JICA Global Agenda for

No. 16 Climate Change

Japan International Cooperation Agency (JICA) works toward the achievement of the Sustainable Development Goals (SDGs).

June 2021

1. Objectives

JICA's Global Agenda on Climate Change aims to contribute to the goals of the United Nations Framework Convention on Climate Change (UNFCCC) and building sustainable and resilient societies through strengthening capacity development of partner countries to respond to climate change, and promoting co-benefit that pursue both development issues and climate change measures.

2. Current Situation, Analysis of Issues and Reasons for Setting objectives

(1) Climate change issues and international treaty (Paris Agreement)

1) Risks and measures

Climate change is a global threat to the sustainable development and human security. The intensity and frequency of climatic and meteorological events such as extreme temperatures, heavy rainfall, droughts and rainfall shortages are continuously rising. Extreme climatic events have impacts on (1) terrestrial and marine ecosystems, (2) water resources and the aquatic environment, (3) agriculture and food, (4) cities, settlements, and infrastructure, (5) health and welfare, and (6) poverty and livelihoods. Most developing countries have difficulties to take measures to avoid or mitigate climate-related risks which can have negative impact on their economy and society compared to developed countries.

Greenhouse gases (GHGs) have been on the rise (Fig. 1) since the Industrial Revolution. While developed countries are responsible for the majority of historical cumulative emissions, the ratio of emissions from developing countries have seen a rapid increase due to their recent economic growth.

Protecting human lives and property from the negative impacts of climate change in the future requires both developed countries and developing countries to take **mitigation (measures to reduce and increase absorption of GHG emissions)** in all development activities (especially in the fields of energy, transportation, forest conservation) and **adaptation (measures to avoid and reduce the damage caused by projected climate change).** It is important to reduce and manage the risks of climate change by devising complementary strategies that are considering measures

to avoid or mitigate damage, especially in the fields of disaster risk reduction, water resources, agriculture, etc.

2) The Paris Agreement and history of building international consensus

In 1992, the international community adopted the UNFCCC, which entered into force in 1994, and began addressing climate change under the international treaty. The UNFCCC, with the ultimate goal of stabilizing GHG concentrations in the atmosphere, required parties to develop GHG reduction plans and inventories of GHG emissions and sinks, but did not impose specific emission reduction obligations. The UNFCCC includes important concepts such as the "precautionary principle," which states that measures should be taken even if scientific knowledge is insufficient, and the "common but differentiated responsibilities" that should be assumed by developed and developing countries, considering historical cumulative emissions.

Subsequently, the Kyoto Protocol, adopted at the Third Conference of the Parties (COP3) to the UNFCCC in 1997 (effective 2005), imposed GHG emission reduction obligations with numerical targets only on developed countries. The Kyoto Protocol became less effective due to the withdrawal of the United States and the rapid increase in GHG emissions from fast-growing economies such as China and India.

The Paris Agreement, adopted at the 21st Conference of the Parties (COP21) to the UNFCCC in December 2015, sets a goal of keeping the average global temperature increase well below 2 ℃ and to pursue efforts to limit it to 1.5℃ compared to pre-industrial levels, and of reducing anthropogenic GHG emissions to net zero in the second half of this century. In contrast to the Kyoto Protocol, the GHG emission reduction targets were set by the parties themselves, thus creating a mechanism for both developed and developing countries to work together to reduce emissions. In addition, each country is required to report on the implementation of its Nationally Determined Contribution (NDC)[1] every other year, and a mechanism (global stocktaking) has been established to encourage countries to increase ambition of their GHG emission reduction targets by assessing the status of global efforts every five years based on this information.

[1] It has become clear that even if all of the NDCs submitted by 190 countries to date are achieved, it will not be enough to achieve the 1.5℃/2℃ targets. Under the Paris Agreement, both developed and developing countries must promote climate change countermeasures by repeating the cycle of "steady achievement of NDCs and revisions with target increases".

(2) Overview of issues and status in response to the Paris Agreement

1) Negative impacts of climate change on the development agenda

Since the Industrial Revolution, the global average surface temperature has been on an upward trend and has already risen by about 1.0℃. If there is no change in social behavior and technology advancement, the temperature is expected to rise continuously (Fig. 2). Warming of the atmosphere and oceans, decrease in snowfall and glacier, and increase in sea level have been observed, and the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) indicates the following:

- There is no doubt about the warming of the climate system.
- Human influence is very likely to have been the dominant factor in the recent warming.
- Climate change is affecting nature and human society across all continents and oceans.
- Continued emissions of GHGs into the future will lead to further warming and long-term changes in all elements of the climate system, which will increase the likelihood of serious, widespread, and irreversible impacts on people and ecosystems.

Specific impacts on nature and human society are predicted to include items (a) to (f) as explained above. In particular, AR5 reports that climate change may lead to events such as shortages of food and water, increased migration and poverty, and more frequent flooding and droughts in developing countries. These impacts are expected to change the status of countries' development agendas, requiring a reassessment of development priorities and the need to adapt development to climate change and address its challenges.

(a) Negative impacts on terrestrial and marine ecosystems, such as the decline and change in distribution of vegetation, changes and expansion in the distribution of wildlife due to rising water and air temperatures, the threat of extinction, and coral bleaching.

(b) Changes in rainfall patterns may increase the number of days without precipitation, the amount of snow cover, and evaporation, thereby increasing the possibility of a decrease in river flow and groundwater volume. In addition, rising sea levels may increase the extent of saltwater runoff in river estuaries and groundwater, increasing the risk of freshwater salinization.

(c) In the area of agriculture and food, high temperatures may cause health problems in livestock, reduced milk production, crop failure, sunburn, changes in farmland, reduced productivity, increased incidence of pests and diseases, and disasters that affect food and animal production.

(d) In addition, disasters caused by extreme weather conditions can damage urban infrastructure and lifelines, affecting our living environment.
(e) The effects of heat on our lives and other factors affect human health and well-being, causing heat stroke, increased risk of heat-related death, and the spread of waterborne, foodborne, and other infectious diseases.
(f) Poverty and livelihoods will be greatly impacted by the above.

2) Overview of GHG emissions by sector

CO_2 and methane (CH_4) in the atmosphere absorb infrared rays from the Earth's surface and accumulate as heat in the atmosphere, thereby warming the Earth's surface (greenhouse effect). The IPCC has determined that the increase in anthropogenic GHG emissions is largely responsible for global warming.[2]

Globally, by sector (Fig. 4), energy-related GHG emissions account for 73% of the world's GHG emissions, with the largest emissions in the power generation and transmission (30%), transportation (16%), agriculture (12%), and industry and construction (12%) sectors. Land use change and forests also account for 6%, and in developing countries the sector accounts for relatively larger share of the total emissions.

3) Status of GHG emissions and efforts toward a decarbonized society by country

In terms of GHG emissions by country, the top five countries (China, the U.S., India, Russia, and Indonesia) account for more than 50% of the world's total emissions, and Japan is in seventh place with 2.56% of the total (Fig. 5). Based on the Paris Agreement, 191 countries have pledged to make efforts to limit the increase in global average temperature to 1.5 degrees Celsius compared to pre-industrial levels (as of May 2021), but the IPCC 1.5℃ Special Report in the emissions pathway to achieve net zero global GHG emissions by around 2050 indicates that CO_2 emissions should be reduced by 45% (26-29 $GtCO_2eq$) compared to 2010 levels by around 2030. However, as of December 2019, there was still a gap of 12-19 $GtCO_2eq$ between the targeted reductions (UNEP Emissions Gap Report 2020).

Against this backdrop, China, the U.S., and Japan have declared their intention to transition to a decarbonized society in which net zero GHG emissions will be achieved

[2] According to the IPCC, about 60% of global warming is caused by CO_2, about 20% by methane, and the rest by nitrous oxide (N_2O) and chlorofluorocarbons. Compared to CO_2, methane is 25 times more potent, nitrous oxide is 310 times more potent, and chlorofluorocarbons are thousands to tens of thousands of times more potent, so even small amounts of these gases have a large impact. Under the Kyoto Protocol, six types of GHGs (CO_2, CH_4, N_2O, sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs)) were targeted, but after COP17, seven types including nitrogen trifluoride (NF_3) were targeted for reduction. The concentrations of major GHGs (CO_2, CH_4, and N_2O) have increased dramatically since the Industrial Revolution, and their concentrations continue to increase rapidly (Fig. 3).

by 2060, 2050, and 2050, respectively. As a result, the public and private sectors are accelerating their efforts for technological innovation and the transformation of economic and social systems, including the development of new technologies such as hydrogen and carbon capture and storage, and the introduction of carbon taxes and other regulatory changes.

