

An illustration within a triangular frame showing a landscape with three white wind turbines on a green hill, a black bicycle, a cluster of evergreen trees, a bright sun, and two birds flying in the sky. A large, faint recycling symbol is visible in the background of the triangle.

**CREATING
SUSTAINABLE,
ZERO-CARBON
SOCIETIES
THROUGH
CITY-TO-CITY
COLLABORATION**

CREATING SUSTAINABLE, ZERO-CARBON SOCIETIES THROUGH CITY-TO-CITY COLLABORATION

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An illustration on a light gray background featuring a large, faint recycling symbol at the top. Below it, there are three white wind turbines on a hill, a black bicycle, three dark green coniferous trees, a sun with rays, and two birds flying in the sky.

CREATING
SUSTAINABLE, ZERO-CARBON SOCIETIES
THROUGH CITY-TO-CITY COLLABORATION

FORWARD

A diverse mix of environmental problems, such as traffic congestion, increasing amounts of waste, and air and water pollution, have surfaced around the world in line with rapidly growing populations and urban development. Climate change has also resulted in more frequent incidences of localised torrential rains, floods, droughts and landslides in various parts of the world and has had a significant impact on the activities of cities, which form the base of socio-economic activities. Yet, as cities are estimated to account for more than 70% of global CO₂ emissions, it has become increasingly vital to promote city planning in urban development both now and in the future from the perspective of climate change as well.

The Paris Agreement, which entered into force in 2016 as the world's legal framework for climate change, moved into the implementation phase in 2020. As implementation is emphasised, expectations for actions by non-state actors such as cities and the private sector, have risen and movements to support these actions being strengthened at the international level.

The Ministry of the Environment, Japan has implemented the "City-to-City Collaboration for Low-carbon Society" programme (hereinafter "city-to-city collaboration programme") since fiscal 2013, even before such international trends had been observed. This programme is a collaborative effort between local governments in Japan and partner cities in developing countries packaging studies to identify and formulate potential projects that will contribute to zero-/low-carbon development in partner cities in cooperation with private companies and collaborative projects, such as support for institutional building and the development of human resources.

With a diverse range of infrastructure concentrated in cities, the introduction and development of superior zero-/low-carbon technologies, products and systems in these facilities using the Joint Crediting Mechanism (JCM), an initiative being pushed forward by the Japanese government, will not only be instrumental for zero-/low-carbon development in cities, but are also expected to generate multiple co-benefits, such as improving the environment and supplying energy to cities, as well as promoting the Sustainable Development Goals (SDGs). Starting from April 2020, this programme will be further promoted to contribute to the rapid creation of zero-carbon societies, taking into account the status of the implementation of the Paris Agreement.

This guidebook has been developed for local governments and private companies around the world as a way to encourage their understanding of the city-to-city collaboration programme. Amidst rising expectations on non-state actors from different corners of the world, we would appreciate your consideration in participating in this city-to-city collaboration programme.

March 2020
Ministry of the Environment, Japan

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INTRODUCTION:

**ROLE OF NON-STATE ACTORS
IN CREATING A ZERO-CARBON SOCIETY**

Launch of the Paris Agreement, the world's international framework on climate change

The Paris Agreement was unanimously adopted by all Parties at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP21) in 2015. Entering into force in November 2016, full-scale implementation started in January 2020. This agreement aims to keep global temperature rise well below 2°C above pre-industrial levels and to pursue efforts to limit temperature increases even further to 1.5°C to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases (GHGs) in the second half of the century. In addition, a

special report published by the Intergovernmental Panel on Climate Change (IPCC) in 2018 indicated the necessity of reaching net zero carbon dioxide (CO₂) emissions by 2050 in order to keep temperature rise within 1.5°C.

Under the Paris Agreement, all Parties must outline and implement their Nationally Determined Contributions (NDCs). However, even if all current NDCs are achieved, there is a gap of 12 to 15 GtCO₂e to stay within the target 2°C limit, and a gap of 29 to 30 GtCO₂e to stay within the target 1.5°C limit, an indication that targets must be raised further (Fig.1).

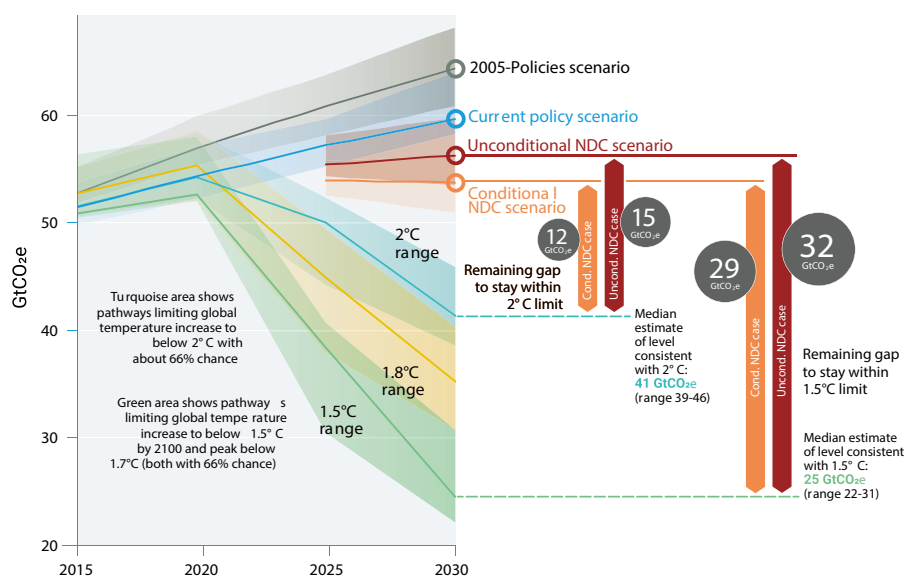


Fig. 1 Global greenhouse gas emissions under different scenarios and the emission gaps by 2030
(Source: UNEP 2019, Emission Gap Report 2019)

Non-state actors as drivers of the zero-carbon movement

There has been a surge in expectations of non-state actors (NSAs), such as local governments, private companies and civil society, in the implementation of the Paris Agreement. Around the world, movements to support the actions of NSAs have intensified and their presence is increasingly being felt as they take proactive steps. The Non-State Actor Zone for Climate Action (NAZCA), established in response to the "Lima-Paris Action Agenda" adopted at COP20 in Lima, Peru in 2014 to expand actions by NSAs, includes the involvement of more than 17,000 NSAs from all around the world (including 10,640 cities and 234 regions as of February 2020).¹ The Climate Ambition Alliance, which aims to achieve net zero emissions, was formed at the Climate Action Summit held at UN headquarters in 2019 under the initiative of Chile, which held the Presidency at COP25. At the time that COP25

was held in Madrid, Spain in 2019, 73 countries, 14 regions, 398 cities, 786 companies and 16 investors announced that they would aim to achieve net zero CO₂ emissions by 2050.²



Fig. 2 Mayor Minna Arve of Turku, Finland speaking at COP25 on behalf of the Local Government and Municipal Authorities
(Source: ICLEI Japan)

¹ UNFCCC HP <<https://climateaction.unfccc.int/>>

² UNFCCC HP <<https://unfccc.int/news/climate-ambition-alliance-nations-renew-their-push-to-upscale-action-by-2020-and-achieve-net-zero>>

Accelerated actions by non-state actors in Japan

In 2019, the Japanese government formulated a long-term strategy based on the Paris Agreement, which called for the creation of a zero-carbon society early in the second half of this century. GHG emissions in Japan have been on a downward trend for the past five years since 2013. Japan joined the Carbon Neutrality Coalition, a gathering of countries aiming to reduce carbon emissions to zero in order to express this position on the international stage. Launched in 2017 as an initiative led by New Zealand, this coalition currently comprises more than 30 countries, including the UK, France, Germany, Canada, Mexico, Chile and Costa Rica.

In addition, a growing number of local governments have announced that they will implement actions in Japan to support the aim of achieving net zero CO₂ emissions by 2050 in order to achieve the creation of zero-carbon societies. Starting with Tokyo, Yokohama, Kyoto and Yamanashi Prefecture in September 2019, number of municipalities has swelled to 82 as of March 2020 (17 prefectures, 33 cities, 1 special ward, 23 towns and 8 villages). Combined, the municipalities have a population of 61 million (about 48% of Japan's total population) and a GDP of USD 2.9 trillion.

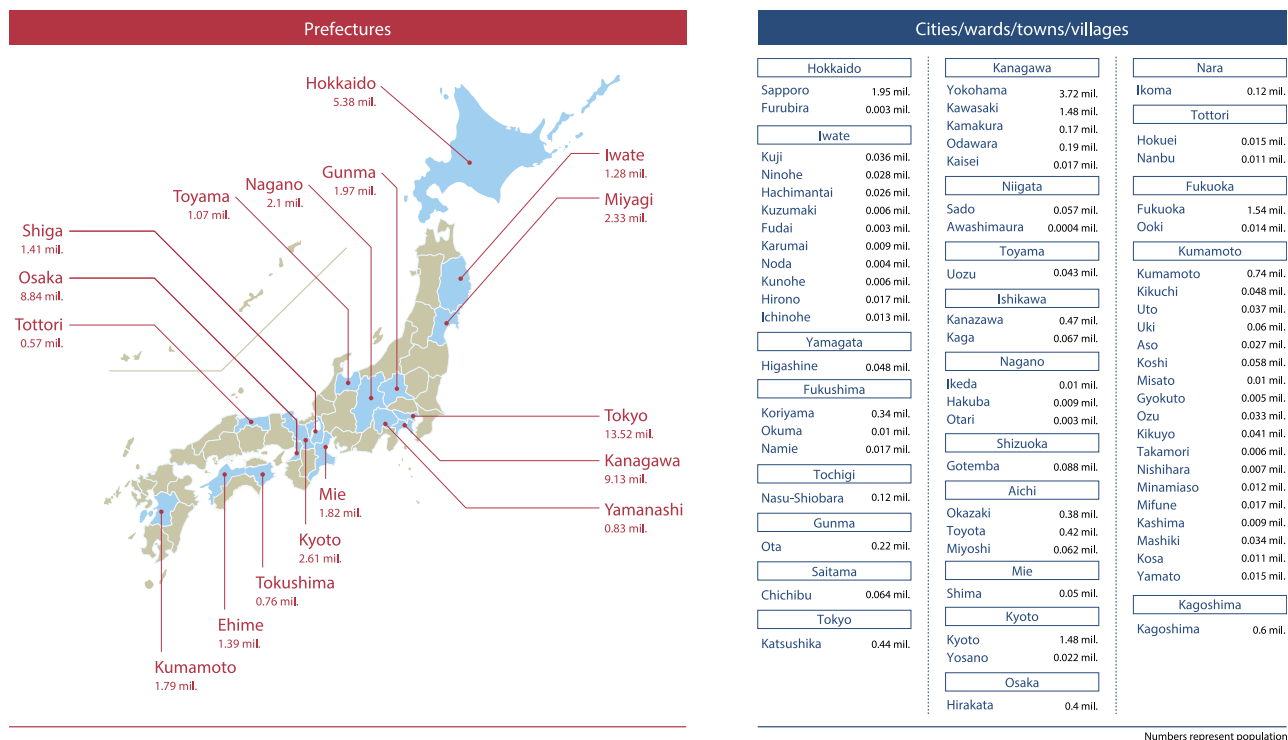


Fig. 3 Local governments that have announced their intentions to reduce net CO₂ emissions to zero by 2050 (as of February 2020)

Shape of development in cities key to creating zero-carbon societies

Cities are the drivers behind development; today, approximately half of Earth's population lives in urban areas, which generate 80% of the world's GDP. However, cities also account for more than 70% of global CO₂ emissions. Estimates show that 70% of the world's population will live in cities by 2050, meaning that they will play an increasing role in the future in mitigating climate change. In particular, the increase in CO₂ emissions is significant (Fig. 4), and it is safe to say that shape of development of cities in developing countries in the future will have an impact on global CO₂ emissions.

Around the world, record high temperatures, typhoons, heavy rains, floods, droughts and forest fires have escalated in recent years. In response to this critical state of affairs, there are now more than 1,000 countries, municipalities and organisations that have issued Climate Emergency Declarations. In urban areas, in particular, where the scale of economic and human damage is often extensive, this has created a sense of crisis.

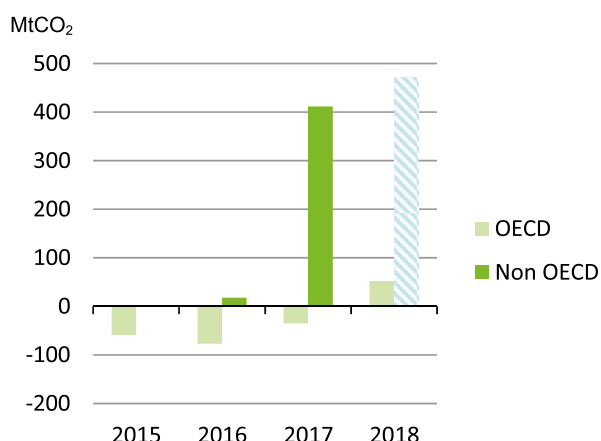


Fig. 4 Annual changes in CO₂ emissions for OECD and non-OECD countries
(Source: IEA 2019, CO₂ emissions from fuel combustion Highlights (2019 edition))

Synergy through zero-carbon development and the SDGs

The 2030 Agenda for Sustainable Development, adopted in 2015 at the same time as the Paris Agreement, contains 17 Sustainable Development Goals (SDGs) and is expected to

create synergy with the Paris Agreement. Of the 169 targets under these 17 goals, 105 were analysed as being deeply involved with local and urban activities.³



Fig. 5 Sustainable development goals

³ OECD 2020, A Territorial Approach to the Sustainable Development Goals Synthesis Report

CHAPTER 1

OVERVIEW OF THE CITY-TO-CITY COLLABORATION PROGRAMME

- 1.1 Japan's policy to create zero-carbon societies
- 1.2 Concept of the city-to-city collaboration programme
- 1.3 What does the city-to-city collaboration programme entail?
- 1.4 Stakeholders involved
- 1.5 Role of partner cities and regions
- 1.6 Timeline of activities under the city-to-city collaboration programme
- 1.7 Benefits for stakeholders
- 1.8 Differences with general technology transfer projects
- 1.9 Requirements for eligible countries and partner cities
- 1.10 Performance of the city-to-city collaboration programme
- 1.11 Opportunities for collaboration between local governments and private companies in Japan

1.1 Japan's policy to create zero-carbon societies

The Japanese government supports the concept of leapfrog development in developing countries in its aim to create zero-carbon societies. To achieve this, Japan must transfer both its remarkable zero-/low-carbon technologies,

as well as the policies and systems needed to spread such technologies in a method that will efficiently promote zero-/low-carbon development on site at an early stage.

