The Government of Japan

Submission on the fourth Global Dialogues in 2024 under the Sharm el-Sheikh mitigation ambition and implementation work programme referred to in paragraph 14 of decision 4/CMA.4

September 2024

1. Introduction

Japan welcomes the third global dialogue that took place in Bonn ahead of SB 60, where comprehensive and technical discussions were held related to the decarbonization of cities and buildings, focusing on "Reducing operational emissions," "Designing building envelope for efficiency," and "Reducing embodied emissions." On the other hand, it was regrettable that no substantive discussion was made under the agenda item on the MWP at SB 60, and the conclusion was not adopted. Japan would like to reiterate the objective of the MWP, which is to urgently scale up mitigation ambition and implementation in this critical decade. The role of the MWP is important because the MWP can provide an opportunity for Parties and non-Party stakeholders to enhance their ambition and implementation to keep the window for the 1.5 °C goal open. Japan also would like to recall that the SBs are requested to consider progress, including key findings, opportunities and barriers, in implementing the work programme with a view to recommending a draft decision for consideration and adoption by the CMA. Japan believes that it is consistent with the objectives and mandate of the MWP to consider substantive issues, such as key findings related to the topics discussed in the global dialogues. It is crucial that global dialogues deliver meaningful outcomes and that actionable solutions are included in the CMA decisions to serve this objective.

Cities and buildings, selected as the topic for 2024, are essential areas where mitigation efforts need to be significantly accelerated as soon as possible to achieve the 1.5°C goal. This topic is closely related to the GST1 outcome, especially paragraph 28 of decision 1/CMA.5, such as tripling renewable energy capacity globally and doubling the global average annual rate of energy efficiency improvements by 2030. Japan believes that sharing its experiences and lessons learned, including opportunities and barriers, would benefit the international community and is willing to do so. Japan's view on the opportunities, best practices, actionable solutions, challenges and barriers related to the subtopics of the fourth global dialogue is as follows.

2. Spatial planning and low-carbon infrastructure

Achieving net-zero emissions requires decarbonizing a wide variety of city infrastructure, including public facilities, transportation infrastructure, and energy infrastructure.

Considering the long-term emissions implications of infrastructure, it is important to proceed with decarbonizing infrastructures strategically, in the medium to long term, and as soon as possible. While national legislation and planning practices related to infrastructure development vary from country to country, **spatial planning at national and local levels can be an effective tool to promote the decarbonization of infrastructures, taking into account the national/local needs and priorities.** In order to develop and utilize spatial planning for decarbonization, it is important to strengthen coordination among various plans and relevant local stakeholders, encourage interdepartmental cooperation within local governments, and promote the sharing of knowhow and human resource development.

Among various infrastructures, ports and airports play a unique and essential role in the smooth flow of people and goods. While GHG reductions in international shipping and aviation are implemented under the IMO and ICAO, ship and aviation sectors, including ports and airports, are also required to take actions within each jurisdiction. **Thus, it is essential to promote GHG reductions in ports and airports, including through promoting energy conservation and introducing renewable energy.** In addition, these infrastructures can contribute to the decarbonization of other sectors. For example, many industries that account for about 60% of CO2 emissions in Japan are located in ports and coastal areas. Thus, ports are expected to contribute to the decarbonization of these industries by developing the environment for receiving hydrogen, ammonia, etc., required for the energy transition. As the decarbonization of supply chains becomes a major challenge for companies, the decarbonization but also for international competitiveness.

(a) Case Study: Municipalities' spatial planning for renewable energy

Japan has made progress in introducing renewable energy, particularly solar power, and the capacity of solar power installed per flatland area is among the highest in the world. On the other hand, along with the expansion of renewable energy introduction, various concerns have arisen among residents, such as deterioration of the landscape, adverse effects on wildlife, and disasters such as landslides. **Therefore, one of the challenges for the further introduction of renewable energy is how to improve local acceptance.**

In order to address this issue, Japan has established a system of renewable energy promotion areas under the Act on Promotion of Global Warming Countermeasures in 2021. In this system, **municipalities can designate renewable energy promotion areas through consultation with local stakeholders to lead the location of renewable energy projects in line with local needs**. For renewable energy projects certified by municipalities in the promotion areas, the environmental assessment period is reasonably shortened because environmental considerations are guaranteed through the process of consultations with local stakeholders and certification by municipalities. So far, about 40 municipalities designated the promotion areas. This is a good example

of municipalities strategically introducing low-carbon infrastructure based on spatial planning while taking into account local needs.