- Trends in EU Countries

  EU countries have been working to reduce GHG emissions from an early stage, aiming to reduce emissions by 18.5% below 1990 levels in 2011 and by at least 55% by 2030, with the goal of achieving net zero carbon emissions (carbon neutrality) by 2050. In order to achieve this goal, they have launched the European Green Deal Strategy[3] and issued green bonds to the value of 35 billion euros in order to break away from their dependence on fossil fuels. In addition, to help the economy recover from the COVID-19 pandemic, EU countries have set up a "Green Recovery" policy, allocating approximately 1.8 trillion euros in a medium-term budget for 2021-2027 to promote the use of electric vehicles and fuel cells.

- Trends in the USA

  The United States signed the Paris Agreement in 2015 and passed the Clean Power Plan alongside fuel efficient vehicles, GHG emission regulations and energy efficiency standards, with the goal of reducing GHG emissions by 26-28% below 2005 levels by 2025. The United States was attempting to introduce energy conservation standards, but in June 2017 the government announced its intention to withdraw from the Paris Agreement, and notified its withdrawal in November 2019. Such actions retracted the plans and policies related to climate change, and many plans and activities to reduce GHGs fell into a state of stagnation.

  However, President Biden, who took office in January 2021, has pledged to carry on the policies of the Obama administration, return to the Paris Agreement, invest $2 trillion in clean energy and other sectors over the first four years of his administration, and keep pace with Europe. This approach is aiming to strengthen industry and stimulate the economy through climate change measures. The United States also hosted the Leaders' Climate Change Summit in April 2021 and announced its goal to reduce GHG emissions by 50% below 2005 levels by 2030.

- Trends in China

  In September 2020, China announced at the United Nations General Assembly that

[3] The European Green Deal, under which the EU aims to achieve carbon neutrality by 2050, is an attempt to create concrete action plans in the areas of energy, buildings, industry, and mobility, and to embody these efforts in the European Climate Law.

CO_2 emissions would peak in 2030, with the goal of carbon neutrality by 2060. While there are still approximately three million coal-related jobs in China, the country has become a world market leader in energy-saving technologies, with a plan to begin trading under a nationwide unified emissions trading system (power sector) by the end of 2021, and a global market share of approximately 80% for solar panels and 50% for wind power.

4) Corporate trends

In parallel with the ESG finance movement triggered by the Paris Agreement, several initiatives in the private sectors have developed. The TCFD (Task Force for Climate-related Financial Disclosures) is a private-sector-led task force that aims to promote the disclosure of climate-related financial information to companies in order to encourage investors to make appropriate investment decisions. In Japan, 377 financial institutions, companies, governments, and other organizations have expressed their support, ranking first in the world (as of April 2021). SBT (Science Based Targets) is an international initiative that calls for the setting and implementation of targets consistent with reduction scenarios to achieve the goals of the Paris Agreement. Japan ranks second in the world with 93 certified companies (as of March 2021). RE100 is an international initiative in which companies aim to cover 100% of the electricity they use in their business with renewable energy; 50 companies in Japan have joined this initiative (as of March 2021). The number of companies that have adopted management strategies incorporating climate change is increasing, and the trend toward environmental improvement and decarbonization is accelerating.

(3) Development cooperation and Japanese government policies

1) Japan's Official Development Cooperation Charter[4]

Japan's Official Development Cooperation Charter states that climate change is a global issue that transcends national borders, and that the aim is to build a sustainable and resilient international society by engaging in the creation of international goals and guidelines and addressing global-scale issues. In addition, climate change mitigation and adaptation to reduce consequences of climate risks are essential to achieve human security and high-quality economic growth, as they reduce the threats to vulnerable groups in developing countries and lead to sustainable economic growth.

2) 2030 Agenda for Sustainable Development (SDGs)

Goal 13 of the SDGs sets out specific targets for climate change action as follows. In

[4] https://www.mofa.go.jp/files/000067701.pdf

addition, since climate change is a cross-sectoral issue, it includes contents closely related to climate change mitigation and adaptation.

Target 13.1 "Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries"
Target 13.2 "Integrate climate change measures into national policies, strategies, and planning"
Target 13.3 "Improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning"
In addition to the above, commitments for climate finance mobilization are mentioned in 13.a and 13.b.

Since climate change is a cross-sectoral issue, the following contents are closely related to climate change mitigation and adaptation.

Goals directly related to both mitigation and adaptation include the following

- Goal 14: "Conserve and sustainably use the oceans, seas and marine resources"
- Goal 15: "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss"

Goals[5] directly related to climate change mitigation include the following.

- Goal 7: "Ensure access to affordable, reliable, sustainable and modern energy for all."
- Goal 8: "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all."
- Goal 12: "Ensure sustainable consumption and production patterns."

In addition, goals directly related to adaptation include the following:

- Goal 1: "End poverty in all its forms everywhere."
- Goal 2: "End hunger, achieve food security and improved nutrition, and promote sustainable agriculture."
- Goal 3: "Ensure healthy lives and promote well-being for all at all ages."
- Goal 6: "Ensure availability and sustainable management of water and sanitation for all."

[5] SDG Goal 7, Target 7.2 states, "Increase substantially the share of renewable energy in the global energy mix by 2030", 7.3 states, "Double the global rate of improvement in energy efficiency by 2030".SDG Goal 15, Target 15.2 states, "By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally". SDG Goal 14,Target 14.2, "By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant impacts, including by strengthening their resilience and take action for their restoration, to achieve healthy and productive oceans", is also highly relevant to climate change.

- Goal 9: "Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation."
- Goal 11: "Make cities and human settlements inclusive, safe, resilient and sustainable."

3) Japanese Government policies and commitments

In Japan's Plan for Global Warming Countermeasures approved by the Cabinet in May 2016, the Japanese government set a medium-term target of "reducing GHG emissions by 26% by FY2030 compared to FY2013" and a long-term target of "reducing GHG emissions by 80% by 2050". In addition, the Cabinet approved the Long-Term Strategy as a Growth Strategy Based on the Paris Agreement in June 2019, proclaiming a " decarbonized society as early as possible in the second half of this century," and submitted it to the Secretariat of the UNFCCC. In addition, in March 2020, the Global Warming Prevention Headquarters decided to set Japan's NDC (NDC) to achieve its mid- to long-term targets of 26% reduction by 2030 and 80% reduction by 2050, as well as to pursue further reduction efforts beyond these levels, and submitted it to the Secretariat of the Convention.

In October 2020, the Prime Minister Suga declared "carbon neutral by 2050" in his policy speech, and in May 2021, the Cabinet approved and enacted the amendment to the Law Concerning the Promotion of the Measures to Cope with Global Warming, which positioned carbon neutrality by 2050 as a basic principle. At the Climate Change Leaders' Summit in April 2021, a high target of 46% reduction (compared to 2013) by 2030 was announced. At the G7 summit in June, the G7 pledged to provide a total of about 6.5 trillion yen in public and private support for climate change between 2021 and 2025, and to strengthen support in the area of adaptation for countries vulnerable to the impacts of climate change.

In response, in the energy sector, where CO_2 emissions are high, the study of the Basic Energy Plan has begun and a major review of electricity demand and power supply composition is expected, with the aim of achieving net zero GHG emissions in 2050.

In addition, in April 2021, the U.S.-Japan Climate Partnership on Ambition, Decarbonization, and Clean Energy was announced, setting out three priority areas in which the two countries will lead international climate action: (a) cooperation and dialogue on climate ambition and implementation of the Paris Agreement; (b) climate and clean technology and innovation; and (c) cooperation on accelerating the transition to a decarbonized society in third countries, particularly in the Indo-Pacific. In particular, in the area of (c), the following were identified as priority areas: cooperation and dialogue on the transition to net zero emissions, sustainable development, clean

energy technology and innovation, including mobilizing additional public and private finance for climate resilience and disaster risk in the Indo-Pacific region and other partner countries.