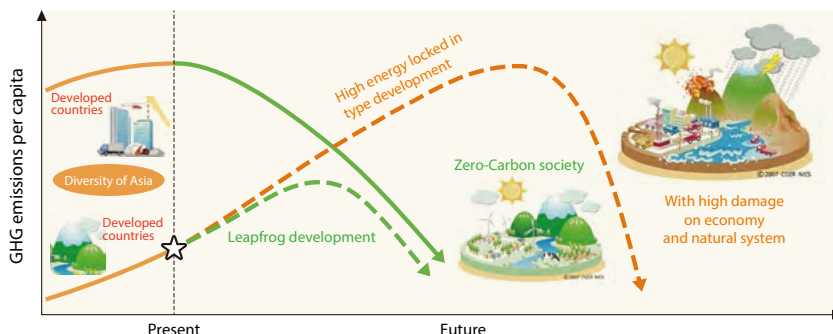


Fig. 6 Conceptual diagram of leapfrog development

One measure that can be used to accomplish this aim is the Joint Crediting Mechanism (JCM) (BOX 1). Referenced in a speech by Prime Minister Shinzo Abe (30 November 2015)⁴ and in the country's Overseas Development Strategy (Environment)⁵ (7 June 2018), the JCM is being promoted

as the centrepiece of Japan's climate change policy, as it also helps contribute to sustainable development in the partner countries and cities in which technology, policies and systems are being introduced.

BOX 1. Joint Crediting Mechanism (JCM)

The JCM is a mechanism jointly created and implemented under an agreement between the Government of Japan and a partner country's government to achieve Japan's GHG emissions reduction targets by quantitatively evaluating and understanding Japan's contributions to the reduction/removal of GHG emissions achieved through the spread of superior zero-/low-carbon technologies (technologies/products, systems, services, infrastructure, etc.) and the implementation of policies that can lead to a reduction

in GHG emissions in developing countries. The JCM also contributes to the achievement of the ultimate objective of the UNFCCC by promoting actions to reduce and remove GHG emissions on a global scale.

Japan is implementing the JCM with 17 countries: Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Viet Nam, Laos, Indonesia, Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia, Chile, Myanmar, Thailand and the Philippines. (As of February 2020)

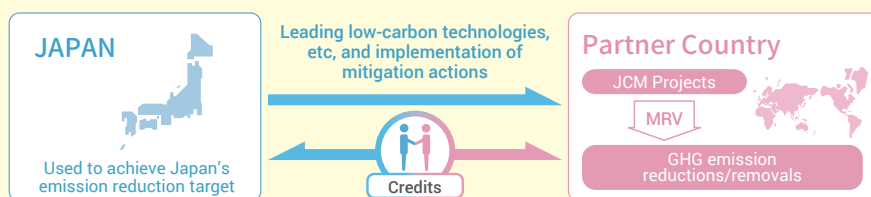


Fig. 7 Outline of Joint Crediting Mechanism (JCM)

1.2 Concept of the city-to-city collaboration programme

The Ministry of the Environment's "City-to-City Collaboration for Zero-Carbon Society" programme (hereinafter referred to as the "city-to-city collaboration programme") promotes leapfrog development in developing countries. Private companies in Japan that have

signed contracts with the Ministry of the Environment and local municipalities collaborate to develop zero-/low-carbon projects in partner cities in developing countries, provide support for the formation of basic systems to promote zero carbon societies, and support building the capacity of

⁴ http://www.kantei.go.jp/jp/97_abe/statement/2015/1130speech.html

⁵ <http://www.env.go.jp/press/105573.html>

municipal staff in partner cities. The programme benefits both sides by promoting zero-/low-carbon and self-

sustained development in partner cities, as well as helping to promote private investment in Japan.

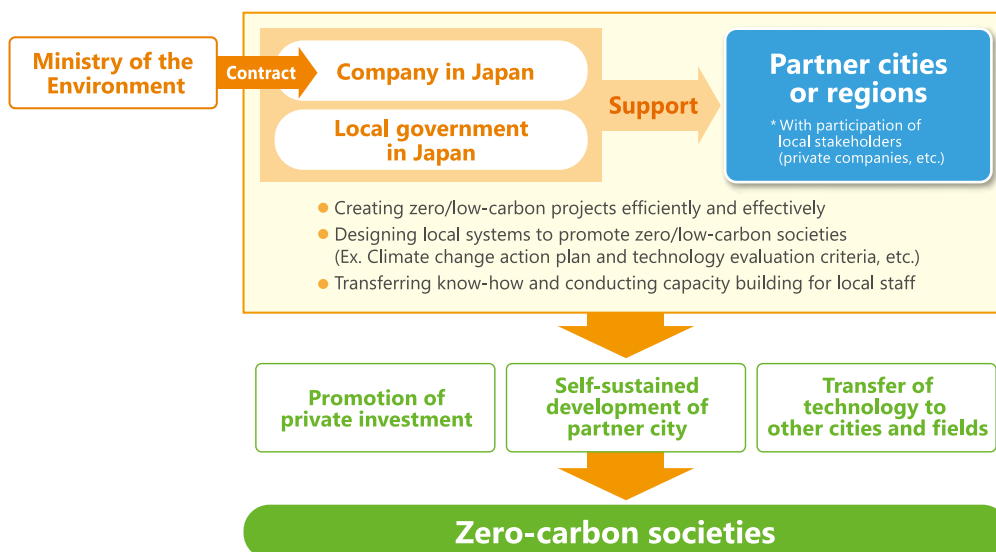


Fig. 8 Conceptual diagram of the city-to-city collaboration programme

1.3 What does the city-to-city collaboration programme entail?

In this programme, consignees are private companies in Japan. However, studies to identify and determine the feasibility of projects (hard infrastructure) as well as support for developing system (soft infrastructure) that will help create zero-carbon societies in partner cities overseas are conducted by all stakeholders involved in the project.

The Ministry of the Environment's JCM Model Project scheme is expected to be used in the implementation of zero-/low-carbon projects that have been the subject of studies under the city-to-city collaboration programme. The JCM Model Project scheme provides subsidies for up to

50% of initial costs involved in introducing technologies and equipment that help reduce GHG emissions.

However, some projects that have been studied based on the needs of a partner city may not be eligible for support under the JCM Model Project scheme. In this case, a flexible mindset should be adopted in considering exit strategies, including the use of other support schemes sponsored by the Ministry of the Environment and projects and funds from other institutions.

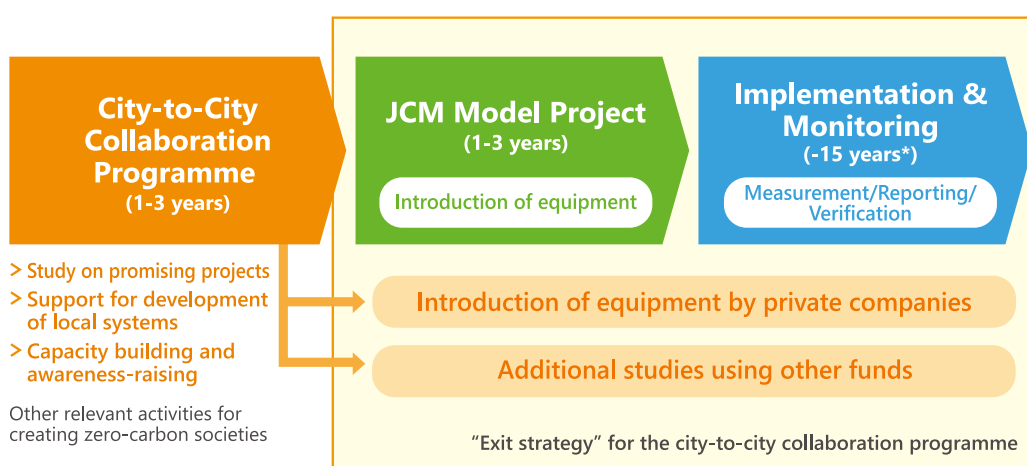


Fig. 9 Image of activities under the city-to-city collaboration programme and exit strategies

1.4 Stakeholders involved

The city-to-city collaboration programme includes the involvement of municipalities in Japan and partner cities overseas, as well as private companies and groups in Japan that have excellent zero-/low-carbon technologies and know-how, and companies in partner countries that want to introduce such technologies. Although the groups involved will differ depending on the proposed project to be studied, at the start, the project must include the participation of at least (1) a private company in Japan (consignee), (2) a local government in Japan, and (3) a partner city.

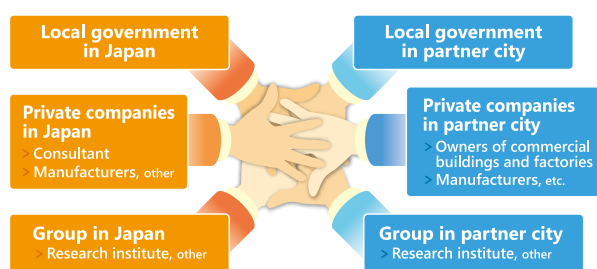


Fig. 10 Stakeholders involved in the city-to-city collaboration programme

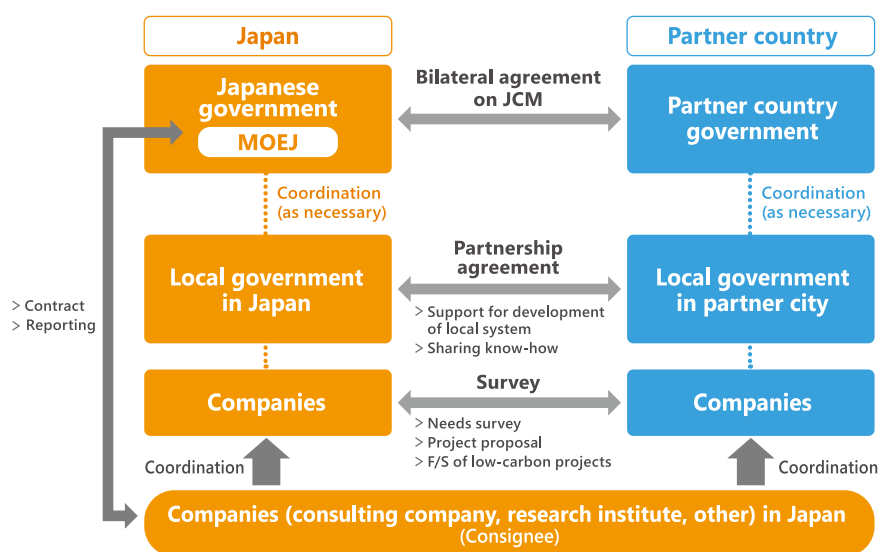


Fig. 11 Example of implementation system of the city-to-city collaboration programme

1.5 Role of partner cities and regions

Municipalities and private companies overseas cannot directly submit a project proposal under the city-to-city collaboration programme. However, it is possible for them to take advantage of this programme through private companies in collaboration with local governments and private companies in Japan. The following roles should be considered to ensure smooth implementation. It is also

important to facilitate communication between stakeholders by making use of various opportunities and tools.

The city-to-city collaboration programme creates benefits for both parties in Japan and cities overseas. Communicating local needs may result in a project being considered for collaboration in the future, so it is best to be proactive in sharing information between all parties concerned.

Table 1 Roles of partner cities in the city-to-city collaboration programme

Preparation stage	✦ Share information (i.e., information on local needs and markets, related policies, organisational structures (contact points), etc.) ✦ Submit letter of interest as an indication of involvement in the city-to-city collaboration programme throughout the programme period (when applying)
Implementation stage	✦ Cooperation with studies (i.e., regular meetings with Japanese local governments and companies, identification of potential candidates for the introduction of zero-/low-carbon technologies, surveys with stakeholders needed to formulate projects, examination of policies that can contribute to the spread of zero-/low-carbon technologies, etc.) ✦ Participate and deliver presentations at events hosted by the Ministry of the Environment (*Fees to participate in event to be borne by the Ministry of the Environment)
Completion stage	✦ Follow-up with implementing parties as needed in cases where projects are developed through the city-to-city collaboration programme

1.6 Timeline of activities under the city-to-city collaboration programme

Although the period of activity under the city-to-city collaboration programme varies depending on the content of a study, this period is expected to last a maximum of three years. A timeline of activities for each year is outlined below. The activities described in the blue sections in figures 12 and 13 will be coordinated and implemented by consignees

in Japan (private companies), while the orange sections indicate field surveys to be conducted by all stakeholders involved in the project. In some cases, those involved in projects will be expected to participate in the field survey and events to disseminate information.

