Japan's Submission for Talanoa Dialogue

SUMMARY

Key Message

Japan will make the largest contribution towards the long-term targets in the Paris Agreement. As indicated by the latest scientific findings, including those in the IPCC Special Report on Global Warming of 1.5°C released this October, the whole world needs to enhance measures to reduce GHG emissions in order to achieve the 2.0-degree target and pursue effort toward the 1.5-degree target. This submission document focuses on "How do we get there" among the three questions raised for the Talanoa Dialogue and introduces the latest measures to reduce GHG emissions towards the medium- to long-term targets under the Paris Agreement. Climate actions are no longer costs, rather, sources of competitiveness. Based on this understanding, a virtuous cycle between the environment and growth and a paradigm shift for technological innovation led by business are important. Japan will foster measures to create innovation in an unconventional new manner and to become a model for the world in the achievement of the virtuous cycle between the environment and growth, taking advantage of its advanced technologies and knowhow.

Where are we:

Japan achieved its target of reducing emissions by 6% compared to 1990 levels during the 1st commitment period of the Kyoto Protocol. We are most likely to achieve the Cancun target. In a global context, Japan announced "Action for Cool Earth 2.0" and committed to provide approximately 11.6 billion US dollars (1.3 trillion yen) of climate finance to developing countries in 2020 and has been providing low carbon/decarbonization technology transfer to developing countries through the Joint Crediting Mechanism (JCM).

Where do we want to go:

Japan is committed to continuously working towards achievement of the target of "reducing emissions to 26.0% compared to FY2013 level in FY2030" as described in our NDC. And based on the Paris Agreement, under a fair and effective international framework applicable to all major Parties, Japan will take the lead in the international community's efforts for major emitters to undertake emission reduction in accordance with their capacities, and aims to reduce GHG emissions by 80% by 2050 as its long-term goal while achieving both climate action and economic growth. As for international cooperation, we will contribute toward achieving the world's drastic emission reduction and SDGs through "Co-innovation." For this Co-innovation, Japan will work together with partner countries by sharing its advanced technology and know-how, and establish a mutually beneficial relationship with partners that can create a market for products and services, technologies reflecting their challenges and needs, thereby generating transformation in technology, socio-economic systems and lifestyles.

How do we get there:

Formulation of a long-term low GHG emission development strategy

As the presidency of G20 in 2019, Japan will formulate a long-term low GHG emission development strategy under the Paris Agreement, with strong commitment to the virtuous cycle between the environment and growth and leading the world's energy transitions and decarbonization.

Decarbonization measures

1) Energy Transitions

Making renewable energy the major power source. Focusing on shifting to cleaner use of gas and phasing out inefficient coal thermal power generation and supporting the global trends towards a low carbon approach to fossil fuels worldwide.

2) Innovation

Promoting innovations for decarbonization across all sectors, including those to realize "Well-to-Wheel Zero Emission" by reducing GHG emissions from vehicles. Introducing and disseminating net-Zero-Energy Houses and Buildings, and creating a hydrogen society.

3) Finance

Promoting green finance and make ESG finance a mainstream as a driving force for a strategic shift to a decarbonized society.

4) International Cooperation

Increasing transparency of each country's emission reduction measures, thereby encouraging the countries to implement NDCs and enhance ambitions. Also propelling the development of new low-carbon technologies, business models, innovations and markets through increasing the transparency of companies' emission reduction actions,.

Promotion of measures by non-governmental entities

Encouraging non-governmental entities to implement decarbonization actions through the management of the Talanoa Japan portal website and the organization of events for the Talanoa Dialogue. At the COP24 Japan Pavilion, introducing non-government entities' decarbonizing initiatives to share them with the rest of the world and speed up the paradigm shift.

