing to the process of the development of GHG inventories

Expected outcomes

- Participants have a better understanding of the linkage between the GST and the ETF
- Potential ideas and approaches to use GOSAT satellite data for GHG inventories
- Build a collaborative partnership for the next fiscal year

Targeted audience

Policymakers and technical experts who are involved in the preparation of a national GHG inventory as well as specialists in satellite technology and atmospheric observation

Ministry of the Environment
Government of Japan

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Agenda

Moderated by the Institute for Global Environmental Strategies (IGES)

Time (JST)	Programme	Presenter
13:00-13:10 (10 mins)	Opening remarks	Mr. TAKEDA Yoshinori, Director, Central Asia and Caucasus Division, European Affairs Bureau, Ministry of Foreign Affairs of Japan
13:10-13:30 (20 mins)	National GHG inventory as part of the Enhanced Transparency Framework (ETF) and its linkage to the Global Stocktake (GST)	Ms. TSUKUI Akibi, Policy Researcher, Climate and Energy Area, Institute for Global Environmental Strategies (IGES)
13:30-13:50 (20 mins)	Sharing the results of country-specific inventory verification using GOSAT satellite data in Mongolia	Mr. Batjargal Zamba, Special Envoy for Climate Change, Ministry of Environment and Tourism, Mongolia
13:50-14:10 (20 mins)	The next step to engage with the GOSAT project in Central Asia	Prof. WATANABE Masataka, Chuo University Research & Development Initiative
14:10-14:20 (10 mins)	Q and A	
14:20-14:50 (30 mins)	Discussion guiding questions include: - What barriers or challenges do you have for making GHG inventories in your country? - Do you think if the utilization of GOSAT can address the barriers and challenges? - What benefits do you see in using GOSAT data? - What are the potential challenges in applying GOSAT data?	
14:50-15:00 (10 mins)	Closing remarks	Mr. KAWAMURA Reo, Director, Office of Global Environment and Decarbonizing Innovation Research, Ministry of the Environment, Japan

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Japan and 5 CA countries (MOFA)

Ministry of the Environment
Government of Japan

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Annex II. List of Registrants