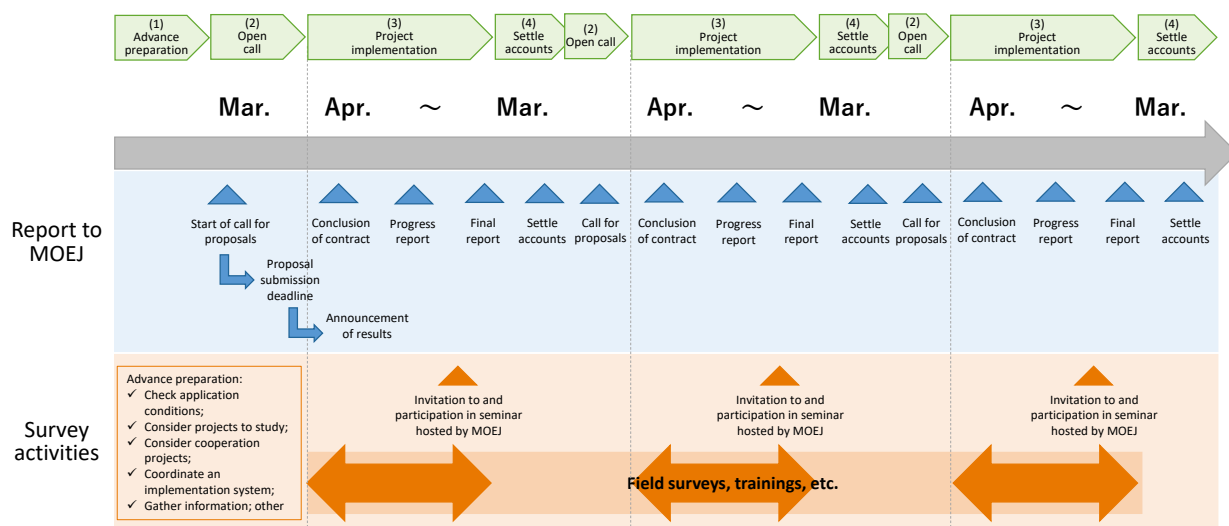


Fig. 12 Timeline of activities under the city-to-city collaboration programme (Case of open call in March 2019)



Fig. 13 Schedule from contract conclusion to work completion (Case of open call in March 2019)

1.7 Benefits for stakeholders

All stakeholders benefit through their participation in the city-to-city collaboration programme (Table 2 -5). In the framework of city-to-city collaboration, private companies in Japan can access to a wide range of information, develop new sales channels and build up sales. Municipalities in Japan can create opportunities to achieve their own policies, form and strengthen city networks, boost name recognition

and revitalise local communities. Partner cities benefit from learning know-how on environmental management from local governments in Japan, including urban development and climate change policies, and private companies will find it easier to introduce superior zero-/low-carbon technologies.

Table 2 Advantages for local government in Japan

Advantages for Local Governments in Japan	
Contribute to the creation of zero-carbon society	● Use of environmental management know-how of local governments to improve the environment in partner cities ● Use of the experiences of local governments to help develop domestic policies and international agendas
Encourage expansion of local companies overseas	● Use of programmes and networks of the Ministry of the Environment (including the city-to-city collaboration programme) as well as their own programmes to support the overseas expansion of local companies ● Gain an accurate understanding of the needs and policy trends in partner cities and return benefits to the local community
Revitalise the local economy	● Lead to increased sales for local companies ● Results in a concentration of private companies interested in expanding business activities overseas ● Anticipated inbound effect as visibility increases ● Revitalisation of local economy to control population decline
Improve capacity of local staff	● Participation in international activities to develop human resources that will be active on the global stage
Expand networks	● Building and strengthening networks with private companies in Japan, etc. ● Building networks with public institutions and private companies in partner cities
Increase visibility	● Increased visibility in Japan and overseas as a result of being featured in events and publications by the Ministry of the Environment
Nurture a sense of civic pride	● Understanding of the activities of local governments and businesses helps residents take pride in their communities

Table 3 Advantages for private companies in Japan

Advantages for Private Companies in Japan	
Increase product sales	● Use of JCM funding support (subsidies) makes it easier to introduce products to partner cities and raises expectations for expanding their use, building on the introduction of these products
Use of public support	● Availability of various types of support (various consultation services and assistance, etc.) in cooperation with local governments in Japan that support the overseas expansion of local companies ● Use of local government networks ● Ability to carry out studies with public support to create a sense of security
Improve access to environmental information	● Easier to obtain information, such as local policy trends ● Able to gain an accurate understanding of local market trends ● Able to identify potential local partner companies
Recognise company position	● Clarification of company's position with an understanding of international trends allows companies to consider medium- to long-term sales strategies
Improve capacity of staff	● Participation in international activities to develop human resources that will be active on the global stage ● Acquisition of know-how on MRV
Expand networks	● Building and strengthening networks with local governments and private companies ● Cooperation with local governments makes it easier to approach organisations that are generally difficult for private companies to approach on their own, such as local public institutions, and allows them to identify new sales channels
Increase visibility	● Increased visibility in Japan and overseas as a result of being featured in events and publications by the Ministry of the Environment

Table 4 Advantages for partner cities

Advantages for Partner Cities	
Achieve the creation of a zero-carbon city at an early stage	● Strengthens the foundation of low/zero-carbon urban development (planning and development of strategies, capacity building of staff, etc.) ● Introduction of low-carbon technologies results in low/zero-carbon development in cities ● Contribution to the achievement of domestic policies and international agendas ● Expected co-benefits, such as improvements in the urban environment
Create business opportunities for local companies	● Encouragement of participation in studies and other activities to create business opportunities for local companies
Raise city appeal	● Improvements to the urban environment can result in clustering industries and promoting investment
Improve capacity of staff	● Participation in international activities to develop human resources that will be active on the global stage ● Ability to learn environmental management know-how from Japan
Expand networks	● Building and strengthening networks with private companies in Japan ● Creating networks with public organisations and private companies in Japan
Increase visibility	● Increased visibility in Japan and overseas as a result of being featured in events and publications by the Ministry of the Environment
Nurture a sense of civic pride	● Understanding the activities of local governments and businesses helps residents take pride in their communities

Table 5 Advantages for private companies in partner cities

Advantages for Private Companies in Partner Cities	
Introduce leading low/zero-carbon technologies	● Introduction of leading low/zero-carbon technologies at low costs through JCM funding support (subsidies) ● Acquisition of know-how on the operation of introduced technology ● Expectation of various co-benefits, such as lower electricity/water bills and reduced waste ● Lower running costs as a result of the good performance of introduced technology and low number of failures
Increase brand power	● Introduction of low-carbon technologies will lead to a reduction in GHG emissions ● Stronger brand power as a result of being viewed as a company taking a proactive approach in terms of environmental measures
Improve capacity of staff	● Participation in international activities to develop human resources that will be active on the global stage ● Acquisition of know-how on MRV
Expand networks	● Building and strengthening networks with local governments and private companies domestically ● Creation of networks with public organisations and private companies in Japan and acquisition of new sales channels
Increase visibility	● Increased visibility in Japan and overseas as a result of being featured in events and publications by the Ministry of the Environment

1.8 Differences with general technology transfer projects

In projects that support technology transfer, it is common for private companies to work either independently or with the support of a government agency to conduct activities from field surveys to the introduction of technologies. The city-to-city collaboration programme differs from this approach in that private companies work together with local governments. This type of public-private partnership makes it possible to develop projects that are expected to have an even greater impact with the inclusion of policy

recommendations to promote the development and spread of the technology introduced, rather than simply concluding with the transfer of the technology itself.

In addition, since the city-to-city collaboration programme contributes to early zero-/low-carbon development in partner cities, another feature of this programme is considering the measurement, reporting and verification (MRV) of its contributions to reducing GHG emissions with the introduction of technology.

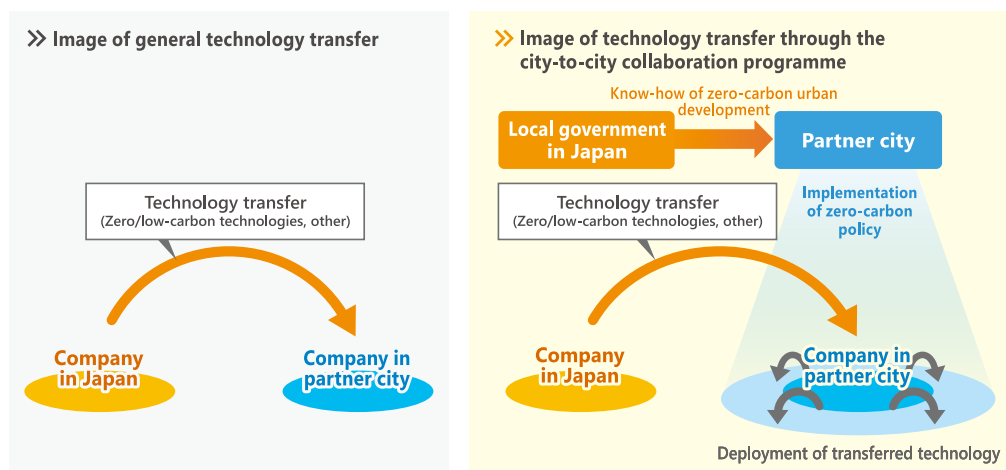


Fig.14 Differences between general technology transfer and technology transfer through city-to-city collaboration

1.9 Requirements for eligible countries and partner cities

Developing countries are eligible to take part in the city-to-city collaboration programme. In line with a call for proposals for city-to-city collaborative projects in fiscal 2019, priority has been assigned to the 17 countries with which the Japanese government has signed bilateral agreements for the JCM (Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Myanmar, Cambodia, Laos, Vietnam, Philippines, Indonesia, Thailand, Saudi Arabia, Mexico, Costa Rica, Chile, and Palau).

Kenya, Maldives, Viet Nam, Laos, Indonesia, Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia, Chile, Myanmar, Thailand, Philippines), as well as Malaysia.⁶ Any city in these countries or cities and regions that have agreements to cooperate with local governments and private companies in Japan may take part in the programme.



Fig. 15 JCM Partner Countries (as of February 2020)

1.10 Performance of the city-to-city collaboration programme

As of February 2020, the city-to-city collaboration programme, which was launched in fiscal 2013, includes participation from 32 cities and areas in 10 countries in Asia and 14 municipalities in Japan. To date, projects have been developed from 13 collaborations out of 32 city-to-city

collaborations.

Participation is high from countries such as Indonesia, Vietnam and Myanmar, but more participation is expected from cities and regions in other countries in the future.

⁶ For more information, please refer to the latest call for proposals for the city-to-city collaboration programme.

Cities participating in the City-to-City Collaboration Programme (FY2013-2019)

Participating countries and cities

To date, **32** cities and area from **10** countries in Asia
and **14** municipalities in Japan
have taken part in the
City-to-City Collaboration Programme

India

Bangalore City

City of Yokohama

Myanmar

Sagaing Region

Fukushima City

Mandalay City

City of Kitakyushu

Yangon Region

City of Kitakyushu

Yangon City

Kawasaki City

Ayeyarwady Region

Fukushima City

Thailand

Chiang Mai Province

City of Kitakyushu

Bangkok

(Bangkok Port • Laem Chabang Port)

City of Yokohama

(Yokohama Port Corporation)

Rayong Province

City of Kitakyushu

Eastern Thailand

City of Osaka

Malaysia

Penang State

Kawasaki City

Kuala Lumpur

Tokyo Metropolitan Government

Iskandar Development Region

City of Kitakyushu

Indonesia

Rokan Hulu, Riau Province

Kawasaki City

Batam City

City of Yokohama

Special Capital Region of Jakarta

Kawasaki City

Bandung City

Kawasaki City

Semarang City

Toyama City

Surabaya City

City of Kitakyushu

Bali Province

Toyama City

Denpasar City

Clean Authority of TOKYO

Cambodia

Siem Reap Province

Kanagawa Prefecture

Phnom Penh Capital City

City of Kitakyushu

Kanagawa Prefecture

Laos

Vientiane Capital City

City of Kyoto

Philippines

Quezon City

City of Osaka

Davao City

City of Kitakyushu

Viet Nam

Hai Phong City

City of Kitakyushu

Da Nang City

City of Yokohama

Ho Chi Minh City

City of Osaka

Can Tho City

Hiroshima Prefecture

Kien Giang Province

City of Kobe

Overseas

32 cities and area
in **10** countries



City-to-city collaboration that led to project formation: 13

Case studies

Collaboration between
Da Nang (Viet Nam) and Yokohama

→ p.16

Collaboration between
Ho Chi Minh (Viet Nam) and Osaka

→ p.16

Collaboration between
Phnom Penh (Cambodia) and Kitakyushu

→ p.17

Collaboration between
Semarang (Indonesia) and Toyama

→ p.18

(As of March 2020)

Collaboration between Da Nang (Viet Nam) and City of Yokohama: Application of Projects to Install High-efficiency Pumps in Water Utilities in Viet Nam

Achievements in City-to-City Collaboration

Yokohama Water Co., Ltd. disseminates extensive know-how on water supply technologies and business management developed in the city to other areas in Japan and overseas in cooperation with the City of Yokohama to help secure a stable supply of safe water. Since fiscal 2013, Yokohama Water has taken part in city-to-city collaboration, resulting in the development of a project in 2016 to replace pumps inside a water treatment plant owned by the Da Nang Water Supply Company (DAWACO) with high-efficiency pumps.

This achievement has been well-received by stakeholders in Viet Nam and is being applied to JCM model projects utilising subsidy schemes, such as the installation of inverters in intake pump facilities at a water supply plant in Ho Chi Minh City in 2018.