I. Policy Measures towards Decarbonization

Japan will make the largest contribution towards the long-term targets in the Paris Agreement. As indicated by the latest scientific findings, including those in the IPCC Special Report on Global Warming of 1.5°C released this October, the whole world needs to enhance measures to reduce GHG emissions in order to achieve the 2.0-degree target and pursue efforts toward the 1.5-degree target. This submission document focuses on "How do we get there" among the three questions raised for the Talanoa Dialogue and introduces the latest measures to reduce GHG emissions towards the medium- to long-term targets under the Paris Agreement. Climate actions are no longer costs, rather, sources of competitiveness. Based on this understanding, the virtuous cycle between the environment and growth and a paradigm shift for technological innovation led by business are important. In order to become a model for the world in the execution of the virtuous cycle between the environment and growth, Japan will foster the following measures.

1.0 Formulation of a long-term low GHG emission development strategy

Japan will take on the challenge of promoting energy transitions and decarbonization towards 2050 for the drastic reduction of GHG emissions, while also making the largest possible contribution to reducing global GHG emissions, and thereby realize economic growth. To this end, Japan will expand investments in energy and environment, make use of innovations, promote enhancement of energy and environment measures, and help the related industries to become more advanced. As the presidency of the G20 in 2019, Japan will formulate a long-term low GHG emission development strategy under the Paris Agreement, with strong commitment to the virtuous cycle between the environment and growth and leading the world's energy transitions and decarbonization.

1.1 Energy transitions

Japan will make renewable energy the major power source for 2030. Furthermore, it will focus on shifting to cleaner use of gas and phasing out inefficient coal thermal power generation and supporting the global trends towards a low carbon approach to fossil fuels worldwide for 2050. Japan will also take on the challenge of long-term decarbonization simultaneously, taking the lead in CCUS and hydrogen conversion, and will achieve the use of fossil fuels through decarbonization together with resource-rich countries and emerging economies.

1.2 Promoting innovations for decarbonization

- Strategy Meeting for the New Era of Automobiles

In the field of automobiles, environmental performance improvement by electrification is highly expected. It is critical for Japan, which is one of the most advanced countries in terms of the electrification of vehicles, to proactively contribute to the solution of environmental problems both within and outside the country through its experiences and technologies. Japan aims to increase the market share of next generation vehicles including the ratio of battery electric vehicles to new car sales to reach 50 to 70 percent. We also aim to promote road traffic flow strategy and the use of

public transportation. In addition, we coordinated electrification of vehicles in the "Strategy Meeting for the New Era of Automobiles," which called on automobile manufacturers and experts in areas of investment and energy sectors in July 2018. Toward 2050, the conference decided that Japan will advance the shift of vehicles produced by Japanese automakers in global markets to electrified vehicles (xEVs), including battery electric vehicles, plug-in hybrid electric vehicles, hybrid electric vehicles, and fuel-cell electric vehicles to achieve the world's best environmental performance. And, as the ultimate goal, we will take on the challenge of "Well-to-Wheel Zero Emission," with a view to realizing zero emissions across the entire process, from the global manufacture of energy through to the use of energy to drive cars.

- Net-Zero-Energy Houses and Buildings

Japan has been working hard to realize net-zero-energy in houses and of buildings by improving energy efficiency with highly heat-insulating and air-tight materials and energy efficient air conditioning equipment, and introduction of renewable energy. The aim is to realize net-zero-energy on average for newly built houses and buildings by fiscal 2030. To this end, we will take all possible measures to reduce the cost of high-performance construction materials and raise the awareness of designers and customers of construction companies.

- Promoting the use of hydrogen energy

Hydrogen and fuel-cell related technologies are promising technologies for future decarbonization with their characteristics producing electricity and heat without CO2. Also, hydrogen could be a promising energy carrier for renewable energy since local renewable and unused energy can be fully utilized by conversion to hydrogen.

In order to lead the world in the use of hydrogen energy, Japan held the world's first international ministerial meeting on the theme of hydrogen in October 2018. Participants confirmed the importance of collaborating on the following agenda to accelerate progress in hydrogen technologies:

1) Harmonization of regulations, codes and standards across countries
2) International joint research, R&D and demonstration projects emphasizing safety
3) Study and evaluation of hydrogen potential including CO2 emission reduction effects
4) Communication, education and outreach activities for the acceptance of hydrogen in society.

Moreover in the G20 Ministerial Meeting on Energy Transitions and Global Environment for Sustainable Growth to be held next June, Japan will lead discussions for promotion of hydrogen for energy transitions and decarbonization as the host country.