4) Actions for a Cool Earth 2.0

In order to contribute to the achievement of the common goals of the international community, the Japanese government has announced Actions for a Cool Earth 2.0 (ACE 2.0), which includes increasing Japan's combined public and private support for climate change to developing countries to about 1.3 trillion yen in 2020 (1.3 times the previous level). Subsequently, targets for 2021 and beyond are also under consideration.

5) JICA's cooperation on Climate Change

JICA's cooperation for promoting the implementation of the Paris Agreement from FY2015 to FY2019 included 18 technical cooperation projects (about 3 billion yen), two paid financial cooperation projects (20 billion yen in total), and one grant aid project (960 million yen).

When climate co-benefit projects are included, the annual average input for projects contributing to climate change (mitigation and adaptation) for FY2015-2019 was approximately 12.7 billion yen for technical cooperation, 6.68 billion yen for grant aid, 865.5 billion yen for yen loans, and 13.4 billion yen for overseas investment and loans. As the total amount of funds is greatly influenced by the size of the project, the percentage of yen loan projects is inevitably large.

By type of measures, climate change mitigation accounted for about 661.3 billion yen, climate change adaptation for 191.5 billion yen, and cross-cutting measures for 17.5 billion yen (average for 2015-19), indicating that most of the input was for mitigation. The main reason for this is that in the case of yen loans, the share of projects in the fields of electricity, energy, and transportation, which contribute to climate change mitigation, is large, while the number of yen loan projects that contribute to climate change adaptation is relatively small. In the case of technical cooperation and grant aid schemes, the ratio of mitigation and adaptation is almost the same amount.

By region, the South Asia region received approximately 375.9 billion yen, Southeast Asia 281.5 billion yen, the Middle East and Europe 83.1 billion yen, East and Central Asia 44.4 billion yen, Latin America 34.5 billion yen, Africa 28.4 billion yen, and Oceania 3.2 billion yen (2017-19 on average). However, the actual results of yen loans vary from year to year and are only approximate figures.

6) Japanese local governments initiatives

An increasing number of municipalities have declared their intention to reduce GHG or CO_2 emissions to net zero by 2050, and (as of the end of April 2021) 384 municipalities (total population of the declared municipalities: about 110.11 million) are implementing zero-carbon initiatives (such as examining the environmental energy performance of buildings, systems, and pioneering initiatives such as joint purchasing of solar power generation).

3. Significance of Japan and JICA's Engagement

(1) Contributing to Japan’s international commitments

Climate change is an issue common to all countries of the world, and its solution requires technological innovation and changes in socio-economic systems, so it is necessary for developed countries to take the leading role. Japan has been contributing to the promotion of measures for climate change through the provision of scientific knowledge to the IPCC and other organizations, and the formation of policy frameworks such as the Kyoto Protocol. With regard to the Paris Agreement, which aims at realizing a decarbonized society, Japan and the U.S. announced the “U.S.-Japan Climate Partnership on Ambition, Decarbonization and Clean Energy” in April 2021, and the two countries intention to lead climate action in the international community.

With the entry into force of the Paris Agreement, developing countries have committed themselves to reduce greenhouse gas emissions, but they lack the capacity to formulate and update various climate change plans, prepare biennial transparency reports, and implement measures based on these plans, as required by the Paris Agreement. The Japanese government's own knowledge and experience of compliance with the Paris Agreement and climate change adaptation including JICA's experience would be useful for supporting developing countries in achieving their commitments.

(2) A vital issue for achieving human security and sustainable development

Climate change is important from the perspective of human security, as its impact on vulnerable societies is predicted to be significant. It is also an issue that affects the 17 development goals of the SDGs. We must go beyond the dualism of development and climate change, and contribute to the development pathway that balances the two

themes by creatively mainstreaming climate change into solutions for each development issue, together with partner countries, in order to build a sustainable and resilient international society.

4. Scenarios Contributing to Objectives of the Global Agenda, and Clusters

(1) Basic concept

- Climate change is a threat to sustainable development across the world. Many countries have recognized the importance and necessity of taking climate change action and ratified the Paris Agreement. On the other hand, achieving carbon neutrality with existing technologies will be difficult and will require technological innovation, significant investment, and changes in socioeconomic systems. While greenhouse gas emissions in many developing countries are still relatively low, such a transformation is an opportunity for them. As part of its commitment to international cooperation, JICA will keep abreast with the latest technology innovations around the world and promote co-creation with partner countries to achieve their carbon neutrality.
- Under the Paris Agreement adopted in 2015, not only developed countries but also developing countries are required to formulate climate change mitigation and adaptation objectives in their NDCs in various sectors. However, due to the lack of human resources, technology, and scientific knowledge, it is difficult to formulate and implement concrete plans, strategies, and measures. Therefore, JICA will strengthen the capacity of the central government, which is responsible for climate change actions in their country.
- Climate change is a cross-sectoral issue that needs to be addressed in each sector. However, in many developing countries even basic needs are not yet being met, hence climate change actions are not sufficiently considered. In order to sustain and advance development results in a sustainable manner, it is necessary to incorporate climate change measures to reduce and mitigate climate risks, based on scientific findings such as those of the IPCC into each sector of development. Therefore, it is essential to improve the capacity of ministries and agencies responsible for each development issue to mainstream climate change, and to promote the so-called co-benefit-oriented development programs that balance development and climate benefits.
- Within JICA's cooperation, we will actively mainstream climate change in each

development sector to make the development results more sustainable and resilient to the effects of climate change. Since it is important to consider such measures at the very beginning of project development, JICA will actively evaluate climate co-benefit during project formulation as well as implementation[6].

- In order to promote climate change measures such as achieving carbon neutrality by 2050, public sector funds, technologies, and knowledge alone are insufficient and inadequate. Private sector funds and new technologies will be mobilized, and partnerships with other organizations including local governments will be built.

(2) Composition of JICA clusters

JICA has established the following two clusters in order to contribute to building sustainable and climate resilient societies in partner countries:

1) "Promote the implementation of the Paris Agreement" cluster

2) “Co-benefits of climate change” cluster

(3) Cooperation policy

1) "Promote the implementation of the Paris Agreement" cluster

<Overview>

As a result of climate change mitigation efforts, GHG emissions in developed countries have been declining in recent years, while those in developing countries continue to increase due to economic and population growth. Under the Paris Agreement adopted in 2015, all parties, developed and developing, are working on mitigation and adaptation actions, such as developing and/or revising NDCs and domestic policies, developing National Adaptation Plans (NAPs) and implementation mechanisms, and submitting Biennial Transparency Reports (BTRs) that include GHG inventories and NDC progress. However, many governments in developing countries do not have sufficient financial, technological, and technical capacity to implement these measures on their own, and need support from the international community. Another issue is the low level of accuracy and commitment of NDCs in developing countries.

In order to enable partner countries to steadily implement the various commitments stipulated in the Paris Agreement and to cope with climate change, JICA will support central and local governments by strengthening their technical capacities for developing and/or updating, implementing and monitoring their climate change policies and strategies, and for preparing biennial transparency reports (BTRs). For the transformation towards a carbon neutral society, we will provide support for partner

[6] When designing projects, climate change mitigation and adaptation will be considered at the stage of project formulation and planning, using the JICA Climate Finance Impact Tool (JICA Climate-FIT) to promote mainstreaming of climate change measures.

countries according to their climate change commitments (organization, human resources, and targets) and GHG emission level. Cooperation can be broadly categorized into “planning and/or implementation support” ,”strengthening the GHG inventory and/or transparency framework”, and “introduction and utilization of climate finance”. Due to the nature of the Paris Agreement, **most of the cooperation will contribute to climate change mitigation, but for countries vulnerable to the impacts of climate change, the cooperation will focus on adaptation to climate change.** The implementation policies for each of these areas are described below.