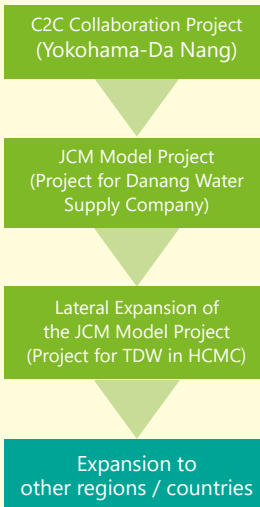
Expected GHG Emission Reductions

2,191 t-CO₂/year

Integrated values of estimated emission reductions in JCM model projects utilising subsidy schemes developed in Da Nang and Ho Chi Minh

Project Implementer

- ▼Japan Yokohama Water Co., Ltd.
- ▼Viet Nam Danang Water Supply Company (DAWACO) Project in Da Nang
Thu Duc Water B. O. O. Corporation (TDW) Project in Ho Chi Minh



Collaboration between Ho Chi Minh (Viet Nam) and Osaka

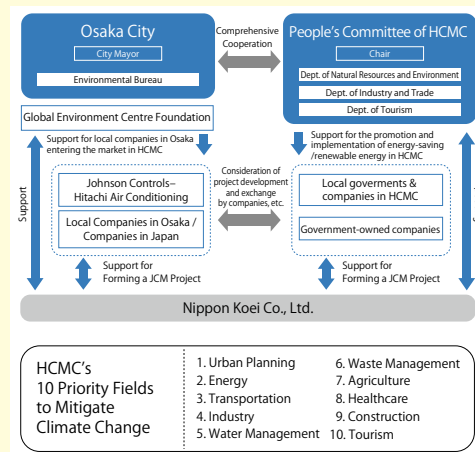
Support for the Formulation of the Climate Change Action Plan of Ho Chi Minh City in cooperation with Osaka City

Overview of City-to-City Collaboration

The cities of Ho Chi Minh and Osaka have promoted intercity cooperation on the basis of a memorandum of understanding on the Ho Chi Minh City–Osaka City Cooperation Project for Developing a Zero-/low-carbon City signed in 2013 and renewed in 2016. In 2017, Ho Chi Minh formulated the “Ho Chi Minh City Climate Change Action Plan 2017-2020 and Prospects until 2030” with support from Osaka. The two cities have conducted a number of policy dialogues at the mayoral level and consultations at the practitioner level, created projects, developed human resources, organisations and systems, shared technologies and expertise, raised awareness and disseminated information for the steady implementation of the action plan.

Achievements in City-to-City Collaboration

Both Ho Chi Minh and Osaka are creating projects aiming at the formation of zero-/low-carbon cities in 10 target areas included in Ho Chi Minh's Climate Change Action Plan. To date, planning studies (PS) and technical assistance projects have been adopted for eight projects in the areas of transportation, waste and energy. Additional studies are being carried out to develop more concrete projects for the steady implementation of the action plan, designed to ensure that Ho Chi Minh City realises the formation of a zero-/low-carbon city.



Transportation

Eco-Driving by Utilizing Digital Tachograph System

JP: Nippon Express Co., Ltd.
VN: Nippon Express Viet Nam



Energy

Introduction of Solar PV System at Shopping Mall in HCMC

JP: AEON RETAIL Co., Ltd.
VN: AEON VIETNAM Co., Ltd.



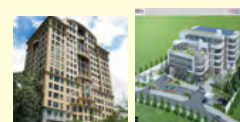
Energy Saving in Factories with AC Control System

JP: Yuko-Keiso Co., Ltd.
VN: Nidec Vietnam Co., Nidec SERVO Co., etc.



Introduction of High Efficiency AC System and Air Cooled Chillers to Office Buildings

JP: Hitachi-Johnson Controls Air Conditioning, Inc.
VN: Daibiru Saigon Tower Co., Ltd., IDEA HIGHTECH R&D CENTER

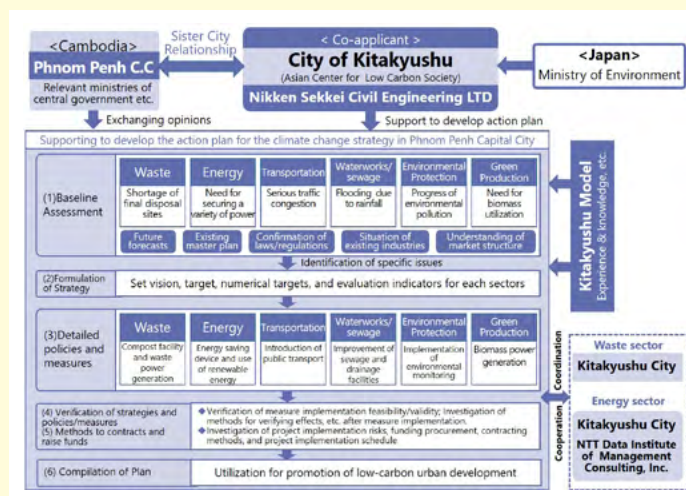


Collaboration between Phnom Penh (Cambodia) and City of Kitakyushu:

Support for the formulation of the Hai Phong City Green Growth Promotion Plan through collaboration with Kitakyushu

Overview of City-to-City Collaboration

Cambodia has been identified as a country that will be strongly affected by climate change. Although the Cambodian government had developed the Cambodia Climate Change Strategic Plan 2014-2023 and action plans for each department (2015-2018), specific measures had yet to be implemented in Phnom Penh. Seizing upon the opportunities afforded by the sister city agreement concluded in March 2016 between the cities of Kitakyushu and Phnom Penh, the project team launched an initiative to support the development of the Phnom Penh City Climate Change Strategic Action Plan (PPCCSAP), which covers the six sectors of waste, energy, transportation, waterworks/sewage, environmental conservation and green production. This plan serves as compass for solving environmental issues in Phnom Penh. The project team also worked together in a public-private partnership to conduct feasibility studies on concrete energy-saving and renewable energy projects



Achievements in City-to-City Collaboration

A foundation for creating a zero-/low-carbon society was established in Phnom Penh through the process of formulating the PPCCSAP. Furthermore, the measures included in the plan have been studied, and two projects have led to the adoption of a JCM Model Project. Through the development of such comprehensive collaborative projects, City of Kitakyushu is contributing to the sustainable development of Phnom Penh.

Project 1

Introduction of 1MW Solar Power System and High Efficiency Centrifugal Chiller in Large Shopping Mall



▼Representative Participant: AEON MALL Co., Ltd.

▼Partner Participant: AEONMALL (CAMBODIA) CO., LTD.

Project 2

Hybrid Power Plant Project with Biomass and Solar Power in Kandal Province



▼Representative Participant: WWB Corporation

▼Partner Participant: AURA-Green Energy Co., Ltd.,
J-REC CO., LTD., Angkor Bio Cogen Co., Ltd.

Collaboration between Semarang (Indonesia) and Toyama

Introduction of mixed CNG and diesel combustion facility for public transport buses in Semarang

Achievements in City-to-City Collaboration

Toyama city, which has concluded a collaborative agreement with Semarang city on the achievement of a zero-/low-carbon society, carried out a project development feasibility study to create a zero-/low-carbon public transportation system for a compact city in Semarang using the knowledge and technology of "compact city development centred on public transportation". This study examined policies to introduce applied technologies, evaluate the effects of CO₂ emission reductions due to the implementation of the project, and confirm relevant legal systems.

Outline of GHG Mitigation Activity

Of the 141 diesel buses operated by Trans Semarang, Semarang city's transportation company, a total of 72 vehicles with diesel engines (25 large buses and 47 medium-sized buses) were targeted to be refit with hybrid engines capable of using CNG to reduce GHG emissions through a shift in the fuel used.

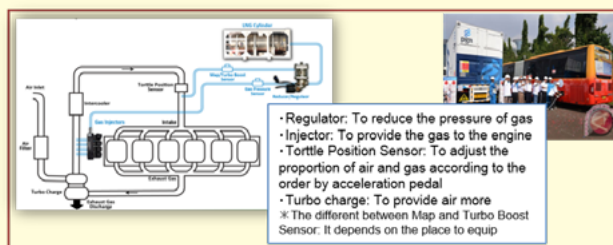
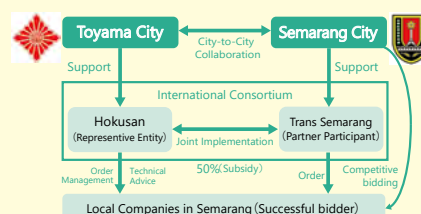
Expected GHG Emission Reductions

1,870 t-CO₂/year

Calculation of emission reduction effects when some diesel buses that are currently in operation are converted to buses equipped with hybrid engines.

Project Implementer

- ▼Japan: Hokusan Co., Ltd.
- ▼Indonesia: BLU UPTD Trans Semarang



Bus in Semarang City

1.11 Opportunities for collaboration between local governments and private companies in Japan

Projects are often developed for the city-to-city collaboration programme under sister city agreements or memorandums of cooperation. However, even if there has been no relationship up to that point, in some cases, collaboration may be initiated through dialogues at international events. If a city shows an interest, they may wish to consult about participating in the programme during an opportunity to meet face-to-face with local governments and private companies from Japan.

In addition, the Ministry of the Environment is searching for new participants in this programme. Events are also being held (seminars, trainings, workshops, etc.) in Japan to present opportunities to disseminate information and for matching in order to promote the creation of zero-carbon cities. If interested, please visit the Ministry of the Environment's "Web Portal for Low Carbon Development in Asia"⁷ for further information.



Fig. 16 Scenes of events for promoting the city-to-city collaboration programme

⁷ <https://www.env.go.jp/earth/coop/lowcarbon-asia/english/index.html>

CHAPTER 2

EXIT STRATEGIES OF THE CITY-TO-CITY COLLABORATION

- 2.1 Joint Crediting Mechanism (JCM)
- 2.2 JCM Model Projects
- 2.3 Zero-/low-carbon Technology Innovation Programme
- 2.4 Japan Fund for the Joint Crediting Mechanism (JFJCM)
- 2.5 Additional Support Schemes

2.1 Joint Crediting Mechanism (JCM)

(1) Outline of the mechanism

Japan started the Joint Crediting Mechanism (JCM) in 2013, and along with JCM partner cities, established and implements the JCM with the following objectives.

- ✦ Facilitating diffusion of leading zero-/low-carbon technologies, products, systems, services and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries.
- ✦ Appropriately evaluating contributions from Japan for GHG emission reductions or removals in a quantitative manner and use them such to achieve Japan's emission reduction target.
- ✦ Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions or removals

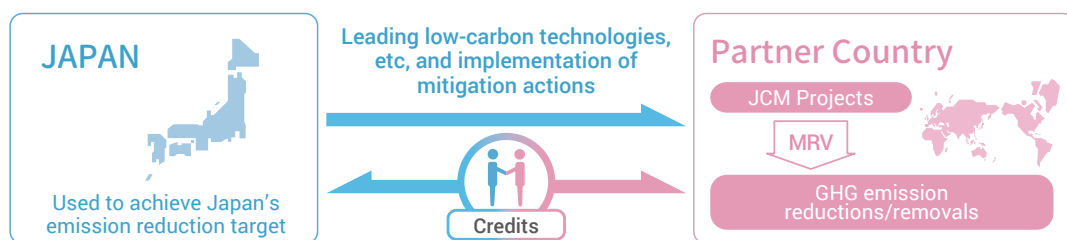


Fig.17 Outline of Joint Crediting Mechanism (JCM) (Reprint of Fig. 7)

(2) Benefits of the JCM

In general, the initial cost of advanced zero-/low-carbon technologies and products in the environmental performance is relatively high. By using the JCM Financing Programme, barriers to the introduction of advanced

such technologies and products can be removed. It is also expected that implementation of JCM projects will contribute to collaboration among relevant stakeholders including local governments and the private sector.

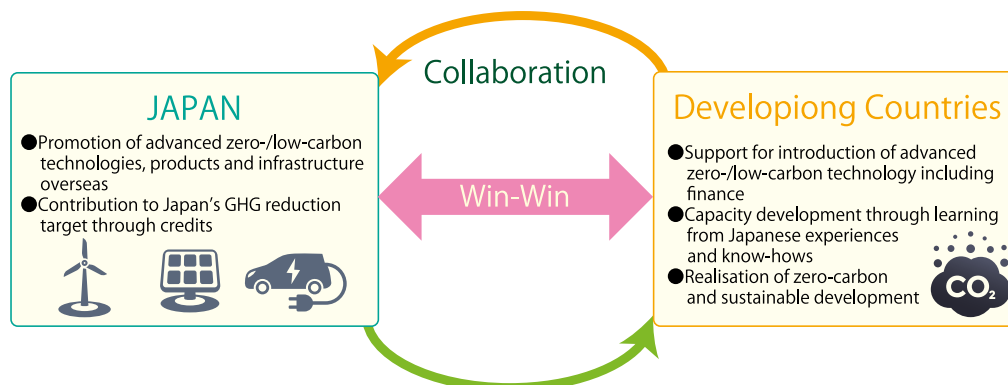


Fig.18 Benefits of the JCM

(3) JCM scheme

The Joint Committee acts as a governing body for the JCM in partner countries, and comprises representatives from Japan and the respective partner country. The Joint Committee handles development/revision of rules, guidelines and methodologies as well as approval/rejection thereof; registration of JCM projects; accreditation of third

party entities (TPE); approval/rejection of credit issuance.⁸

After the amount of credits is determined by the Joint Committee, the governments of both countries issue credits to their JCM registries.