Japan will also press forward GHG emission reductions by hydrogen use, through R&D, support for the introduction of hydrogen- and fuel cell-related technologies, and demonstration projects of a hydrogen supply chain.

- Promoting technological innovations and reforming forest management in forestry

For the expansion of using wooden materials as a renewable resource, Japan will promote R&D of bio-based

materials such as cellulose nanofibers, increasing the efficiency of forestry by utilizing ICT, making wider use of wooden materials in medium- to high-rise buildings, non-residential buildings and interiors / exteriors, and promoting wider use of fast-growing trees. In addition, the country will create a new system of forest management which aggregates forest management under motivated forest managers, thereby transforming forestry into a growth industry while also implementing forest sink measures.

- Acceleration of R&D to innovate decarbonization technologies

The long-term target of an 80% of GHG emission reduction by 2050 postulates that brand new science and innovative technologies establish an energy-saving- and renewable-energy-based system. Therefore, Japan will accelerate R&D on decarbonization technologies to achieve both enormous GHG emission reductions and economic growth, such as the next-generation power electronics to reduce energy loss and energy storage technologies to assist the stable usage of renewable energy.

- Promotion of innovations for the solution of climate change issues

Japan has been hosting the Innovation for Cool Earth Forum (ICEF) for the world's leaders to gather and discuss technological innovation-based climate change countermeasures. At the fifth annual meeting (ICEF 2018), participants discussed the theme of "Driving Green Innovation" and proposed three key actions: "Inspire investment in technology, products, and services for green growth", "Involve industry and consumers in accelerating technologies and innovation for decarbonization" and "Internationalize cooperative efforts for deploying innovation outcomes."

1.3 Promoting investments in climate-related activities

- Fostering ESG finance

Major players in the financial sector gathered to make recommendations on the future roles that the industry should play to make ESG finance a mainstream. They confirmed the need to expand ESG investments to exert more influence over society for a strategic shift to a decarbonized sustainable society under the Paris Agreement and in line with the SDGs and the need to foster ESG finance through the responses to the global trends by financial institutions. Then they shared the strong belief that each stakeholder should play their respective roles and the national governments should also implement necessary measures. To provide top leaders in the financial and investment sector with a forum to cooperate with the national governments, raise public awareness of ESG finance and take necessary actions, the "ESG Finance High-Level Panel" (tentative name) will be established, through which progress of the measures based on the recommendations will be regularly followed up on.

As a specific example of measures to foster ESG investments, in light of the international initiatives toward the disclosure of climate-related financial information and based on the recommendations made by the TCFD, Japan revised the environmental reporting guidelines, as well as supporting companies in responding to scenario analysis and delivers necessary information. In order to encourage more Japanese companies to disclose information, the

government has established a study group to show the specific guidelines within this year based on which companies should provide related information.

1.4 International cooperation

- Global measurement of GHGs concentrations in the whole atmosphere from space with high accuracy

"IBUKI-2" (GOSAT-2), equipped with higher performance monitoring sensors, was launched on October 29, 2018 as a successor to the GHG observing satellite "IBUKI" (GOSAT) launched in 2009. The satellite will contribute to the refinement of climate change forecasting by continuing global atmospheric monitoring from the space. Moreover, the data obtained from the world's first satellite to provide both CO2 and CO monitoring will be utilized for observations of anthropogenic GHG emissions, which will contribute to improving the accuracy and transparency of each country's GHG inventory and to further mitigation actions.

- Improvement of IPCC Guidelines for National Greenhouse Gas Inventories

Reliable calculation of GHG emissions is fundamental for countries to review implementation of their NDCs, develop the next NDCs, and increase their ambitions. The IPCC Guidelines for National GHG Inventories are the core of GHG estimation and are to be improved on a continual basis corresponding to the latest scientific findings and changes in societal situations. Japan will host the 49th session of the Intergovernmental Panel on Climate Change (IPCC 49) in Kyoto, in which the 2019 Refinement to the 2006 IPCC Guidelines for GHG Inventories will be discussed, thereby contributing to reliable estimation of GHG emissions and the implementation of the Paris Agreement.