1) - (i) Planning and/or implementation support (Mitigation and adaptation)

- Through implementation of technical cooperation projects, dispatch of policy advisors, and subject-specific training courses, JICA will support capacity building necessary for the formulation and/or revision, implementation, and monitoring of mitigation and/or adaptation plans, NDCs, and long-term low emission development strategies (long-term strategies), etc., to promote "transition to a carbon-neutral society" (climate change **mitigation**) and "building a climate resilient society" (climate change **adaptation)** in partner countries. As for dispatch of policy advisors, we aim at providing experts more relevant to the needs of countries (especially small countries) that have not yet sufficiently addressed the wide range of negotiation areas of the Paris Agreement, despite the limited resources on the Japanese side (especially the Ministry of the Environment).
- In supporting the formulation of long-term strategies, partner countries that are highly dependent on fossil fuels will be given priority. Japan's expertise will be actively leveraged when providing support. For example, JICA will explore the possibility of utilizing the Asia-Pacific Integrated Model (AIM)[7], which is a simulation model developed by the National Institute for Environmental Studies (NIES) and other partners to examine policies aimed at reducing GHG emissions and mitigating climate change impacts.
- To effectively raise the level of capacity of the departments in charge of climate change in many partner countries, JICA will promote climate change measures together with the government of Japan, strengthen cooperation, and strategically use not only technical cooperation projects and dispatch of experts, but also subject-specific training.

1) - (ii) Strengthening GHG inventory and/or transparency framework (Climate Change Mitigation)

- JICA will strengthen the necessary capacity to enable partner countries to prepare their national GHG inventories, reports on progress of their NDCs, and support submission of their biennial transparency reports (BTRs) to the UNFCCC

[7] https://www-iam.nies.go.jp/aim/index_j.html

Secretariat by the end of 2024, and to sustaining these responsibilities thereafter. Based on the results of JICA's basic information collection and confirmation study on the strengthening of the transparency framework[8], cooperation with about two countries will be undertaken.

- JICA will also promote strengthening the transparency framework through human resource contributions[9] to the UNFCCC Consultative Group of Experts (CGE)[10].
- JICA will work closely with relevant Japanese government agencies to optimize our efforts. Concretely, we will collaborate with the Workshop on Greenhouse Gas Inventories in Asia (WGIA)[11] organized by the National Institute for Environmental Studies (NIES) and the Partnership to Strengthen Transparency for Co-Innovation (PaSTI)[12], promoted by the Ministry of the Environment.

1) - (iii) Introduction and utilization of climate finance (Mitigation and adaptation)

- JICA will support partner countries' efforts to address climate change (mitigation and adaptation) and mainstream climate change into policies by utilizing the Climate Change Program Loan and other programs which promote the formulation of policies that contribute to climate change actions.
- In selecting target countries, given that climate change is a cross-sectoral issue, emphasis will be placed on countries with multiple sectors that are highly relevant to climate change as major pillars of cooperation.
- In implementing projects, based on lessons learned from previous projects such as the Climate Change Program Loan in Indonesia and Vietnam, JICA will maximize the impact of each project by combining financial and technical cooperation. For example, technical cooperation supports the formulation of policy actions agreed upon in the policy matrix of financial cooperation, while financial cooperation encourages the official approval of various plans and policy recommendations formulated through technical cooperation within the policy matrix.

<Priority Countries (proposed)>

- Southeast Asia: Economic growth is remarkable, and Japan's Ministry of the Environment places great importance on this region. In particular, Indonesia, Philippines, Thailand, Vietnam, etc. in consideration of their GHG emissions volumes, impacts on supply chains including Japan's, implementation systems of recipient governments, and use of assets from existing cooperation.
- Oceania: Small island states vulnerable to the impacts of climate change

[8] Basic Information Collection and Confirmation Study on Transparency Framework for Low Carbon and Decarbonized Growth in Developing Countries
[9] From 2018 onwards, JICA's Senior Advisor serves as a member of the Japanese delegation.
[10] https://unfccc.int/CGE
[11] http://www-gio.nies.go.jp/wgia/wgiaindex-j.html
[12] https://www.env.go.jp/earth/ondanka/pasti/index.html

- South Asia: India, Bangladesh, etc., in view of their GHG emissions volumes and dependence on fossil fuels

<Countries with Needs (proposed)>

- Southeast Asia: Cambodia, Laos, Myanmar, etc., where future economic growth is expected.
- Latin America: Mexico, Brazil, etc., with high GHG emissions volumes
- Africa: Many countries are vulnerable to the impacts of climate change and have high needs for implementing climate change adaptation. For climate change mitigation, South Africa, etc., with high GHG emissions volumes and high dependence on fossil fuels.
- Others: Small island states

2) "Co-benefits of climate change" cluster

<Overview>

Climate change is a global issue that involves complex cause-effect relationships and impacts over a vast space and long-term time horizon, and tends to be a lower priority in terms of formulation of policies. This is because the effects of actions are not limited to one's own country and do not manifest themselves in the short term. In addition, in partner countries where current basic needs are not being met, it is difficult to implement measures to mitigate future risks based on a long-term perspective. Under these circumstances, in order to promote climate change initiatives in partner countries, it is important to consider co-benefits that contribute to climate change actions (climate benefits) as well as solving development issues (development benefits). In this cluster, the co-benefit approach will be actively promoted to improve both the quality and quantity of climate change measures.

In particular, sectors such as electricity and energy, urban development, transportation, conservation of the natural environment such as forest conservation, and agriculture are particularly important for building a carbon-neutral and climate resilient society. Therefore, JICA will particularly promote developing climate co-benefit projects in these sectors.

When considering climate change mitigation, the use of various technologies for decarbonization will be promoted. Specifically, JICA will promote the use of energy conservation and renewable energy, Carbon dioxide Capture and Storage/ Carbon dioxide Capture, Utilization and Storage (CCS/CCUS), modal shift to low-carbon public transportation, low-carbon urban development, forest conservation, REDD+ to reduce and absorb CO2 emissions, and reduction of greenhouse gas (GHG) emissions in agriculture, sewage treatment, and waste management.

Regarding climate change adaptation, JICA will promote climate risk assessments, focusing on areas where the IPCC and other organizations have predicted that there will be significant risks due to climate change. Specifically, we will promote disaster risk reduction in consideration of the increasing disaster risks associated with climate change and climate resilient urban infrastructures, water resource management to cope with drought risks, water-saving agriculture, biodiversity conservation, and infectious disease measures. Specific policies for addressing each issue are explained below.

2)-(i) Promotion of GHG emission reduction and absorption (Climate Change Mitigation)

A) Energy

Through the Low-Carbon Energy Use Initiative, JICA will consider the cooperation approach and the optimal input of various schemes. Cooperation will be effectively undertaken to promote transitions towards the realization of a carbon-neutral society, while taking into consideration stable energy supply and cost effectiveness. Specifically, we will promote measures to make renewable energy the main power source in the power system, strengthen grid flexibility, and promote the introduction of low-carbon facilities and equipment[13] to improve energy use efficiency not only in the industrial sector but also in the society as a whole.

B) Urban development and transportation

With regard to cities that are expanding at an unprecedented speed and scale, in order to realize sustainable cities that are low-carbon and take into account the negative impacts of climate change, JICA will identify urban issues, prepare development plans with policy packages, formulate solutions including infrastructure development plans, and cooperate in the establishment and operation of systems for urban development management. In addition, we will

[13]With regard to coal-fired thermal power generation, the Strategy for Overseas Deployment of Infrastructure Systems 2025, announced in December 2020, states as follows: "As a general rule, the Government of Japan will not provide assistance to newly planned coal-fired power generation projects in countries where Japan does not have a framework for bilateral consultations on energy and environmental policies, or where Japan does not have full knowledge of the situation and issues surrounding energy in the counterpart country or its policy toward decarbonization. On the other hand, in the case of a country that has no choice but to choose coal-fired power generation for the time being from the perspective of energy security and economic efficiency, if the counterpart country requests Japan's high-efficiency coal-fired power generation as part of its transition toward decarbonization, Japan will provide policy guidance and support in cooperation with the relevant ministries and agencies. In this way, Japan will support the introduction of coal-fired power plants of ultra-supercritical pressure (USC) or higher with top-class environmental performance that utilize Japan's state-of-the-art technology, in a manner consistent with the energy policies and climate change measures of the requesting country, while taking into account OECD rules, on the condition that the country in question moves toward decarbonization and transitions according to its stage of development. We will support the introduction of these technologies, which have top-class environmental performance and utilize Japan's state-of-the-art technologies.

provide comprehensive support in infrastructure development based on these plans.