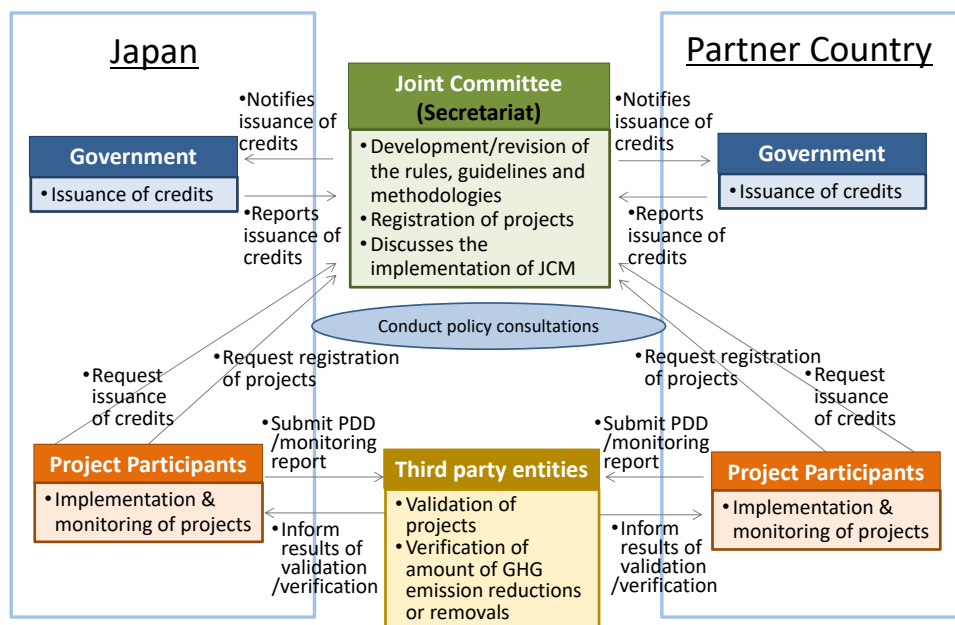


Fig.19 JCM scheme

(Source: https://www.carbon-markets.go.jp/document/20190819_JCM_goj_eng.pdf)

BOX 2. Credits issued for JCM projects

Credits were issued for a second time on 24 October 2017 for a JCM project implemented by Japan and Mongolia to reduce GHG emissions by introducing solar power generation in Darkhan, Mongolia and supplying power to the grid. The cumulative reduction is expected to be

approximately 200,000 tonnes. The credits issued were allocated as follows: 6,263 tonnes (70%) to the Japanese government, 895 tonnes (10%) to a Japanese company, and 1,789 tonnes (20%) to the Mongolian government.



- ◆ Project name:
10MW Solar Power Project in Darkhan City
- ◆ Project Partners:
Japan: Sharp Corporation
Mongolia: Solar Power International LLC (SPI)
- ◆ Implementation status:
Registration complete, active, credits being issued (as of March 2020)

Source: http://gec.jp/jcm/jp/projects/18fgas_tha_01/

⁸ Documents and registered information on the project from the Joint Committee are available on the JCM website (<https://www.jcm.go.jp/>, in English).

(4) Flow of project formation to credit acquisition

Projects identified via preliminary studies are subject to the following registration procedure as a JCM project and to issue credits:

- ① Develop MRV (measurement, reporting and verification) methodology if there are no applicable methodologies. The methodology developed should be submitted to the Joint Committee for approval.
- ② Develop a PDD (project design document). The PDD developed should be subject to review by the TPE selected by the Joint Committee for confirmation of validity. After the validation process, the PDD is submitted to Joint Committee and registered as a JCM project after their approval.
- ③ Projects registered as a JCM project should be monitored according to the MRV methodology. GHG reduction and removal are calculated based on the monitoring data, which is used to produce reports. TPE reviews the GHG reduction and removal volumes.
- ④ Finally, an application for issuance of credits is then submitted to Joint Committee based on the TPE review result. Joint Committee then determines the volume of JCM credits, which are then issued by the governments of Japan and the partner country.

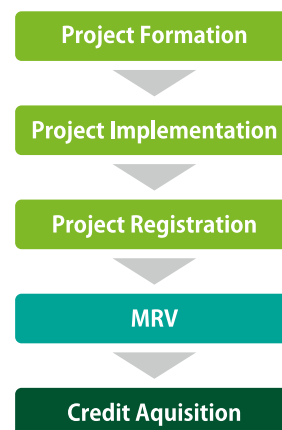


Fig.20
Flow of project formation
to credit acquisition

(5) MRV methodology and issuance of credits

In the JCM, emission reductions to be credited are defined as the difference between “reference emissions” and “project” emissions. Reference emissions are calculated based on business-as-usual (BaU) emissions to represent

plausible emissions in providing the same level of output or service of the proposed JCM project in the partner country. This approach ensures a net decrease and/or avoidance of GHG emissions and also reduces the burden of monitoring.

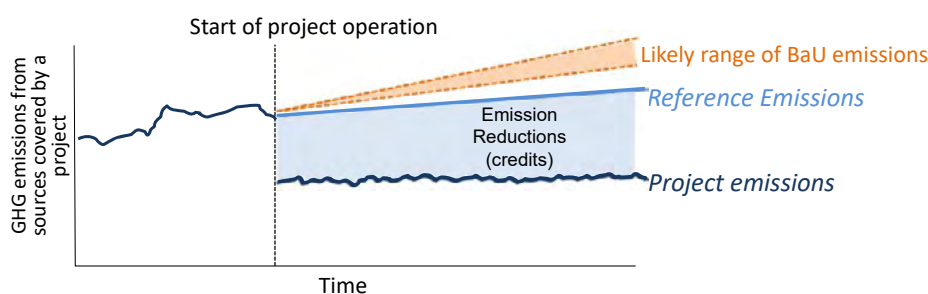


Fig.21 Calculation of emission reductions using reference emissions
(Source: https://www.carbon-markets.go.jp/document/20190819_JCM_goj_eng.pdf)

■ Methodology development of MRV

If no applicable methodology exists, it will first be necessary to develop the proposed methodology. Project participants will prepare the “Proposed Methodology Form” and “Proposed Methodology Spreadsheet”⁹ for submission

to the secretariat of the Joint Committee in each country, which will check that the submission is complete. The methodology will be approved after public input and a review by the Joint Committee.

⁹ Forms for preparation are available on each country page on the JCM website (in English).

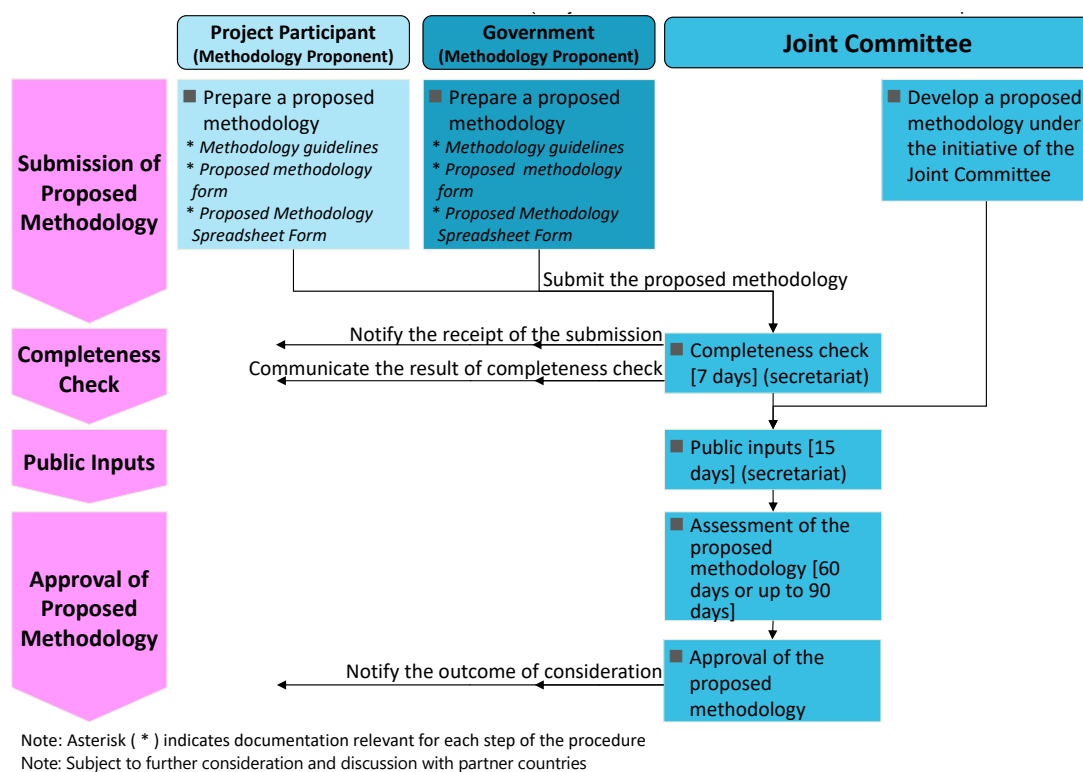


Fig. 22 Methodology Development Procedure

(Source: https://www.carbon-markets.go.jp/document/20190819_JCM_goj_eng.pdf)

(6) Registration of projects

Project participants will prepare PDD-related documents (Project Design Document Form, Monitoring Spreadsheet and Modalities of Communication Statement Form) for submission to the Joint Committee and TPE, outsourced separately by the Ministry of the Environment. These documents will be sent to the TPE after public input, which will confirm the validity of the project based on the results of public input and submit a validation report to the project participants.

Once the project participants receive the validation report, they will prepare a "Project Registration Request Form" for submission to the secretariat of the Joint Committee together with PDD documents that have been validated in order to apply to register the project. The secretariat of the Joint Committee will check that the submission is complete and inform the project participants of the results of that review. Then, the Joint Committee will conduct a review of the project registration and notify the participants of the results.

(7) Monitoring, verification and issuance of credits

The project will be monitored by the project participants. After the subsidised project has been completed, monitoring will be carried out each year during the legal durable period of the equipment. When installing a combination of equipment with different legal durable years, set monitoring schedules based on each individual case.

During the period of the equipment's legal durable years, there may be cases in which subsidies must be reimbursed if the installed equipment stops operating for a period of time, factories close, equipment is sold or transferred or used for a different purpose that is contrary to the original objective of the granted subsidy due to changes in circumstances.

It is possible to continue to own or operate equipment after the legal durable period has elapsed, in which case there is no obligation to return the subsidies for this equipment. It is also possible (although not required) to issue credits

through continuous monitoring.

Project participants carry out monitoring, and consultants outsourced by the Ministry of the Environment will prepare a monitoring report based on the data obtained. The consultant will submit this report to the TPE who will verify the contents, and then compile this information into a verification report. The consultant will communicate with the TPE at the time the project is being verified, and project participants will be required to cooperate in on-site inspections. After the verification report is compiled, the project participants will prepare documents related to the issuance of credits after a decision is made on how credits will be allocated, which will then be submitted to the secretariat of the Joint Committee.

After the above documentation has been submitted, the secretariat of the Joint Committee will check that the

submission is complete, and the Joint Committee will make a decision on the notification of the amount of credits to be issued. Project participants, the TPE and the governments of both countries will then be notified about the amount of credits issued, after which credits will be issued by the

two governments and the Joint Committee will be notified. At least half of the credits issued will be credited to the Japanese government. The first application for credits to be issued must be made within one year of the registration of the project.

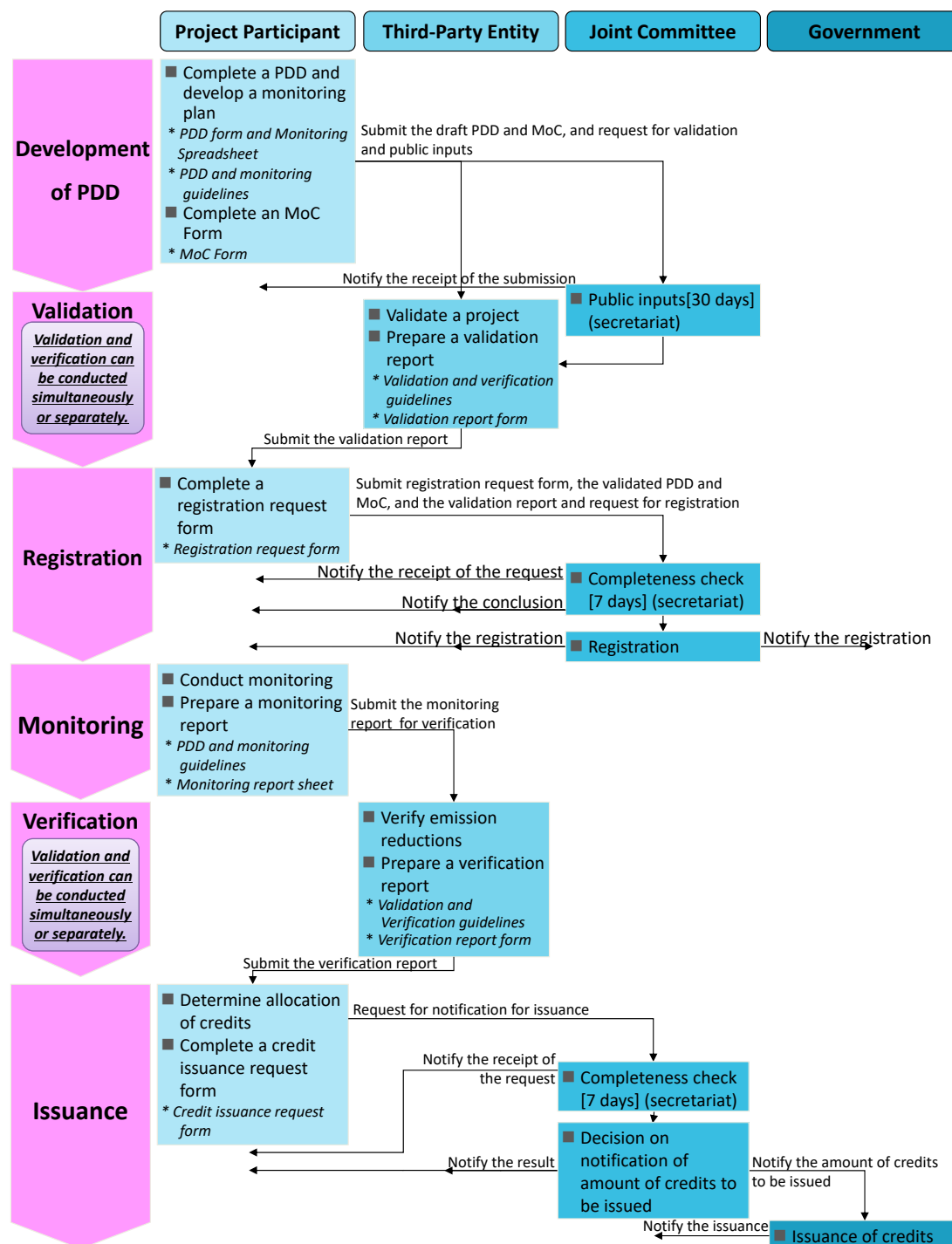


Fig. 23 Registration, MRV and issuance Procedure of the JCM project
(Subject to further consideration and discussion with partner countries)
(Source: https://www.carbon-markets.go.jp/document/20190819_JCM_goj_eng.pdf)

(8) JCM registry

The JCM registry is an information system used to manage JCM credits. It acts as a ledger to record JCM credit transactions, such as the transfer (transaction/movement) or nullification of credits, between each holding account. A registry has been built for each country; in Japan, the registry was developed and started operation in November 2015. Its use is not limited to project participants; corporations (domestic and foreign) can also open accounts in the JCM registry. Credits can also be transferred between accounts held by each corporation. Credits recorded in nullified accounts will be applied to achieve Japan's reduction targets.