(b) Case Study: Decarbonization of ports and airports

In Japan, legal frameworks have been established to allow port and airport operators to plan and implement decarbonization. Regarding ports, Carbon Neutral Port (CNP) initiative is being promoted to decarbonize the terminal operation and develop the environment for receiving hydrogen, ammonia, etc. In 2022, the Port and Harbour Act was amended to establish an environment to advance decarbonization efforts with public-private partnership, thus port management bodies may organize port decarbonization councils consisting of a wide range of public and private sector stakeholders and may develop port decarbonization plans. In addition, Japan supports the efforts to establish CNPs through subsidies for the development of plans and participation in the councils.

Regarding airports, in June 2022, the Civil Aeronautics Act and the Airport Act were amended to establish a system under which airport administrators, in cooperation with airport-related parties, develop airport decarbonization promotion plans that set specific goals and initiatives for decarbonization. As of August 2024, airport decarbonization promotion plans have been developed and certified for 34 airports.

3. Electrification and switching to net-zero emission resources

According to the "Net Zero Roadmap" by IEA (2023), electrification technologies, such as electric vehicles and heat pumps, will provide nearly one-fifth of the emissions reductions to 2030 in the Net Zero Emission (NZE) Scenario by replacing fossil fuels with low-GHG electricity. The report also states that the share of electricity in energy use in the global building sector will rise from 35% today to nearly 50% in 2030 in the NZE scenario, with increased deployment of heat pumps playing an important role. Against this backdrop, **it is important to promote the introduction of electricity**.

In addition, the Summary for Policymakers of WGIII contribution to the AR6 of the IPCC (2022) states that electrification combined with low-GHG energy and shifts to public transport can enhance health and employment, elicit energy security, and deliver equity. In industry, electrification and circular material flows contribute to reduced environmental pressures and increased economic activity and employment. It is essential to recognize potential synergies between sustainable development and renewable energy measures in conjunction with electrification.

(a) Case Study: Promotion of heat pumps

The NZE scenario of "Net Zero Roadmap" indicates that space heating will account for most of the mitigation impact of energy conservation measures in buildings in advanced economies. In addition, especially in Japan, which has the custom of taking a bath at home, water heaters, mainly gas heating systems, are the largest source of household energy consumption, accounting for about 30% of total household energy consumption. Therefore, the introduction of heat pumps can contribute a lot to reducing GHG emissions from households in Japan. Thus, Japan has provided subsidy programs for electrifying water heaters, and they have greatly enhanced the installation of heat pump water heaters as an energy conservation measure for existing houses.

On the other hand, there are some barriers, such as the inability of heat pump water heaters in extremely cold regions since its technology needs heat to be extracted from sources such as the surrounding air. Also, in Japan, it is common for each household to have its own water heaters, but in apartment complexes and small detached houses in urban areas, there are significant space constraints for installing equipment such as hot water storage tanks. Thus, it is important to thoroughly introduce the heat pump where possible, as well as develop and commercialize new technologies to overcome these barriers.

(b) Case Study: Decarbonization of electricity through the introduction of renewable energy in housings and buildings

The introduction of renewable energy in Japan has progressed. In particular, the capacity of solar power installed per flatland area is among the highest in the world. Japan provides support for the installation of solar power in housings and buildings, including through Feed in Tariff (FIT) and Feed in Premium (FIP), tax incentives and subsidies. Japan plans to set a new target for the introduction of solar power generation to major house builders through the Housing Top Runner Program, which sets energy-efficiency standards for residential housing. Local governments are also making their own efforts. For instance, the Tokyo Metropolitan Government plans to introduce a mandate for newly built housings and buildings to install solar power generation systems.

One of the challenges in expanding the introduction of solar power generation is the limited space for installation due to the weight of the solar cells themselves and the weight of the glass used to make them durable outdoors. Some Japanese companies are developing thinner, lighter, and more flexible "perovskite solar cells," which are expected to overcome the challenge. Japan supports them to establish the mass production of the "perovskite solar cells," as soon as possible. On the other hand, the introduction of renewable energy has already resulted in cases of excessive power generation under certain weather conditions. Therefore, energy demand-side measures, such as demand response, and grid reinforcement need to be implemented in parallel.