In the field of transportation, where the contribution to low-carbon society is particularly significant through modal shifts, JICA will promote the development of a transportation system centered on mass rapid transit (MRT) and other rail transportation systems, with the aim of realizing a public transportation-oriented city. In addition, through support for public transport operators and the introduction of mobility management, etc., we will provide comprehensive support to reduce the use of automobiles in cities and realize a smooth urban transport system by switching to public transport.

C) Conservation of forests and other natural environments

The natural environment, including forests, plays a major role in carbon sequestration, and globally, “Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forest and enhancement of forest carbon stocks” (REDD+) has been recognized for its effects on reducing emissions that can be measured. Through the “Japan Public Private Platform for Forest based Solutions”, JICA is working to reflect and promote REDD+ in the national development policies of partner countries in Asia and the Pacific, Latin America, and Africa, where highly important tropical forests are located[14]. The cooperation includes peat management and blue carbon sequestration.

Promoting the conservation of the natural environment as a mitigation measure will at the same time lead to the conservation of ecosystems that are feared to become degraded due to climate change, and contribute to adaptation measures in terms of biodiversity conservation and desertification prevention.

Climate change measures through conservation of the natural environment are capturing attention as Nature-based Solutions (NbS). NbS is an approach with high synergetic effects that can simultaneously address multiple social and environmental issues by utilizing the multifaceted services of ecosystems, such as securing stable food and water supplies and reducing the risk of natural disasters, in addition to climate change. Particularly in partner countries that cannot secure sufficient funds for infrastructure development, NbS is an effective measure that contributes not only to mitigating climate change but also to sustainable development.

[14]The Intergovernmental Panel on Climate Change (IPCC) Special Land-Related Report, released in August 2019, found that about 23% of total anthropogenic emissions of GHGs in 2007-2016 were from agriculture, forestry, and other land uses, and that the reduction of deforestation and forest degradation has the potential to reduce GHG emissions by 400 million to 5.8 billion CO_2 tons/year.

D) Agriculture

JICA will work on agricultural photovoltaic power generation[15] that balances photovoltaic power generation and agricultural production, methane emission control from rice paddies, and methane emission control from livestock.

E) Environmental management

In sewage treatment, JICA will promote approaches such as energy conservation by introducing high-efficiency equipment, converting sewage sludge into solid fuel, utilization of heat produced during waste incineration, and reduction of the generation of nitrous oxide (N_2O) by raising the combustion temperature in the sewage sludge incineration process.

In the area of waste management, JICA will work to reduce the generation of methane (CH_4) using semi-aerobic landfill systems, establish composting facilities, improve the efficiency of collection, transportation, intermediate treatment, and final disposal, and reduce carbon emissions (introducing waste collection vehicles fueled by liquefied natural gas, improving the efficiency of transportation and resource sorting, etc.). We will also promote the 3Rs (Reduce, Reuse, Recycle) and contribute to mitigating climate change by shifting from mass production, mass consumption, and mass destruction to a recycling-oriented society.

2)- (ii) Building a climate-resilient society (Climate Change Adaptation)

A) Disaster Risk Reduction

Focusing on the Asian monsoon region, where flood damage is expected to increase due to climate change, long-term future flood risks will be assessed using scientific knowledge related to climate change impact prediction, and structural measures will be scaled up to ensure the control of highly frequent flood risks in particular. In addition, measures such as Ecosystem-based Disaster Risk Reduction (Eco-DRR) and Nature-based Solution (NbS) will be implemented as appropriate.

B) Water resources management

Utilizing scientific knowledge related to climate change impact prediction, JICA will develop plans for integrated water resources management based on climate risks, and promote measures such as water source selection, watershed conservation, land use policy, and groundwater conservation and recharge in consideration of climate change, as well as efforts to strengthen the water supply system to be more resilient to drought, including measures against non-revenue

[15] https://www.maff.go.jp/j/shokusan/renewable/energy/einou.html

water (NRW) and water conservation.

C) Agriculture

The effects of climate change (extreme events such as drought and gradual changes in average temperature) and the shifting of suitable areas for crop production may have serious implications on food security in the future. JICA will utilize advanced technologies to enhance resilience and take measures for climate change adaptation.

D) Health

JICA will strengthen the measures against vector-borne diseases that spread through vectors such as mosquitoes and rodents, zoonotic diseases that spread from animals such as wild and domestic animals to humans, and waterborne diseases that spread through the environment due to water source pollution caused by climate-induced hazards such as floods.

<Priority Countries (proposed), Countries with Needs (proposed)>

In promoting this cluster, since it will cover many issues and sectors, no priority countries or countries with needs will be set.

(4) Cluster targets

1) "Promote the implementation of the Paris Agreement" cluster

The goal is to increase the number of countries assisted in the formulation and/or update and implementation of various plans (NDCs, long-term strategies, NAPs) and reports (BTRs, GHG inventories) on climate change actions to realize a carbon-neutral and climate resilient society in partner countries. Indicators are as follows.

- Number of countries supported to develop and/or update and implement various climate change plans by 2030 (at least 10 countries)
- Number of people trained (more than 10,000 people)

2) "Co-benefits of climate change" cluster

The goal is to expand cooperation to simultaneously address development issues and climate change. The indicators are as follows.

- Number of projects promoting climate co-benefit using climate change Finance Impact Tool (Climate-FIT) by 2030 (more than 500 projects)
- GHG emission reductions[16] by 2030 (2 million CO_2eq tons/year)
- Double the contribution to climate change adaptation by 2030
- Finance climate change projects worth 1 trillion yen/year in total by 2025

[16]The baseline for GHG emission reductions will be the average of the planned values for 2016-2019.

- Reach beneficiary population of 380 million people

(5) Scale of inputs

1) "Promote the implementation of the Paris Agreement" cluster

- Support for the formulation and/or implementation of Plans: About three technical cooperation projects are expected to be implemented for supporting the formulation and implementation of mitigation plans, NDCs, long-term strategies, and adaptation plans. Dispatch of policy advisors and the possibility of forming a climate change program loan will be considered.
- Transparency framework: About two projects are expected to be implemented.
- Support for cities: About one or two technical cooperation projects are expected to be implemented.
- Intra-regional collaboration: Consider the possibility of implementing about one project.
- Climate finance: Consider formulating a program loan and utilizing funds from the Green Climate Fund (GCF).
- Human resource development: In addition to capacity development through Technical Cooperation Project, the following training programs are utilized.
  - ✓ Subject-specific training: In addition to the existing NDC and Adaptation trainings, Climate Finance will be newly established from FY2021, and Long-Term Strategy and Low-Carbon Urban Development from FY2022, respectively.
  - ✓ Long-term training: Plan to accept about one student per year from FY2022.
  - ✓ Consultant capacity development training: Continue the training conducted in FY2018-2020 to strengthen capacity of experts and/or consultant in this field.

2) "Co-benefits of climate change" cluster

JICA will not set concrete financial inputs for each scheme of cooperation (technical cooperation, grant, loan, etc.) as the financial circumstances and decision-making varies for each sector. However, we aim to contribute to the achievement of the climate finance target set by the Government of Japan by adding up the total of 1) and 2) clusters. We will also aim at assessing the contribution in terms of GHG emissions reduction.

5. Strategic Approaches for the Global Agenda and Clusters

(1) Utilization of knowledge and technology from Japan and other countries, and collaboration with JICA Development Studies Program (JICA-DSP)

- JICA will closely coordinate and cooperate with public and private human resources (ministries, agencies, research institutes, consultants, etc.) for promoting climate change countermeasures in Japan, and proactively convey knowledge and technologies that can be used as reference for partner countries in Japan's efforts to support development. Since Japan and other partner countries are also tackling the issue of climate change through trial and error, it is important to consider Japan's comparative advantage over other developed countries due to JICA's joint implementation approach with partner countries.
- JICA will also promote collaboration with local governments and NGOs, such as Yokohama City, which are promoting advanced initiatives, as well as with universities and other organizations that have implemented SATREPS.
- In the field of environment and climate change countermeasures, as of May 2020, 53 international students, including those from the JICA Development Studies Program, were striving to become future leaders through their studies at Hokkaido University, the University of Tokyo, Kyoto University, etc. Among them were JDS scholars[17] in the field of disaster risk reduction. JICA will continue to promote the development of human resources in this field from the perspective of fostering leaders in climate change and building networks.