The basic rules that must be followed when handling credits in Japan, such as issuing or transferring credits, are specified in the Guidelines for the Implementation of the JCM in Japan.¹⁰

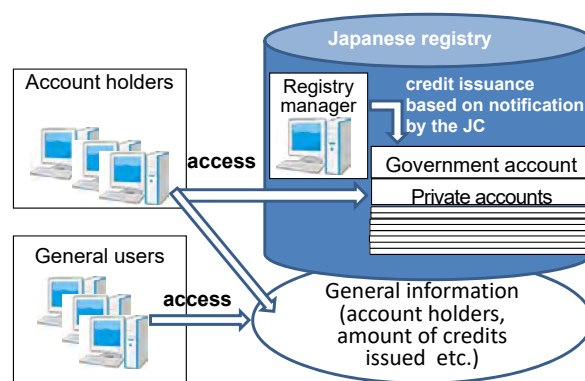


Fig. 24 Image of JCM registry

(Source: https://www.carbon-markets.go.jp/document/20190819_JCM_goj_eng.pdf)

(9) Financing programmes for JCM projects

Various projects are in place to support the formation and implementation of JCM projects (Table 5). These can be used as reference when planning an exit strategy from the city-to-city collaboration programme. Please refer to subsequent

sections and open websites for detailed information on each project.

Table 5 Financing programmes for JCM projects (Examples)

- 1) Financing programme for JCM Model Projects (see section 2.2)
- 2) Financing programme to demonstrate advanced zero-/low-carbon technology innovation for further deployment in developing countries (see section 2.3)
- 3) Japan Fund for the JCM (JFJCM) (see section 2.4.)
- 4) Supporting programme for reducing CO₂ emissions overseas through the Incubation and Overseas Promotion of Waste Management and Recycling Industry¹¹
- 5) JCM F-gas Recovery and Destruction Model Project¹²

¹⁰ Guidelines for the Implementation of the JCM in Japan (https://www.carbon-markets.go.jp/document/20151113_JCM_guideline_jpn.pdf)

¹¹ Project contributing to the reduction of GHG emissions around the world and the global deployment of Japan's recycling industry (waste disposal, recycling-related businesses) through the provision of support in implementing feasibility studies and the expansion of zero-/low-carbon waste treatment

¹² Project on the recovery and destruction of alternative CFCs from used equipment and implementation of MRV to reduce GHG emissions

2.2 JCM Model Projects

"Financing programme for JCM Model Projects" (JCM Model Projects) is a strategy to realise reductions in CO₂ emissions with the introduction of superior zero-carbon technologies to partner countries, and for which reductions are then used to contribute to the achievement of Japan's Nationally Determined Contributions (NDCs). The JCM

Model Project also aims to promote the deployment of leading zero-carbon technologies in developing countries to contribute to achieving substantial reductions in emissions and expanding the market for such technologies overseas. The programme was launched in fiscal 2013.

(1) Content of programme

The programme aims to harness the energy of the private sector to support projects introducing advanced zero-/low-carbon technologies that have not been introduced due to

cost constraints and a lack of performance results to help developing countries achieve the transition to a zero-carbon society.

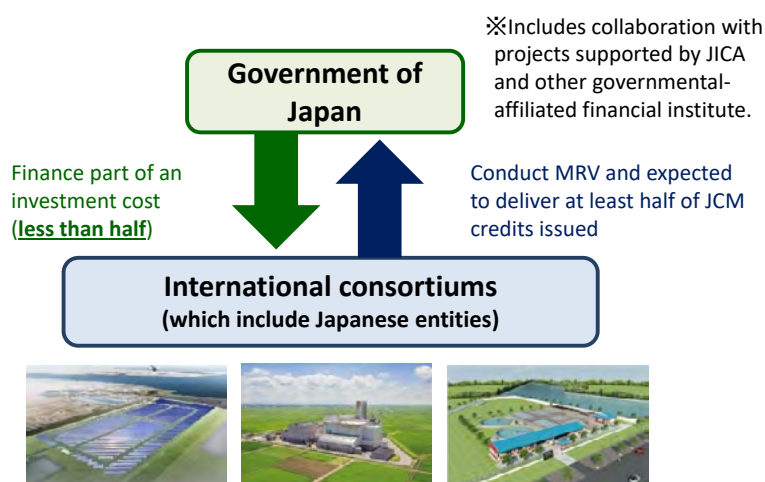


Fig. 25 Concept of the JCM Model Project scheme

(Source: Government of Japan "Recent Development of The Joint Crediting Mechanism (JCM)" (August 2019) (https://www.carbon-markets.go.jp/document/20190819_JCM_goj_eng.pdf))

(2) Content of assistance

The following section provides an overview of eligible projects under this programme and the requirements that must be met. The information shown is based on the FY

2019 Call for Proposals. Please refer to the most recent Call for Proposals for the latest information.

a. Eligible projects

This programme is applicable for projects carried out in developing countries to reduce energy-derived CO₂ emissions through the use of advanced zero-/low-carbon technologies, facilities and equipment. This also includes projects linked to those funded or financed by the Japan International Cooperation Agency (JICA) or other government-affiliated financial institutions. Specific projects

may include those related to renewable energy, such as solar power generation, small hydroelectric power generation and biomass power generation, as well as energy-saving projects, such as high-efficiency air conditioning equipment, refrigerators and freezers, and gas co-generation. The following requirements (1) to (4) must be met.

Table 6 Requirements for JCM Model Projects

- (1) Projects must contribute to reducing energy-derived CO₂ emissions through the use of leading technologies in developing countries that have signed or are expected to sign bilateral agreements on the JCM, and contribute to achieving Japan's GHG emission reduction targets through the acquisition of actual reduced GHG emissions as credits based on the JCM.
- (2) Subsidised projects must contribute to sustainable development and the achievement of the SDGs in partner countries. The installation and operation of facilities and equipment must be in compliance with legal systems for the environment in partner countries and follow international practices and guidelines related to environmental protection.
- (3) GHG emission reductions should be able to be quantitatively calculated and verified as a result of the project.
- (4) Subsidies must not have been received from other entities in Japan for equipment/facilities to be introduced with assistance from this programme (Act on Regulation of Execution of Budget Pertaining to Subsidies, etc. (Act No.179 of 1955, hereinafter referred to as the "Regulation Act"). Refers to "subsidies, etc." specified in Article 2, paragraph 1 and "indirect subsidies, etc." specified in paragraph 4).

(Note) Information from FY 2019

b. Eligible entities

An entity that is eligible for this programme is a Japanese corporation that is the representative participant of an international consortium.

An international consortium is an association that consists of a Japanese entity and a foreign entity(ies), with the objective of effectively implementing a project.

c. Responsibilities of members of international consortiums

The responsibilities of joint ventures, including private companies overseas, are shown in Table 7.

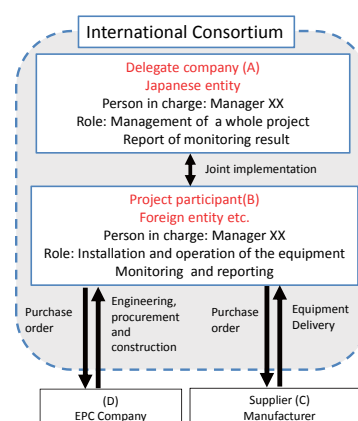


Fig. 26 Example of an international consortium

(Source: GEC "Financing Programme for JCM Model Projects" (April 2019)
(http://gec.jp/jcm/jp/kobo/h31/mp/20190415_gec_summary.pdf)

Table 7 Responsibilities of members of international consortiums

Members	Entities that are members of an international consortium have the following responsibilities.
	(a) Cooperate with entities developing MRV methodologies applicable to the project, such as by providing information needed to develop methodology. (b) Cooperate in the provision of materials and information necessary to a Third Party Entity (TPE) to ensure that the project is implemented smoothly when a TPE confirms the validity of a project and verifies GHG emission reductions at target factories and business sites. (c) Implement measures to reduce GHG emissions from target factories and business sites and perform required monitoring to calculate reduced emissions by selecting and using leading zero-/low-carbon technologies for facilities and equipment to be introduced through the subsidised project. (d) Calculate the GHG emission reduction effect that has resulted from the introduction of equipment based on the results of monitoring and submit a report to the Ministry of the Environment each year for the legal durable years of the equipment as designated by law. (e) Take necessary measures, such as registering the project with the JCM Joint Committee, in countries where the JCM has been established and those where the JCM is being established after adoption. (f) Apply for credits to be issued for the project to the JCM Joint Committee and apply at least half of the issued JCM credits to the account of the Government of Japan. (g) Manage equipment with care for the period of legal durable years even after the subsidised project has been completed and plan for its efficient operation in accordance with the purpose of granting the subsidy. (h) If there is a change in members of the international consortium, submit a report on the change to the centre and continue to implement the above measures (a) through (h).

(Note) Information from FY 2019

d. Amount of subsidy

In principle, subsidies of JPY 50 million or more and JPY 2 billion or less (as of FY 2019) are available per project. The maximum amount of the subsidy is the total amount of costs eligible for the subsidy multiplied by the subsidy

rate. The actual amount of the subsidy is determined with delivery of notification confirming the amount.

e. Subsidy rate

The maximum subsidy rate is between 30% and 50%. In partner countries, the maximum subsidy rate will be set as follows according to the number of projects (at the time of application) with technologies that are similar to subsidised

projects related to the JCM that have been adopted in the past. The maximum subsidy is the amount determined in the grant notification.

Table 8 Setting subsidy rates

Number of past projects adopted with similar technologies in countries where the project will be implemented	Maximum subsidy rate
None (first case to be introduced)	50%
1 to 3	40%
4 or more	30%

(Note) Information from FY 2019

(3) Timetable from open call to subsidy payment

Since fiscal 2019, open call for this programme has been offered throughout the year. The financing programme under the JCM Model Project scheme will start after the date

that the subsidy has been decided and will be completed by the end of January 2022 at the latest.

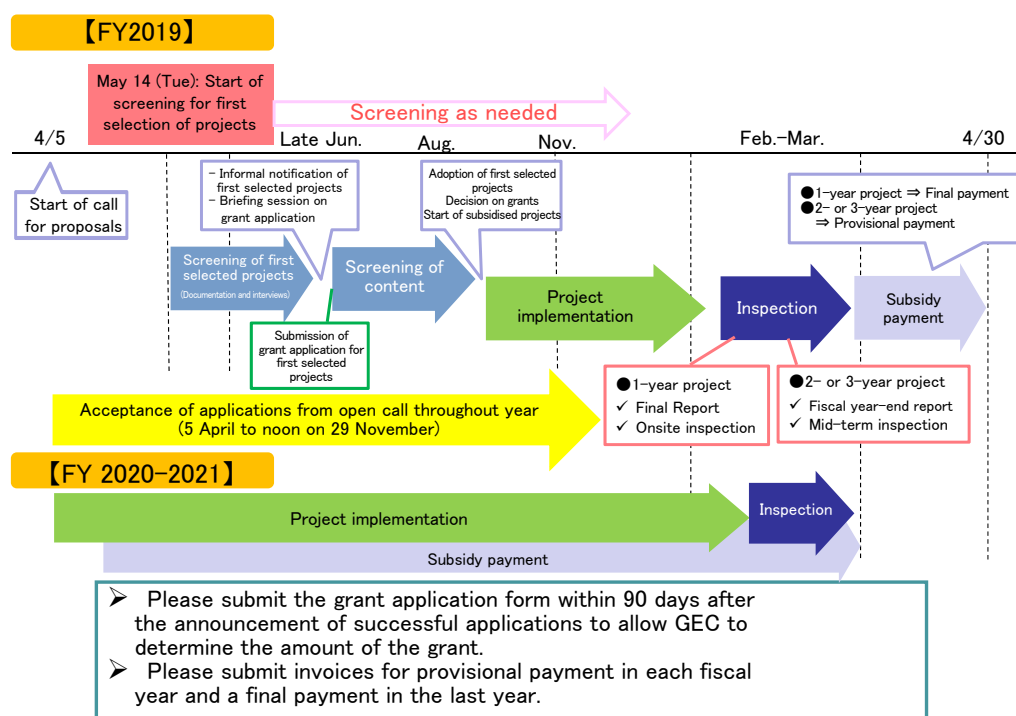


Fig. 27 Timetable for financing programme (as of FY 2019)