Name	Affiliation	
Ministry of Foreign Affairs of Japan		
TAKEDA Yoshinori	Central Asia and Caucasus Division, European Affairs Bureau, MOFA	Director
SATO Hiroshi	Central Asia and Caucasus Division, European Affairs Bureau, MOFA	Assistant Director
KOBAYASHI Takashige	Embassy of Japan in the Republic of Kazakhstan	First Secretary
YUGUCHI Hidenori	Embassy of Japan in the Republic of Uzbekistan	First Secretary
YAMAGUCHI Yuji	Embassy of Japan in the Kyrgyz Republic	Second Secretary
MIYAMOTO Taichi	Embassy of Japan in Turkmenistan	Third Secretary
ARAKI Kozue	Embassy of Japan in the Republic of Tajikistan	Second Secretary
HORi Keita	Embassy of Japan in the Republic of Tajikistan	Second Secretary
Ministry of the Environement of Japan		
KAWAMURA Reo	Office of Global Environment and Decarbonizing Innovation Research, MOEJ	Director
KOYAMA Takumi	Office of Global Environment and Decarbonizing Innovation Research, MOEJ	Deputy Director
KURATA Daiki	Office of Global Environment and Decarbonizing Innovation Research, MOEJ	Official
INOUE Tomohiro	Office of Global Environment and Decarbonizing Innovation Research, MOEJ	Researcher
ORITA Tomonori	Climate Change Adaptation Office, Global Environment Bureau, MOEJ	Specialist
Japan International Cooperation Agency		
MISHIMA Kenji	JICA East and Central Asia and Caucasus Department	Deputy Director
TOGO Chisa	JICA Uzbekisutan Office	Representative
SEKI Hitoshi	JICA Uzbekisutan Office	Representative
Abdufarrukh Khabirov	JICA Uzbekisutan Office	Program Officer
Chuo University		
WATANABE Masataka	Chuo University Research & Development Initative	Institute Professor
SHISHIME Tomohiro	Chuo University	Professor
OBA Akihiro	Chuo University Research & Development Initiative	Institute Assistant Professor
SAITO Yoko	Chuo University Research & Development Initiative	Researcher
KASHIDA Kazuo	Chuo University Research & Development Initiative	Researcher
KOGA Yuka	Chuo University Research & Development Initiative	
SATO Katsuya	Chuo University Research & Development Initiative	Institute Professor (visiting)
YAGASAKI Daichi	Chuo University Research Support Office	
BABA Ryoko	Chuo University Research Support Office	University Research Administrator
SUENO Mikio	Chuo University	Researcher (visiting)
Mongolia		
Batjargal Zamba	Ministry of Environment and Tourism, Mongolia	Special Envoy for Climate Change, Mongolia
Gomboluudev Purevjav	Information and Research Institute for Meteorology, Hydrology and Environment (IRIMHE)	Deputy Director of the Institute
Chuluun Togtokhyn	National University of Mongolia	Director of the Institute for Sustainable Development
Ijiltsetseg Dorjsuren	Climate Change Research and Cooperation Centre under the Ministry of Environment and Tourism of Mongolia	Administrative officer
Davaasambuu Ulzii-orshikh	Climate Change Research and Cooperation Centre under the Ministry of Environment and Tourism of Mongolia	GHG Inventory specialist for IPPU sector
Bujidmaa Borkhuu	Climate Change Research and Cooperation Centre under the Ministry of Environment and Tourism of Mongolia	GHG inventory expert
Undarmaa Khurelbaatar	Climate Change Research and Cooperation Centre under the Ministry of Environment and Tourism of Mongolia	Project coordinator (National Communications and Biennial Update Report)
Tegshjargal Bumtsend	Climate Change Research and Cooperation Centre under the Ministry of Environment and Tourism of Mongolia	GHGI specialist
Gerelmaa Shaariibuu	Climate Change Research and Cooperation Centre under the Ministry of Environment and Tourism of Mongolia	
Kazakhstan		
ALIYEVA Aida	Ministry of Ecology, Geology and Natural Resources	Chief expert
the Kyrgyz Republic		
Esentur Djamalov	Climate Finance Center under the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic	Deputy Director
Tajikistan		
Ibodullo Mahmadullo	the Department of State Control over the Use and Protection of Atmospheric Air of the Committee	Specialist
Hojiev Abdusamad	the Forecasting and Archives Department of the Meteorological Agency of the Committee	Specialist
Khojaev Mahmaddovud	the hydrographic and forwarding department of the Ice Center of the Meteorological Agency of the Committee	Specialist
Khudoyorzoda Parvina	the Center for Climate Change and Ozone Layer of the Meteorological Agency of the Committee	Deputy Head
Biloli Alisher	the Center for Climate Change and Ozone Layer of the Meteorological Agency of the Committee	Chief Specialist
Turkmenistan		
Serdar EYEBERENOV	Hydrometeorology and Environmental Protection Department, Ministry of Agriculture and Environmental Protection of Turkmenistan	Deputy Head
Uzbekistan		
Bakhriddin Nishonov	Hydrometeorological Research Instiute of the Centre of Hydrometeorological Service of the Republic of Uzbekistan	Head of Laboratory
Kovalevskaya Yulia	Centre of Hydrometeorological Service of the Republic of Uzbekistan (Uzhydromet)	Leading specialist
Rustambekov Rustam	Centre of Hydrometeorological Service of the Republic of Uzbekistan (Uzhydromet)	
Institute for Global Environmental Strategies		
SAMEJIMA Hiromitsu	IGES Biodiversity & Forests	Research Manager
UMEMIYA Chisa	IGES Climate and Energy/Biodiversity & Forests	Research Manager
MURUN Temuulen	IGES Climate and Energy	Policy Researcher
TSUKUI Akibi	IGES Climate and Energy	Policy Researcher
ITO Reiko	IGES Strategic Management Office	Programme Coordinator
TINOCO Yasue	IGES Strategic Management Office	Administrative Assistant
KAWAKITA Tomoko	IGES Strategic Management Office	Project Officer