(2) Strategic information dissemination

- Recognizing that climate change needs to be pursued in collaboration with many development partners and stakeholders, the Government of Japan will maintain close communication with the Ministry of Foreign Affairs on the progress and trends of international negotiations under the UNFCCC, and will continue to make commitments, disseminate information, and prepare for various submissions. In addition, JICA's support is characterized by careful dialogue with the governments of partner countries and support that is sympathetic to the position of the other party, which contributes to the dissolution of the antagonistic relationship between developed and developing countries and has the effect of further strengthening the

[17] The Project for Human Resource Development Scholarship: https://www.jica.go.jp/english/our_work/types_of_assistance/grant_aid/types_jds.html

climate change framework. These contributions of JICA will be jointly communicated with the governments of partner countries and related partners.

(3) Promotion of inter-city coordination and cooperation

- Recognizing that the efforts of central governments alone are insufficient in promoting climate change countermeasures, and the importance of the efforts of non-state actors, especially local governments and municipalities, JICA will actively engage in cooperation at the city level. We have already cooperated in major cities in Asia (Iskandar in Johor, Malaysia; Bangkok in Thailand, Ho Chi Minh City in Vietnam, etc.) and will continue to explore the possibility of expanding our cooperation to other cities. At the same time, we will also work to find local governments that can serve as partner cities from the Japanese side.
- In collaboration and cooperation among cities, we will provide effective and efficient support by utilizing the networks and resources of the Ministry of the Environment's "City-to-City Collaboration Project for Realizing a Low Carbon Society"[18], "Climate Leaders Group of the World's Major Cities (C40)", and the "Council of Local Authorities for Sustainable Cities and Regions (ICLEI)"[19].
- As of January 2021, four of the twelve Japanese local governments that have concluded comprehensive cooperation agreements with JICA had been selected as Eco-Model Cities by the Japanese government, and the cities of Yokohama, Toyama, and Kitakyushu had been selected as Future Cities for the Environment. JICA is working to strengthen our partnerships with local governments that have advanced knowledge in the environmental field. In addition, we are collaborating with the Japanese private sector to develop projects that contribute to climate change countermeasures in partner countries by utilizing the technologies and know-how of Japanese companies through JICA's overseas investment and loan and private sector partnership schemes.

(4) Promotion of regional cooperation

- In the Southeast Asia region, JICA has supported the establishment and capacity building of the Climate Change International Technical and Training Center (CITC) under the Thailand Greenhouse Gas Management Organization (TGO) for many years. Now that the establishment of the training center has been completed, we will work with CITC as a strategic partner in the Asian region.
- In the Pacific region, JICA supported the construction of the Pacific Climate Change Center (PCCC) through grant aid assistance. PCCC is located in Samoa under the

[18] https://www.env.go.jp/earth/coop/lowcarbon-asia/index.html
[19] http://japan.iclei.org/

Secretariat of the Pacific Regional Environment Programme (SPREP). We are also supporting development of systems at PCCC through technical cooperation. In the future, we will assess the results of the project and consider the need for new cooperation to consolidate and disseminate the results.

- In addition, as a forum for regional information infrastructure and networks, the project will collaborate with the Asia-Pacific Adaptation Information Platform (AP-PLAT) [20] promoted by the Ministry of the Environment, and the Asia Pacific Adaptation Network (APAN) supported by the Ministry of the Environment of Japan.

(5) Leveraging innovation

- Based on the Environment Innovation Strategy (decided by the Integrated Innovation Strategy Promotion Council in February 2020), the following technologies are expected to be utilized for achieving a decarbonized society: i) promotion of the use of non-fossil energy, ii) construction of low-carbon power networks using renewable energy, energy storage systems and energy management systems (EMS), iii) energy-saving technologies such as usage of innovative technologies for transportation, industry, and the private sector, and iv) carbon recycling technologies such as forests, biomass, and carbon capture and storage (CCS/CCUS). These technologies will be tailored based on the needs of partner countries while paying attention to trends in technology development in Japan. Support will also be provided for overseas validation of advanced technologies that are yet to be trialed or currently in the trial stage, from the perspective of promoting the return of know-how to Japan (reverse innovation).
- In the Strategic Innovation Program led by the Cabinet Office, "strengthening national resilience (disaster prevention and mitigation)" has been positioned as one of the major issues. The aim of the strategy "Society 5.0 in times of disaster" is functioning effectively in response to continuously rising risk of more frequent and higher impact disasters due to climate change, by utilizing satellites, big data, AI, etc. at each stage of prediction, prevention, and response that can help reduce damage and achieve early recovery.
- In line with trends in Japan, JICA will utilize the Data Integration and Analysis System (DIAS) for climate change prediction. As part of the digital transformation (DX), we will proactively utilize innovations such as the use of satellite images via Sentinel Asia and drones to identify disaster risks, as well as post-disaster damage assessment and reconstruction planning.
- In the SATREPS project, the areas of "environment and energy (global environmental issues) ", "disaster risk reduction", and "environment and energy (low-carbon

[20] https://ap-plat.nies.go.jp/

society)" have been set as focused areas. In view of the importance of climate change, 84 projects out of all 145 projects have been conducted in the above three climate change related areas. Further projects are expected to be formulated and implemented in the future in accordance with the actual needs of partner countries.

(6) Utilization of Joint Credit Mechanism (JCM)

Japan advocated the Joint Credit Mechanism (JCM) [21] based on Article 6, Paragraph 2 of the Paris Agreement, and has already established JCM with 17 countries. If Japan seeks to expand the number of partner countries, JICA will cooperate with the Japanese government while exploring the possibility of collaboration based on our experience of technical cooperation in Indonesia.

(7) Mobilizing diverse finance

Under the responsibility of promoting sustainable development in partner countries, JICA will pursue more impactful development by mobilizing not only conventional ODA but also various climate funds.

1) Promote the use of external funds such as the Green Climate Fund (GCF)

To pursue effective synergy with ODA projects, JICA will utilize external funds such as the GCF[22].

2) Cooperation with the private sector

Based on the recognition that the initiatives of private companies on decarbonization and/or adaptation technologies and the mobilization of private funds are indispensable to promote climate change countermeasures in partner countries, JICA will promote the formulation of climate change projects with the mobilization of private funds, making full use of private sector investment finance, loans and private-sector partnership projects. In addition, in order to utilize Japan's climate change related technologies, research and verification will be promoted through the SME/SDGs Business Support Project, and participation in RE100 will be promoted.

3) Acquisition of funds (issuance of green bonds and sustainability bonds)

[21] https://www.carbon-markets.go.jp/

[22] Particularly in the area of REDD+, we are actively considering cooperation using external funds from the Central African Forest Initiative (CAFI) and other organizations. Private sector funds are also expected to be mobilized in the formation of GCF projects.

In order to raise funds by issuing bonds, JICA will consider issuing "green bonds" and "sustainability bonds"[23] for demonstrating JICA's commitment to climate change measures to investors. In addition, consideration will be given not only to the greeness and sustainability of the projects, but also to the issuer's response to its strategy for pursuing decarbonized society and sustainability strategy.

6. Other Considerations

(1) Response to COVID-19

1) "Green recovery" (short, medium and long term)

As the economy recovers from the spread of the COVID-19, JICA take this opportunity to consider the concept of “green recovery” in order to promote climate change countermeasures to carbon neutral society and resilient to disasters and infectious diseases society with full awareness of the conservation of ecosystems and biodiversity.

2) Contribution to "One Health" (medium- to long-term)

From the perspective of adaptation to climate change, JICA will contribute to the "One Health" initiative by taking into account vector-borne diseases that spread through vectors such as mosquitoes and rats, zoonotic diseases that spread from animals such as wildlife and livestock to humans, and waterborne diseases that spread through the environment due to water source pollution.

[23]The International Capital Market Association (ICMA) defines bonds as "green bonds" (bonds that use funds for environmental and climate change projects), "social bonds" (bonds that use funds for projects that solve social issues), and "sustainability bonds" (bonds that use funds for both environmental and climate change projects and projects that solve social issues). JICA has continued to issue social bonds since September 2016.