- Higher transparency in private sector's mitigation actions

The government can encourage the private sector's mitigation actions by supporting their calculation of GHG emissions. Their initiatives to reduce emissions will lead to the creation of new technologies, business models and innovations. Based on this recognition, Japan will develop and disseminate necessary methodologies and tools as well as develop an incentive scheme for the private sector to improve transparency in emission reduction activities mainly in ASEAN countries under the Partnership to Strengthen Transparency for Co-Innovation which we have established.

- Establishment of a global environmental information platform

Japan will develop the data integration and analysis system (DIAS) as a platform to archive, integrate and analyze big data in the global environment, including satellite observation data. This system will enable unprecedentedly efficient energy management of hydroelectric power generation based on the predicted rainfalls and river flows, which will contribute to the solution of various social issues, including the mitigation of climate change.

- Promotion of the Joint Crediting Mechanism (JCM)

The JCM is a mechanism for reducing GHG emissions by cooperating with developing countries through dissemination of leading low-carbon technologies, products, systems, services, and infrastructure, in which the results of emission reductions are appropriately evaluated as contribution by both the partner country and Japan.
The cumulative emission reductions and removals of over 130 projects in 17 countries are projected to reach approximately 9 million t-CO2 (direct effect until FY2030).
A new JCM finance support program started this year with a focus on recovery and destruction of hydrofluorocarbons (HFCs) which have high global warming potential from used equipment. Two projects, one in Thailand and the other in Vietnam, have been adopted. Proper management of HFCs is expected to result in effective and efficient GHG emission reductions.

- Reducing emissions from deforestation and forest degradation in developing countries (REDD+)
Measures to reduce emissions from deforestation and forest degradation are of urgent necessity. Japan will proactively make efforts for the promotion of REDD+ through development of technologies to efficiently grasp deforestation and forest degradation, human resources, and business models for the sustainable use of forest resources, by public-private partnership while making use of Japan's expertise and skills.

Also, in order to promote participation of the private sector in REDD+ activities, Japan is actively supporting the development of rules for the implementation of REDD+ under the JCM (The first REDD+ guideline was agreed on with Cambodia in May 2018.)

II Non-state actors Promoting Decarbonization and Low-Carbon Measures (from Talanoa Japan Portal Website)

Non-state actors, including industries, local governments and NGOs, are accelerating their decarbonization actions in Japan where the long-term target of an 80% of GHG emission reductions by 2050 is shared. The industries are moving to decarbonizing management based on the Paris Agreement and the 2030 Agenda for Sustainable Development while municipalities and NGOs are working to achieve decarbonization, disaster risk reduction and regional revitalization concurrently. Moreover, research organizations are conducting studies for the enhancement of the NDCs towards the targets in the Paris Agreement.
We are collecting and delivering information about such activities towards the targets in the Paris Agreement within and outside Japan and promoting measures to catalyze these activities.
Specifically, we are operating our own portal website "A portal of best practices to shape the future on climate change-Talanoa Japan." Furthermore, workshops on the Talanoa Dialogue and dialogue meetings between the related ministers and those engaged in renewable energy and other projects were held (refer to the columns below and our portal website: http://copjapan.env.go.jp/talanoa/en/events/months/2018-10/) to add momentum for the achievement of the targets. More than 20 narratives were submitted to the portal website by non-state actors, mainly companies, regarding their decarbonization actions. The Annex refers to the good practices worth sharing globally.
Also, at the COP24 Japan Pavilion, non-state actors' measures, technologies and international cooperation will be

exhibited on the theme “Lead the world forward” and widely introduced to the international community. Advanced low-carbon products and a diorama will be displayed at the pavilion to show how Japan is taking on the challenge of creating a decarbonized society for the future and how Japan will contribute to the climate change measures in developing countries. In addition, a range of events will be held by players in both Japanese and international sectors to share valuable information with its visitors.