4. Enhance carbon storage through green and blue infrastructure

The WGIII contribution to the AR6 of the IPCC (2022) indicates that urban green and blue infrastructure, including urban forests and street trees, permeable surfaces, and green roofs, offer potentials to mitigate climate change directly through storing carbon, and indirectly by inducing a cooling effect that both reduces energy demand and reduces energy use for water treatment. The IPCC also indicates that the multiple co-benefits of green and blue infrastructure are reducing the urban heat island (UHI) effect and heat stress, reducing stormwater runoff, improving air quality, and improving the mental and physical health of urban dwellers. Green Infrastructure plays a diverse role not only for net-zero emissions and nature-positive but also for disaster prevention measures and well-being. Blue Infrastructure, such as seaweed beds and tidal flats, contributes to the realization of net-zero emissions and rich oceans.

In order to promote green infrastructure and blue infrastructure, **various perspectives are needed, including collaboration with various stakeholders, technological development, financing and objective evaluation of the effects.** In Japan, for example, "Green Infrastructure Promotion Strategy 2023," formulated in 2023, presents a vision of green infrastructure that takes advantage of the diverse functions of the natural environment, and the perspectives from which to approach green infrastructure, as well as the need to promote and incorporate green infrastructure in other fields.

(a) Case Study: Promoting green infrastructure

In Japan, special green space conservation districts are designated by local governments based on the Urban Green Space Act to conserve green space in urban areas. In these districts, certain development activities, such as the construction of buildings, are restricted. These districts contribute to the achievement of Japan's NDC as one of the carbon sinks. However, there are challenges in securing urban green spaces, such as the lack of financial resources and know-how in local governments and the shortage of incentives for private companies. To address these challenges, the Urban Green Space Act was amended in 2024. The amended law expands the support for local governments and establishes a certification system for green space securing plans made by companies and other organizations. Under the new certification system, the government evaluates and certifies the plans from the perspectives of climate change, biodiversity, well-being, and so on. This system seeks to mobilize private finance by making the value of corporate efforts in securing green spaces transparent.

Forests, a green infrastructure, contribute to climate change mitigation as a carbon sink and also play an important role in preventing and minimizing damage caused by natural disasters that are becoming more severe due to climate change. In Japan, an island nation with steep topography, forests are developed and maintained along the fringes of urban areas and other living areas to protect people's living environment from mountain disasters and wind damage. **One of the lessons learned from Japan's** **experiences is the importance of collaboration with various stakeholders.** For example, in the restoration and reforestation of coastal disaster-prevention forests damaged by the Great East Japan Earthquake in 2011, a variety of stakeholders, including municipalities, private companies and volunteers, are working together to ensure the early completion of the project.

(b) Case Study: Promoting blue infrastructure

Japan is vigorously promoting activities related to blue carbon not only for its contribution to climate change mitigation through CO2 sequestration but also for its multiple values in the preservation of the marine environment and fishery resources, tourism, and regional economic development. As an example of efforts to promote bule infrastructure, Japan appropriately counts the amount of CO2 sequestration by blue carbon ecosystems and reflects it in Japan's greenhouse gas inventory. In April 2023, Japan reported the CO2 sequestration by mangrove forests, one of the blue carbon ecosystems, to the Secretariat of the UNFCCC. Furthermore, in April 2024, Japan reported the CO2 sequestration by seagrasses meadows and macroalgal beds. This is the first report on macroalgal beds in the world. Japan will consider calculating the amount of CO2 sequestration through salt marshes and tidal flats.

Another example of efforts to promote blue infrastructure is the implantation of a credit mechanism, J-Blue Credit. In the mechanism, the Japan Blue Economy Association certificates the amount of CO2 absorption through seaweed bed conservation activities, enabling the transactions of credits. Credit creators can secure funds for their activities by selling the credits, and purchasers can reduce their own CO2 emissions by offsetting their own emissions with the credits.

Reference

IEA (2023) Net Zero Roadmap A Global Pathway to Keep the 1.5 °C Goal in Reach

IPCC (2022) the Sixth Assessment Report, Climate Change 2022: Mitigation of Climate Change, the Working Group III contribution