(Source: GEC "Financing Programme for JCM Model Projects" (April 2019)
(http://gec.jp/jcm/jp/kobo/h31/mp/20190415_gec_summary.pdf)

(4) Past achievements

As of January 2020, 150 projects have been adopted under the JCM Model Project scheme. A breakdown of countries and areas where it has been introduced follows

below. Details of specific projects are described in Chapter 1, section 1.10 and on the GEC website.¹³

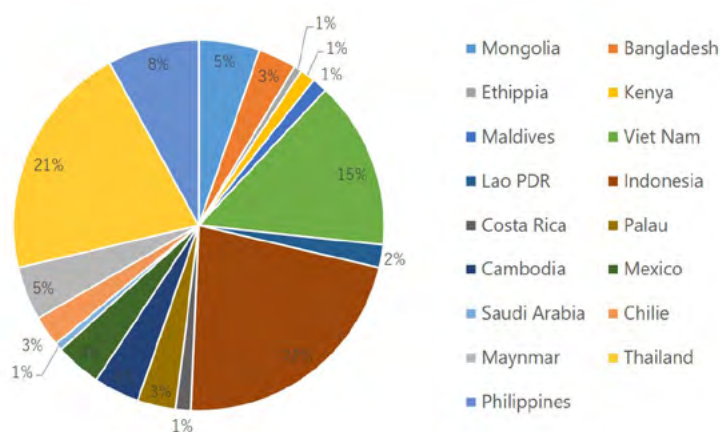


Fig. 28 Country breakdown of projects adopted under the JCM Model Project scheme

(Source: The figure was developed from the list of JCM Financing Programme by MOEJ (FY2013-2019) as of January 24, 2020 (http://gec.jp/jcm/en/wp-content/uploads/2020/01/200124list_en.pdf))

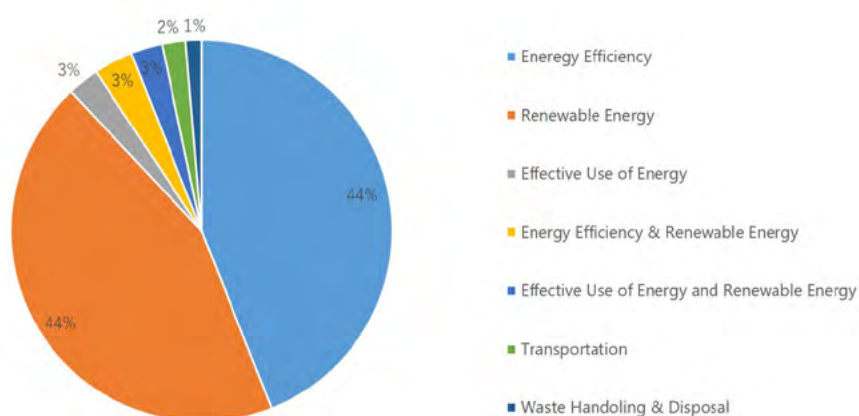


Fig. 29 Sector breakdown of projects adopted under the JCM Model Project scheme

(Source: The figure was developed from the list of JCM Financing Programme by MOEJ (FY2013-2019) as of January 24, 2020 (http://gec.jp/jcm/en/wp-content/uploads/2020/01/200124list_en.pdf))

¹³ <http://gec.jp/jcm/jp/projects/>

2.3 Low-carbon Technology Innovation Programme

Leading zero-/low-carbon technologies are critical for enhancing global warming measures on an international scale. However, for the use of these technologies to become widespread, it is important to collaborate with developing countries to innovate zero-/low-carbon products and services and create markets that meet the needs of these countries. The “Financing programme to demonstrate advanced zero-/low-carbon technology innovation for further deployment in developing countries” (hereinafter referred to as the “Low-carbon Technology Innovation Programme”) aims to create a low-carbon and zero-carbon

society by customising and expanding the use of quality environmental technologies and products, one of Japan’s strong points, through the development of technology systems and creating packages of multiple technologies for developing countries. The programme also aims to return profits to technology development in Japan and extend benefits to other developing countries through innovation that benefits both parties (co-innovation) in collaboration between Japan and developing countries. This programme was launched in fiscal 2019.

(1) Content of programme

The programme aims to create and expand innovation that benefits both parties (co-innovation) in collaboration with developing countries by customising, systemising and

developing multiple packages of quality Japanese zero-carbon technologies and products, as well as reforming socio-economic systems and lifestyles.

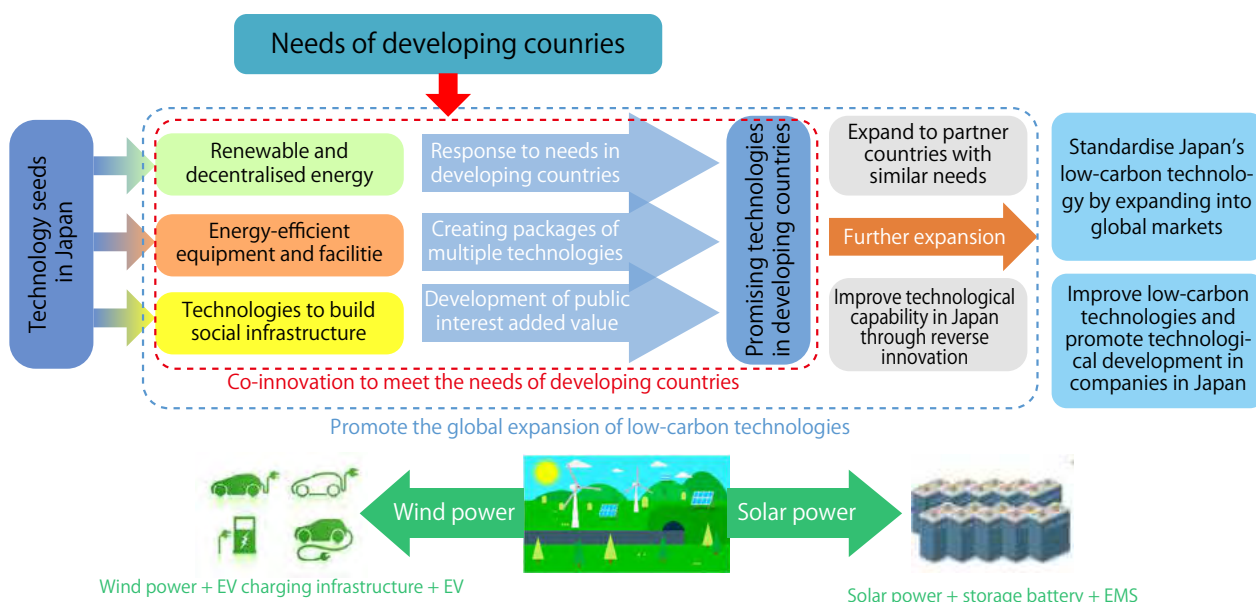


Fig. 30 Concept of Zero-/low-carbon Technology Innovation Programme

(Source: GEC “FY2019 Financing programme to demonstrate advanced low-carbon technology innovation for further deployment in developing countries” (April 2019) (http://gec.jp/innovation/2019/2019_coinnovation_summary.pdf)

(2) Content of assistance

a. Eligible projects

Eligible projects include those that target the renovation and demonstration of zero-/low-carbon technologies for developing countries and help reduce CO₂ emissions derived from energy sources. This financing programme covers projects that meet all the requirements listed in Table

9. In addition, projects implemented in Japan and abroad must also comply with the laws and regulations of the country/region to ensure the subsidised projects is properly implemented.

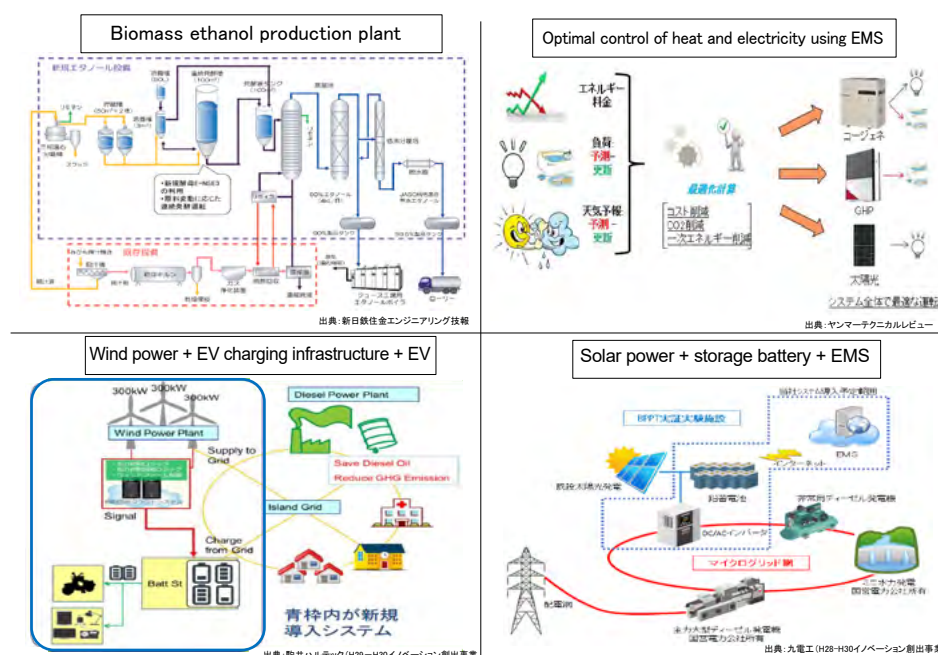


Fig. 31 Examples of packaging multiple technologies

(Source: GEC “FY2019 Financing programme to demonstrate advanced low-carbon technology innovation for further deployment in developing countries” (April 2019) (http://gec.jp/innovation/2019/2019_coinnovation_summary.pdf)

Table 9 Requirements for Low-Carbon Technology Innovation Programme

- 1) Partner countries promoting the spread of target low-carbon technologies must fall under one of the following categories.
 - (a) Countries developing the JCM as of 1 April 2019
 - * Includes countries that have also newly developed the JCM during the implementation period of this programme.
 - (b) Developing countries other than those listed in (a) that have the potential to develop the JCM
 - * Note on the location of renovation and demonstration of target technologies

Partner countries promoting the spread of target low-carbon technologies are described in (a) and (b) above, and in principle, the renovation and demonstration of these technologies will be performed within Japan. However, in cases where it is difficult to perform tests or inspections deemed necessary for verification within Japan due to differences in conditions, such as the environment (as with climates), regulations and the procurement of materials, verification may also be performed outside Japan. If verification will be performed in a location outside of Japan, the necessity should be briefly described in the application form.
- 2) Target low-carbon technology must satisfy all of the following requirements.
 - (a) The key technology must contribute to reducing CO₂ emissions from energy consumption (limited to renewable energy or energy savings). Technologies that only reduce greenhouse gases other than CO₂ or those related to the absorption and fixation of CO₂ that are not clearly derived from energy (such as the absorption of CO₂ in the atmosphere) cannot be applied under this programme.
 - (b) The key technology must be a proven technique in Japan and not be in the research stage.
 - (c) The key technology must be innovative and similar technologies in the partner country or region should have a low adoption rate. In particular, the technology must not have been adopted in similar projects in the partner country, such as in the city-to-city collaboration programme or the “Financing Programme to Demonstrate Advanced Low-carbon Technology Innovation for Further Deployment in Developing Countries” (FY2014 to FY2018).
 - (d) There must be a need to renovate the key technology by changing or restructuring the components for equipment and facilities using the technology in order to deploy it throughout the country, as the market, demand, regulations, customs, resource constraints and other aspects in the partner country and region are significantly different from those in Japan
 - (e) The key technology is expected to be returned back to the partner country and reduce CO₂ emissions in the country in the future.
- 3) In principle, the project plan should be completed within three years.
- 4) The technology should be recognised as contributing to improving the skills and capacity of local human resources that form the foundation of the introduction of technology in partner countries and to the sustainable development of markets for such products in partner countries.

(Note) Information as of FY 2019

b. Priority countries

Priority is given to countries where the JCM has been established. As of February 2020, this includes 17 countries (Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Vietnam, Laos, Indonesia, Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia, Chile, Myanmar, Thailand and the Philippines).

c. Eligible entities

An entity that is eligible for this programme is a Japanese corporation that is the representative participant of a consortium.

d. Consortium members and collaborators

If a corporation other than a member of the consortium participates in the project, they will be classified as collaborators. The representative participant of the consortium will also coordinate and manage the progress of the project to ensure its smooth execution for collaborators as well and to achieve objectives. As a general rule, collaborators cannot acquire assets that are targets of this subsidised programme.

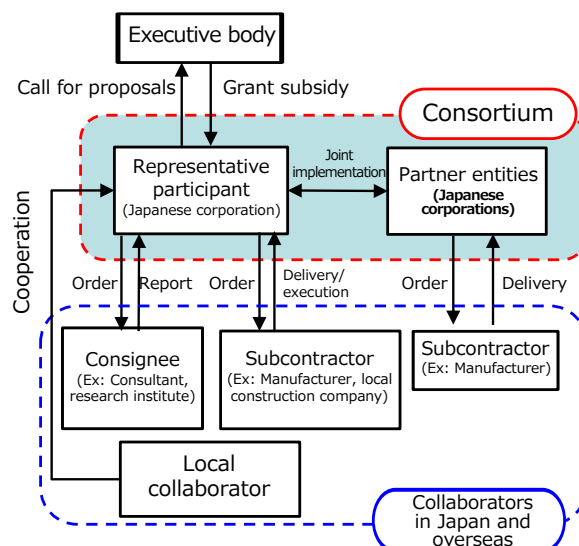


Fig. 32 Example of a consortium

(Source: GEC "FY2019 Financing programme to demonstrate advanced low-carbon technology innovation for further deployment in developing countries" (April 2019) (http://gec.jp/innovation/2019/2019_coinnovation_summary.pdf)

2.4 Japan Fund for the Joint Crediting Mechanism (JFJCM)

With the signing of a memorandum of understanding in fiscal 2013 between the Ministry of the Environment and Asian Development Bank (ADB), the Japan Fund for the Joint Crediting Mechanism (JFJCM) was established as a fund to implement and promote the JCM. The JFJCM provides subsidies as support for additional costs for projects that introduce advanced zero-/low-carbon technologies into

existing ADB projects.