Column 1

The State Minister of the Environment had a Talanoa Dialogue meeting with local people engaged in offshore wind power generation projects and others in Goto City, Nagasaki Prefecture in October 2018. Goto City has been implementing climate change measures and is Japan’s first commercial operator of a floating-type offshore wind farm by making use of its geographical characteristics surrounded by sea. In addition, the city is aiming at creating new industries and jobs for regional economic growth.

In the Dialogue meeting, a representative of the local chamber of commerce and industry commented that Goto City should proceed with its initiatives, taking the pride of leading the “industrial revolution.” A participant from the fishing industry said “the pillars of the offshore wind power generation facilities provide gathering places for fish and contribute to the creation of a good fishing area, and we would like to build a win-win relationship between fishery people and the operator of the wind farm, while expanding the wind farm.” A very good mood was seen toward the simultaneous achievement of decarbonization and regional revitalization.

Column 2

The Japanese Ministry of Foreign Affairs, Ministry of the Environment, ICLEI Japan, CAN-Japan and the Japan Climate Leaders' Partnership Japan (Japan-CLP) jointly held the Symposium "Toward a 100% Renewable Energy Society—Multi-Stakeholder Initiatives" in Japan in August 2018.

The symposium was held as a part of the Talanoa Dialogue based on collaboration between multiple stakeholders, and the State Minister of the Foreign Affairs, the Parliamentary Vice-Minister of the Environment, and representatives of companies, municipalities and NGOs spoke on the stage. They introduced the background for their declarations on a 100% renewable energy society and related measures and proactively discussed the future direction towards the realization of a 100% renewable energy-based society.

ANNEX

○ Eco First Promotion Council

The Eco First Promotion Council is playing a leading role in Japan on environmental issues, including climate change. The Council is an independent organization run by forty companies (as of July 2018) from a wide range of business sectors, each of which has been certified by the Ministry of the Environment as a leading environmentally proactive company (“Eco-First company”). It will continue to encourage environmental measures that will tackle issues such as climate change, targeting a wide range of players in society and the private sector, especially major GHG emitters in Japan, to make the shift to a decarbonized society.

○ Construction and housing

Sekisui House Co., Ltd. became the top seller of Zero Emission Houses (ZEH) in the world in FY2017 with the total cumulative number exceeding 35,000 houses. ZEH accounted for 76% of their newly-built detached housing and the average CO2 emissions of such housing (including housing other than ZEH) provided in FY2017 were reduced by 83.6% over the 1990 levels. Japan's ZEH ratio in FY2017 was only 8%, but looking ahead to the decarbonization target in 2050, Sekisui House Co., Ltd. sees its role as creating the ZEH market and promoting a decarbonized society by making all houses ZEH. The company aims to make ZEH the standard for all newly-built homes, through raising awareness of ZEH as well as the importance of addressing climate change.

Daiwa House Industry Co., Ltd. is the first company in the world to join both "EP 100" and "RE 100" in the construction and housing industry. To achieve these targets, the company has been improving energy efficiency at existing facilities and aggressively introducing Net Zero Energy Buildings (ZEB) at newly-built company owned facilities by actively using solar power generation in main and other renewable energy.

LIXIL Group Corporation is committed to achieving a "NETZERO Environmental Footprint" by 2030 whereby environmental contributions from their products and services such as high insulation, energy saving and water-efficient technology will surpass the environmental burden from its business activities across the entire supply chain, including procurement, production, product use, and disposal.

○ Renewable energy

Their innovative technologies related to offshore wind power generation, developed by TODA CORPORATION, are expected to be one solution for the development of large-scale renewable energy. The aim is to realize offshore wind farms by making use of Japan’s first green bonds (10 billion yen) for its own project.

○ Iron and steel

Japan's iron and steel sector is working on development of innovative technologies that will be a key

to drastic CO2 emission reductions in the future, such as COURSE50 (※1) and ferro-coke (※2). The sector has been conducting steel plant diagnosis mainly in emerging economies in the steel industry such as India and ASEAN countries, and promoting technology transfer such as the most effective energy saving and environmental protection technologies that are suitable for each of these countries and regions. In addition, Japan's iron and steel sector cooperates with partner countries' steel companies to utilize the energy management tool whereby they could sustainably conduct energy efficiency improvement and CO2 emission reductions through trends in energy consumption and CO2 emissions.