Appendix

- Figure 1: Cumulative anthropogenic CO_2 emissions
- Figure 2: IPCC projections of global average temperature change and temperature rise
- Figure 3: Changes in CO_2, CH_4, and N_2O concentrations
- Figure 4: Percentage of GHG emissions by sector
- Figure 5: GHG emissions by country (emissions including land use, land use change, and forests)
- Figure 6: Number of natural disasters in the world
- Typical examples of cooperation in the field of climate change

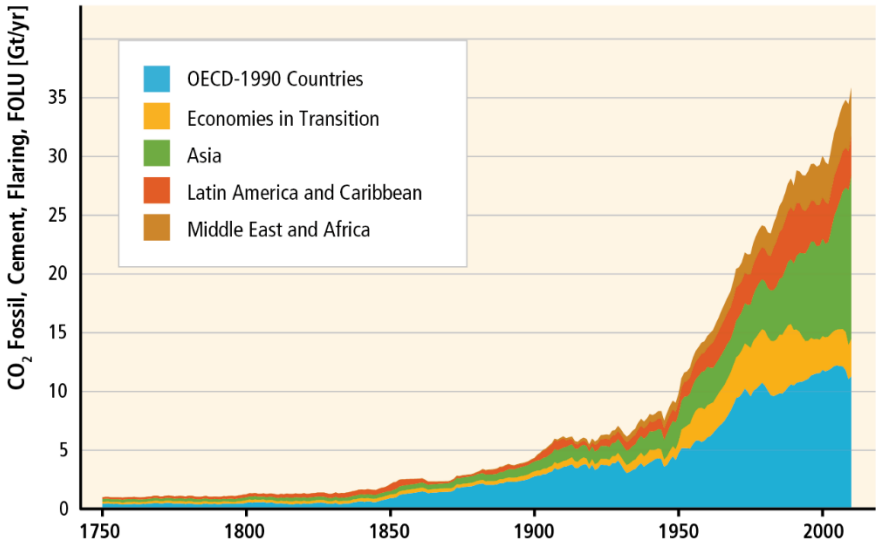

Figure 1: Trends in cumulative anthropogenic CO_2 emissions

Source: IPCC Fifth Assessment Report, Working Group III Report

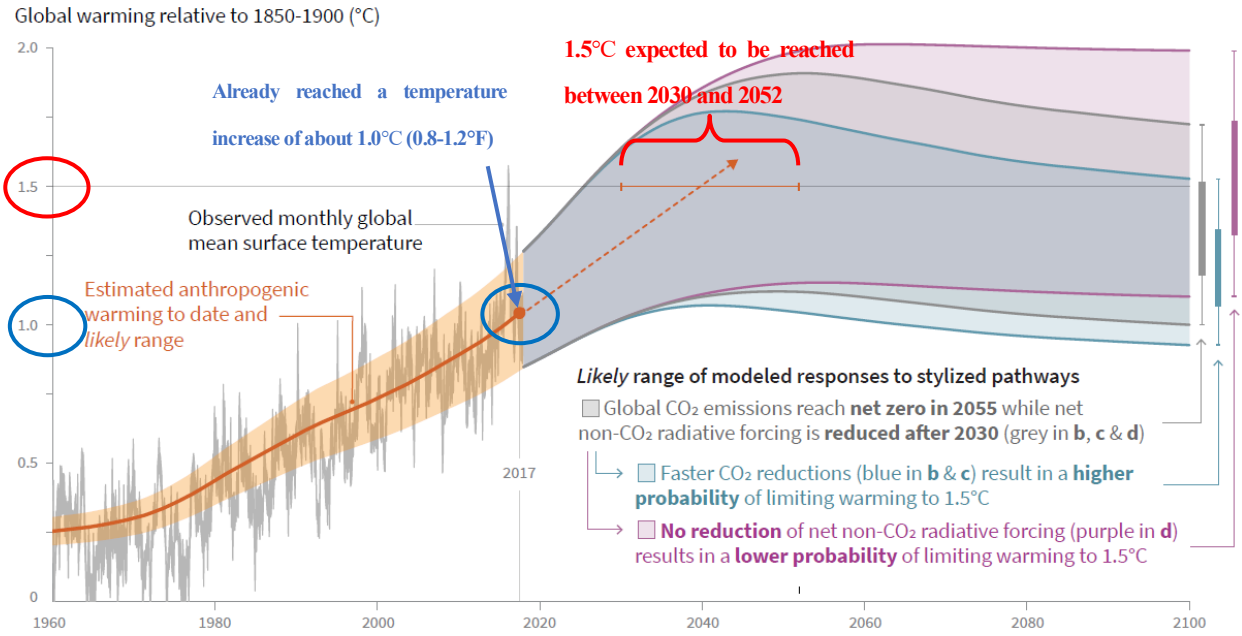

Figure 2: IPCC projections of global average temperature change and temperature rise

Source: IPCC 1.5℃ Special Report, Temperature Rise since Industrialization and Future Projections

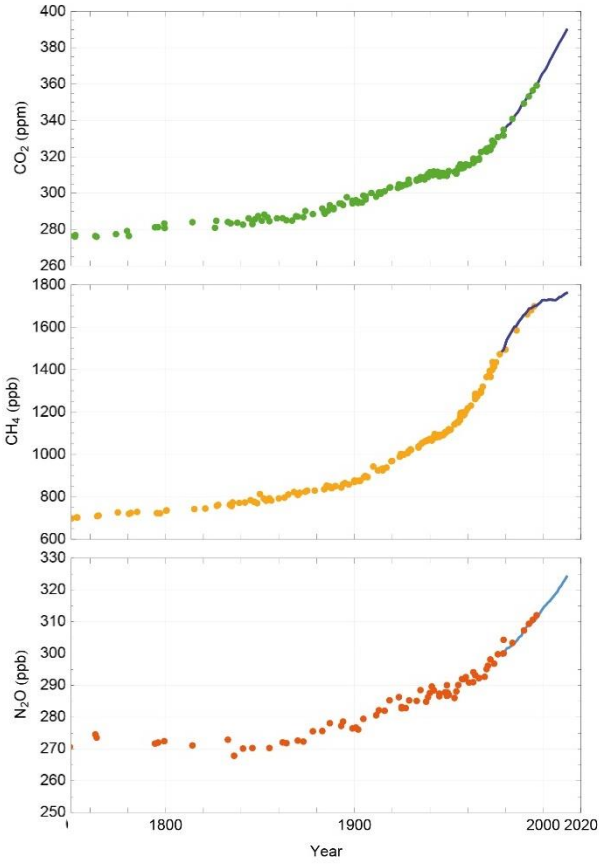

Figure 3: Changes in CO_2, CH_4, and N_2O concentrations

Source: IPCC Fifth Assessment Report, Working Group I Report

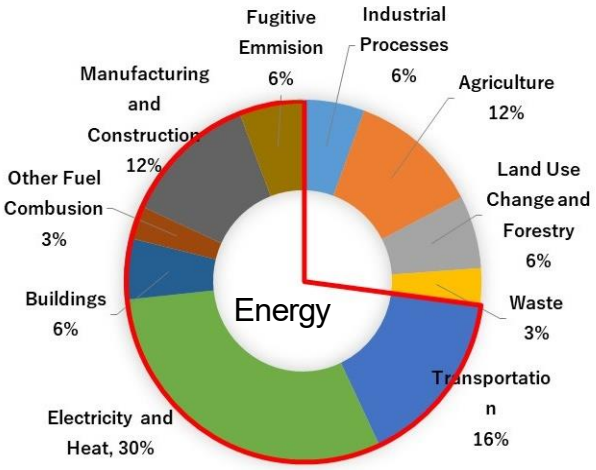

Figure 4: Percentage of GHG emissions

Source: https://www.wri.org/resources/data-visualizations/world-greenhouse-gas-emissions-2016