Grants are provided to governmental and public sector projects (sovereigns), while private sector projects (non-sovereigns) are subsidised with loans.

This programme is considered when a specific zero-/low-carbon project is identified through a study and there is potential for co-financing with ADB.

(1) Content of programme

This programme credits reductions to make the shift to a cutting-edge, zero-/low-carbon society by providing support for additional costs through ADB's social infrastructure project (fund) for the adoption of leading zero-/low-carbon technologies that have not been introduced because of high costs. In addition, the programme aims to lower

market barriers for developing countries and expand/spread markets in the Asian region by demonstrating that leading zero-/low-carbon technologies are economically and socially superior to conventional technologies from the perspective of lifecycle costs.

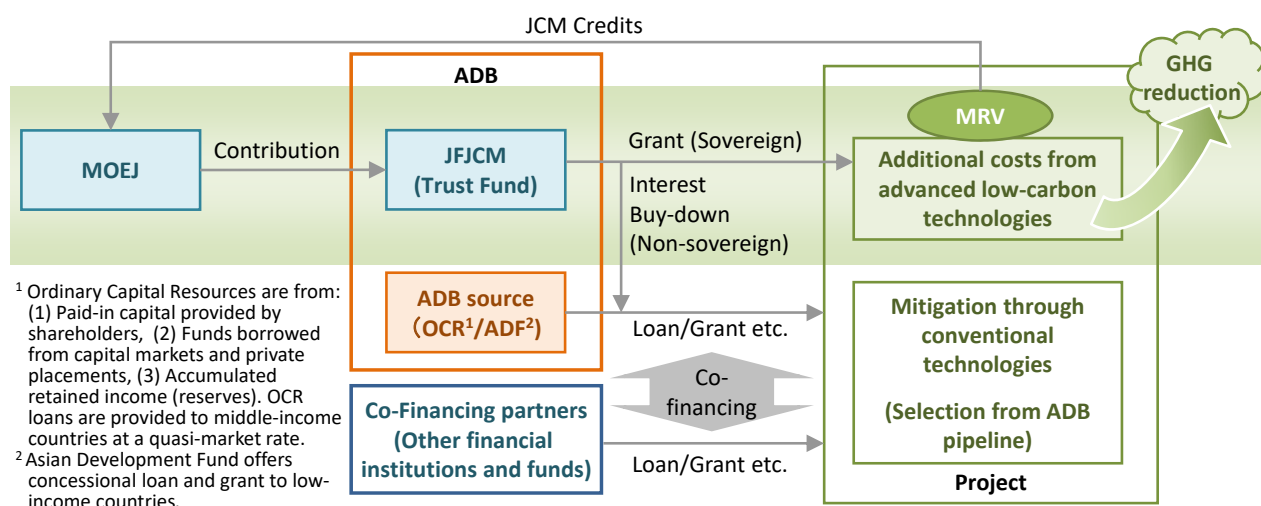


Fig.33 Concept of JFJCM

(Source: https://www.carbon-markets.go.jp/document/20190819_JCM_goj_eng.pdf)

(2) Content of assistance

Please check with ADB¹⁴ for the latest information.

a. Eligible projects

The JFJCM provides support for the additional costs needed to introduce advanced zero-/low-carbon technologies. Subsidised technologies are those considered to be advanced zero-/low-carbon technologies that contribute to reducing GHG emissions, including CO₂ derived from energy sources, as well as technologies that have a track record for operation and have been put into practical use (Note that demonstration projects are not covered). Other international carbon market mechanisms (e.g., CDM) cannot be used for projects that aim to be developed into JCM projects using support from the JFJCM.

The content of support differs depending on the type of project. Grants available for "sovereign projects" are set at 10% of the total project cost (USD 10 million max.). However, if the total project cost is less than USD 50 million, the maximum grant will be USD 5 million. For "non-sovereign projects", support is provided with interest subsidies for private sector projects on renewable energy and energy conservation that are implemented using loans from ADB. Available interest subsidies are 10% of the total project cost (USD 10 million max.).

¹⁴ ADB: <https://www.adb.org/site/funds/funds/japan-fund-for-joint-crediting-mechanism>

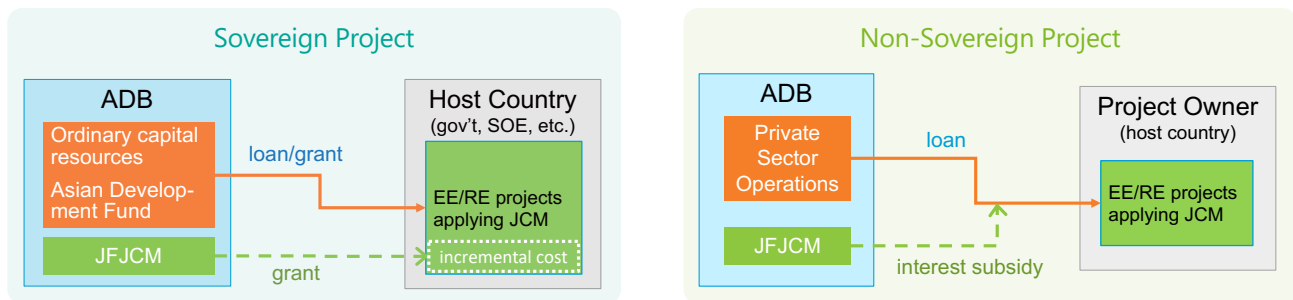


Fig.34 Image of support for sovereign projects (left) and non-sovereign projects (right)
 (Source: ADB "Japan Fund for the Joint Crediting Mechanism (JFJCM)" (November 2019)
 (http://gec.jp/jcm/news/jcmsympo2019/06_ADB.pdf))

b. Priority countries

Of the 17 countries where the JCM has been established, 11 are eligible for this programme (Mongolia, Bangladesh, Maldives, Vietnam, Laos, Indonesia, Palau, Cambodia,

Myanmar, Thailand and the Philippines, as of November 2019).

c. Eligibility

Eligible applicants for sovereign projects are national governments and private corporations for non-sovereign projects.

※The first JFJCM project

The first JFJCM project was approved on Maldives in 2015. It was targeted at improving energy efficiency and CO₂ reduction through installation of lithium-ion batteries,

as well as a high-efficiency energy management system (EMS) additionally introduced through JFJCM.

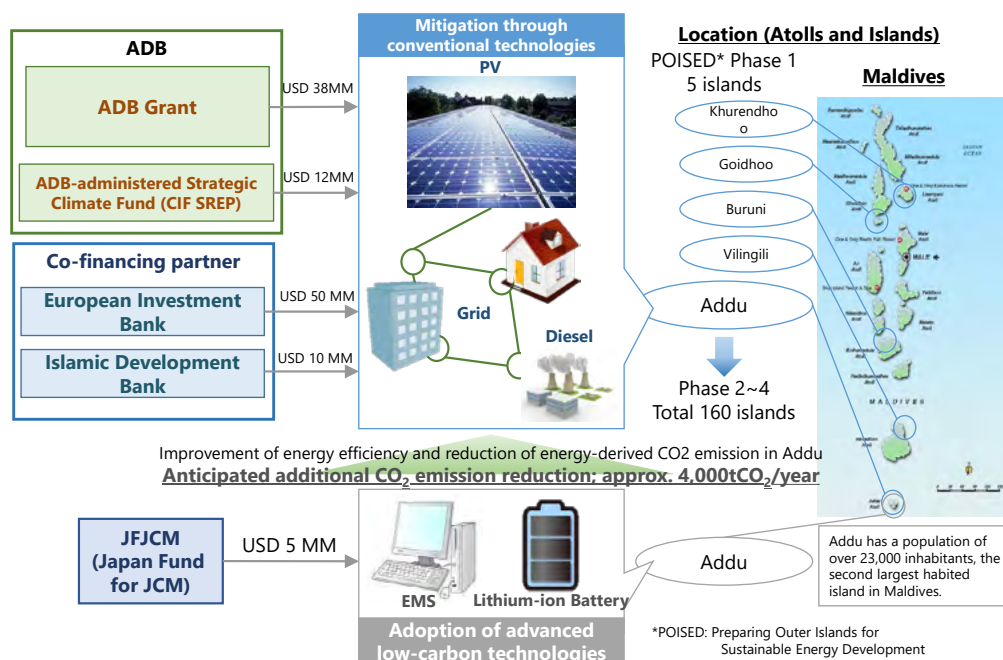


Fig. 35 1st JFJCM project: Smart Micro-Grid system for POISED Project in Addu atoll, Maldives

(Source: MOEJ "ADB Trust Fund: Japan Fund for Joint Crediting Mechanism (JFJCM)"
 (https://www.carbon-markets.go.jp/document/JFJCM_Introduction_English_Upload_201612.pdf))

2.5 Additional Support Schemes

Some studies under the city-to-city collaboration programme may not necessarily be able to make use of the financing programmes introduced in sections 2.1 to 2.4. In this case, it is best to consider an exit strategy by focusing on support programmes available in other organisations.

The following are examples of public funds that can be used independently by Japanese local governments or in collaboration with private companies to promote intercity cooperation.¹⁵

Table 10 List of available funds in Japan that can be used by Japanese local governments to promote city-to-city collaboration

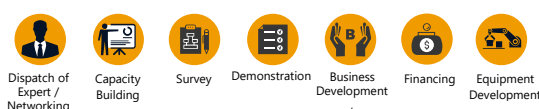
A. List of funds in Japan for local governments

No.	Fund Name	
1	Grant Assistance for Grassroots Human Security Projects	
2	JICA Grassroots Technical Cooperation Project (Special framework for local economic development)	
3	Grant Aid in Cooperation with Local Governments	
4	Breakthrough by Dynamic Approach in Sewage High Technology Project (B-DASH Project)	
5	Local Authorities International Cooperation Specialist Dispatch Project	
6	Local Government Officials Training Program (LGOTP)	
7	Regional Exchange Promotion Program (Overseas Training)	
8	Local Government International Cooperation Project (Model Project)	
9	Support for the Development of Sales Channels Overseas	
10	Regional Industry Tie-Up (RIT Project)	

B. List of funds in Japan for collaboration between local governments and private companies

No.	Fund Name	
11	Support for the Development of Human Resources to Promote the Export of Low-Carbon Technologies	
12	Grant Aid for Project and Operational Rights	
13	Science and Technology Research Partnership for Sustainable Development (SATREPS)	
14	Environment Research and Technology Development Fund	
15	Japan Fund for Global Environment	
16	City-to-City Collaboration for Low-Carbon Society	
17	JCM Model Projects Under the Financing Programme for the Joint Crediting Mechanism	
18	Financing Programme to Demonstrate Advanced Low-Carbon Technology Innovation for Further Deployment in Developing Countries	
19	Model Project for Improvement of Water Environment in Asia	
20	Incubation and Overseas Promotion of Waste Management and Recycling Industry	
21	Solution-oriented Business Surveys (SDGs Business Supporting Surveys)	
22	Support for SMEs and SDGs Business Development	
23	Collaboration Program with the Private Sector for Disseminating Japanese Technology for the Social and Economic Development of Developing Countries	
24	Preparatory Survey on PPP Infrastructure Project	
25	Technical Cooperation Projects	
26	Private Sector Investment Finance	
27	International Project for Increasing the Efficient Use of Energy with Japanese Technology	
28	Private-Sector-Led Promotion of Low-Carbon Technology Overseas	
29	Support for Overseas Business Strategies	
30	Japan Brand Development Assistance Program	
31	Fund for Restructuring Businesses Expanding Overseas	

Legend



¹⁵ Excerpt from the following report*. For details on each project, please refer to the applicable organisation.

*Kohei Hibino, Junko Ota, Fritz Akhmad Nuzir. "Studies and Recommendations on the Use of Public Funds by Local Governments to Promote Environmental Cooperation with Cities Overseas", IGES Discussion Paper, October 2018. (https://www.iges.or.jp/jp/publication_documents/pub/discussionpaper/jp/6653/C2C_Funding_201810.pdf)

Related websites

Name of website	Outline	URL
Web Portal for Low Carbon Development in Asia	Provides general information on zero-/low-carbon development in Asia as well as details of the city-to-city collaboration programme, managed by Ministry of the Environment, Japan	http://www.env.go.jp/earth/coop/lowcarbon-asia/english/index.html
The Joint Crediting Mechanism	Provides details of financing programmes of MOEJ (e.g., JCM Model Projects, Zero-/low-carbon Technology Innovation Programme), managed by Global Environment Centre Foundation (GEC)	http://gec.jp/jcm/index.html
Carbon Markets Express	Contains information on New Mechanisms, including JCM, managed by the Oversea Environment Cooperation Centre (OECC)	https://www.carbon-markets.go.jp/eng/
JCM Homepage	General information on JCM as well as documents of Joint Committees, jointly managed by Ministry of Trade and Industry and Ministry of the Environment, Japan	https://www.jcm.go.jp/

(As of February 2020)



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International Strategy Division, Global Environment Bureau, w
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