※1 COURSE50 aims at CO2 emission reductions from production processes of about 30% by using hydrogen for iron ore reduction and collecting CO2 from blast furnace gas. It is scheduled to establish the technologies by ca. 2030 with the final goal of industrializing and transferring the developed technologies by 2050.
※2 Ferro-coke can cut about 10% of energy consumption in the blast furnace operation process by using innovative coke deoxidizing material for the blast furnace (ferro-coke) made from low-grade coal and low-grade iron ore and speeding up and lowering the temperature of the reduction reaction inside the blast furnace.

○ Environmental technology suppliers

Kao Corporation develops technologies and products that lead to changes in lifestyles of consumers such as water conservation products and film containers that significantly reduce the amount of plastic used, in order to realize a lifestyle with zero environmental impact. The company actively continues to reduce its CO2 emissions and carry out educational activities for consumers. TBM Co., Ltd. collects the oil and fat in wastewater from 400 restaurants in Tokyo and generates biomass power of approximately 30,000 KWh per month. Other private companies are developing technologies and products that could provide solutions for a decarbonized society and turning them into products.

○ Local governments

Nagano Prefecture aims at achieving a "100% renewable energy region" by promoting renewable energy and energy saving, and has developed fundraising projects in collaboration with local financial institutions. A monitoring system and a platform for technology development on adaptation have also been established.
Having given its name to the Kyoto Protocol, Kyoto City became the first local authority in Japan to formulate a strategy of "Road to Zero Project" with the specific aim of achieving net-zero GHG emissions, based on experiences of collaborating with various stakeholders such as citizens and businesses (some 30% of energy efficiency improvement in the past 20 years). Key initiatives include (1) energy savings (27.2% reduction in energy consumption by 2016 from peak levels in 1997), and (2) implementation of a solar power system (7-fold increase in solar energy installation between 2010

and 2016).

Itabashi Ward in Tokyo announced “Ecopolis Itabashi,” an environmental declaration, and has taken various actions including promotion of environmental education to develop human resources to be key players in a sustainable society. Itabashi is aiming to promote dissemination of renewable energy and to improve disaster risk reduction by introducing solar power systems and battery storage.

○ Research institutes

The latest studies by the National Institute for Environmental Studies (NIES) of Japan reviewed the efforts of the G20 countries with a focus on (1) promoting decarbonization of energy; (2) improving energy efficiency; (3) minimizing demand for energy services; and (4) reducing non-CO2 GHG and land-use-related emissions. They also insisted that additional policies are essential to bridge the gap between current NDCs and the 2ºC goal and pointed out the rooms for further mitigation efforts and made recommendations on effective measures.

The Institute for Global Environmental Strategies (IGES) also underlines the needs for transformative policies to facilitate low-carbon transition. Primary policies highlighted are: (1) public investment as a means for mobilizing private finance; (2) a high level of carbon pricing; and (3) new financial mechanisms such as carbon certificates.

The Research Institute of Innovative Technology for the Earth (RITE) is developing an evaluation method of emission reduction efforts prescribed in NDCs as emission reduction targets of countries and is also conducting quantitative analyses of NDCs by major countries by using multiple indices such as emission reductions against GDP, marginal abatement costs of CO2, and abatement costs against GDP under collaboration with Resources for the Future (RFF) in the United States. Furthermore, RITE examines the opportunities for and issues to realizing a low energy demand society brought by car-sharing, ride-sharing and reducing food waste, as well as leading the international discussion including holding an international workshop with the International Institute for Applied Systems Analysis (IIASA).

○ NGOs

The Miyako Agenda 21 Forum in Kyoto is engaged in promotion of climate change actions to realize sustainable society where government, businesses, academic experts and local citizen groups jointly work. They have been contributed to mitigation actions through the Kyoto Environmental Management System Standard (KES) and consulting service for energy saving at household. Other local-based NGOs are promoting activities that can solve current local issues and contribute to GHG emission reductions. One such NGO is “Shokubutsu-shigen-no-chikara” located in Minamata, which has been making effective use of bamboo as an important source of thermal energy.