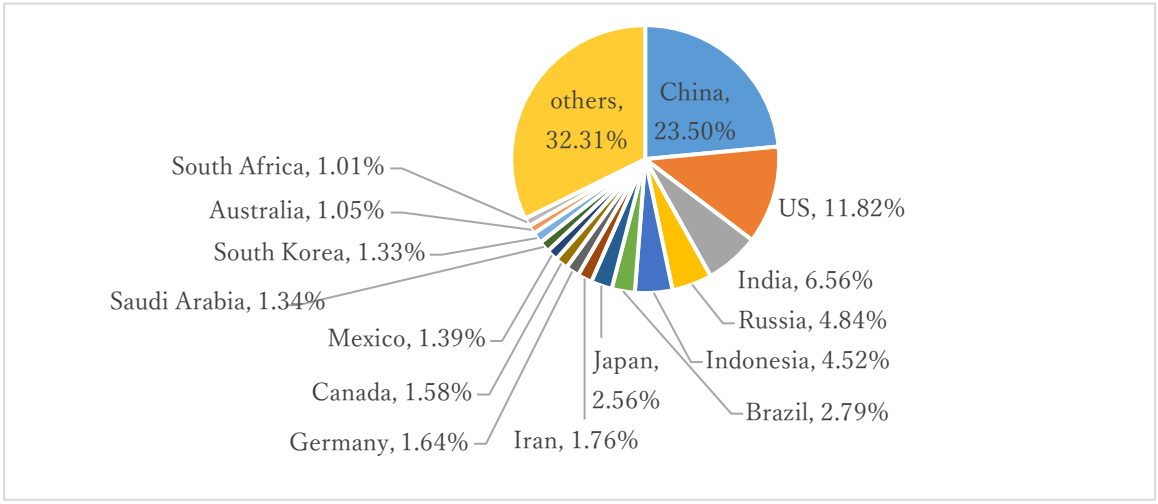

Figure 5: GHG emissions by country (emissions including land use, land use change, and forests)[24]

Source: Climate Watch 2020

[24]Emissions vary from country to country in terms of calculation methods and techniques, and need to be scrutinized when developing strategies and plans for each country.

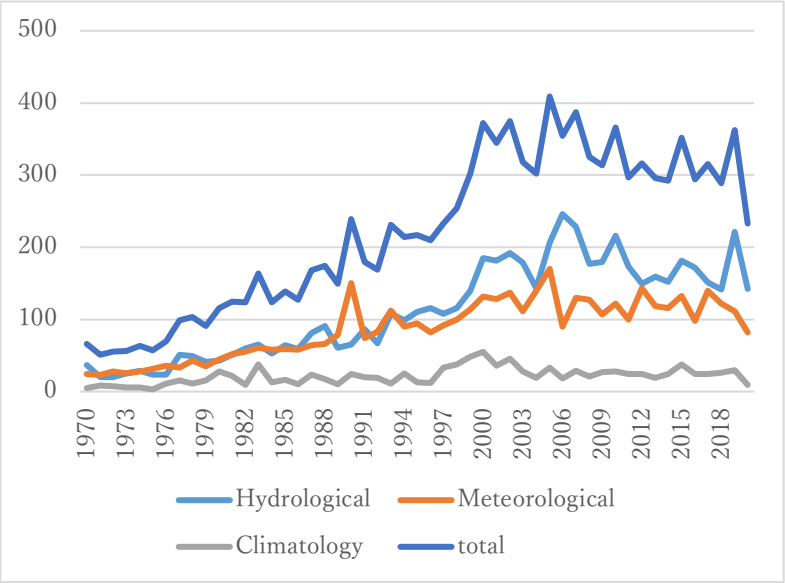

Figure 6: Number of natural disasters in the world

Source: Emergency Event Database, Centre for Research on the Epidemiology of Disasters

[Reference] Typical examples of cooperation in the field of climate change

Planning and implementation support

- Indonesia: "Project on Capacity Building for Restoration of Ecosystems in Conservation Areas" (2010-2015)
- Indonesia: "Project of Capacity Development for the Implementation of Climate Change Strategies (2nd Phase)" (2019-2022)
- Vietnam: "Project to Support the Planning and Implementation of NAMAs in a MRV Manner（SPI-NAMA）" (2015-2020)
- Vietnam: "Survey on promoting the next framework of climate change under the Paris Agreement Rule-book in Vietnam" (2020-2021)
- Vietnam: "Support for planning and implementation of the Nationally Determined Contributions in Vietnam（SPI-NDC）" (2021-2024)
- Thailand: "Training on Low Carbon Policy Formulation Based on Quantitative Approach" (2021-2022)
- Global: "Basic Survey on Long-Term Low Greenhouse Gas Emission Development Strategies under Paris Agreement" (2021-2022)
- Task-based training: "Strengthening Capacity for Developing and Implementing Nationally Determined Contributions to Climate Change" (2018-)
- Task-based training: "Adaptation to Climate Change" (2008-)

Market mechanism, etc.

- Indonesia: "Capacity Development Support Project for Low-Carbon Development" (2014-2017)

Strengthening GHG inventory and/or transparency framework

- Indonesia: "Project on Capacity Building for Restoration of Ecosystems in Conservation Areas" [Re-posted].
- Vietnam: " Project for Capacity Building for National Greenhouse Gas Inventory" (2010-2014)
- Vietnam: " Project to Support the Planning and Implementation of NAMAs in a MRV Manner（SPI-NAMA）" (2015-2020)
- Mongolia: " The Project for capacity development to establish a national GHG inventory cycle of continuous improvement" (2017-2021)
- Papua New Guinea: " The Project for enhancing capacity to develop a sustainable GHG inventory system for PNG" (2017-2021)
- Malaysia: "The Project for the Establishment of Greenhouse Gas Inventory Management System " (scheduled for 2021)
- Member, UNFCCC Consultative Group of Experts (CGE), Japan (2018-)
- "Data collection survey on the enhanced transparency framework for enhancing low carbon and decarbonization in developing countries" (2020-2021)

Cooperation with cities

- Malaysia: "Project for Development of Low Carbon Society Scenarios for Asian Regions" (2011-2016)
- Thailand: "Project for Strengthening Institutional Capacity for the Development and Implementation of Bangkok Master Plan on Climate Change 2013-2023" (2013-2015)
- Thailand: " Project for Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013-2023" (2017-2022)
- Vietnam: " Project to Support the Planning and Implementation of NAMAs in a MRV Manner（SPI-NAMA）" [Re-posted]
- [25]Working with the Global Cities Climate Leaders Group (C40) (2018-2020)

Regional cooperation

- Thailand: " Project for Capacity Development on Mitigation/Adaptation for Climate Change in the Southeast Asia Region" (2013-2016)
- Thailand: " Project for Capacity Development to accelerate Low Carbon and Resilient Society realization in the Southeast Asia region" (2017-2020)
- Samoa: " The Project for Construction of the Pacific Climate Change Center "
- Samoa: " Project for Capacity Building on Climate Resilience in the Pacific" (2019-2022)

Climate funding

- Indonesia: "Climate Change Program Loan" (I) - (II)
- Vietnam: "Climate Change Assistance Program" (I) - (VII)
- Leveraging the Green Climate Fund (GCF) (2017-)
- Support to Strengthen Response Capacity on Promoting Mobilization of Climate Finance (2019-)
- Issue-specific training: "Strengthening Capacity for Improving Access to Climate Finance" (2021-)

Mainstreaming climate change.

Support for mainstreaming of climate change measures, etc. (2011-)

Project research: "Calculation and Disclosure of Total Greenhouse Gas Emissions from ODA Projects" (2021)

Scenario analysis work related to climate change risks and opportunities (2021-2022)

[25] https://www.c40.org/

What is the JICA Global Agenda?

JICA's cooperation strategies for global issues. JICA, with its partners, aims to show global impacts realizing the goals set under JICA Global Agenda. JICA Global Agenda and its goals will be shared among partner countries and various actors, enhancing dialogue and collaboration, therefore, maximizing the development impacts. Through these efforts, JICA will comprehensively contribute to the achievement of the SDGs by 2030 as well as realize Japan's Development Cooperation Charter which focus on "human security," "quality growth," and "addressing global challenges".

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Japan International Cooperation Agency (JICA) is an international cooperation organization that is centrally responsible for the implementation of bilateral assistance among Japan's Official Development Assistance. JICA cooperates with about 150 countries and regions around the world.

https://www.jica.go.jp/english/our_work/thematic_issues/index.html