環境省
Ministry of the Environment

# MoEJ support program for subnational government & private sector

## JICA Clean City Initiative International Seminar 2023

February 2, 2023

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Ministry of the Environment, Japan

# Cooperation on Cities

# Environmental Infrastructure Promotion Strategy by Ministry of the Environment Japan

- Contribution for Carbon Neutrality and SDGs including environment became a main topic in the Infrastructure System Overseas Promotion Strategy
- **MoEJ promotes their supports for decarbonisation transition in Indo-Pacific by environmental Infrastructure in the public private relationship**

Promoting inter-city cooperation in and out of Japan,
Transferring experience and know-how to abroad

**Policy Dialogue** → **Support for making Strategy, plan, and regulation** → **formulation of Infrastructure case** → **Funding Support**

Developing a business environment in public private platform
(Japan Platform for Redesign; sustainable Infrastructure )

## Waste to Energy plant

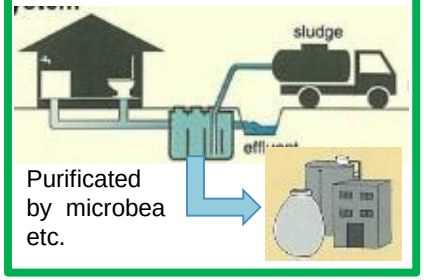
Installed first WtE plant in Myanmar（2017）

## Saving and Renewable energy (Joint Credit Mechanism)

Installed Solar power plant in Mongolia (soccer filed 40 site)
※Developing in 17 countries

## Jyokaso

Developing in China and Vietnam etc. for necessity of wastewater treatment

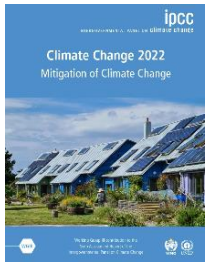



## Water/Air pollution

Concluded an agreement for quality improvement of Citarum river (2018)

# Importance of cities in climate change

- The cities account for approximately **70% of global GHG emissions**.
- The cities  is becoming at the **forefront of making global efforts** to address climate change as well as of adapting to its impacts.




The third part of **the IPCC Sixth Assessment Report** released in 2022 highlights the need for cities, which account for approximately 70% of global GHG emissions, to urgently promote address a transition to decarbonization.

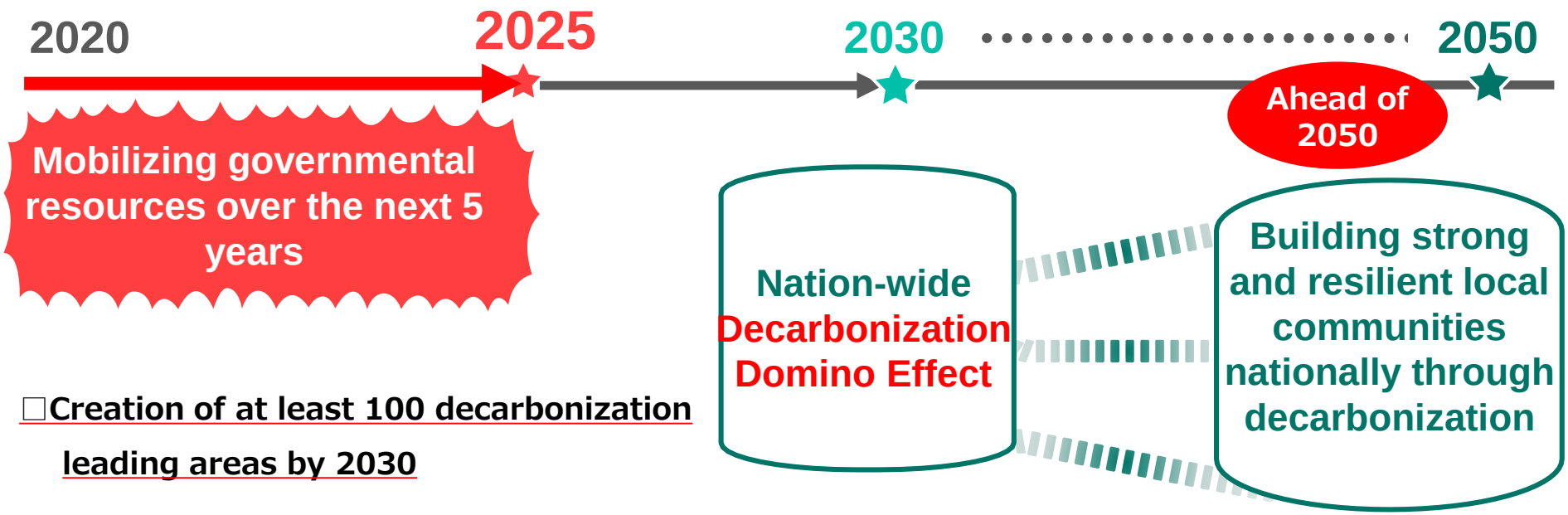
**The Sharm el-Sheikh Implementation Plan** was adopted at COP27, which recognizes the important role of non-Party stakeholder including cities and civil society, in addressing and responding to climate change and highlights the urgent need for multi-level and cooperative action in this regard.

**G7 Climate, Energy and Environmental Ministerial Communiqué** in 2022 highlights important role of cities and commits to facilitate city-to-city collaboration.

# Regional Decarbonization Roadmap

■100 **decarbonisation** leading areas aim to **achieve the goal of its decarbonisation by FY2030.**

■ Subsequently, MOEJ will call for applications semi-annually until FY2025.




□**Creation of at least 100 decarbonization leading areas by 2030**

# Create more than 100 Decarbonization Leading Areas(DLA)

- **Areas aiming to achieve decarbonization by FY2030,** ahead of scheduled date of 2050
- **46 proposals have been selected** / more than **100 DLAs are planned to be selected by FY2025**.
- **Create Models of decarbonization** in diverse areas such as urban, agricultural, and tourist areas

## Biogas power generation from livestock manure (Kamishihoro Town, Hokkaido)

Biogas power generation facilities

## Resource Recycling x Decarbonization (Maniwa City, Okayama)


**Food waste recycling facilities**
Operational capacity: 36,000kl/year
Production capacity of liquid fertilizer: 8,000 ton/year

## Decarbonization of cities with heavy consumption of energy (Yokohama City, Kanagawa)

Coastal area including commercial facilities in Yokohama

## Decarbonization of the Cultural Heritage of Ancient Kyoto (Kyoto City, Kyoto)

Fujinomori Shrine

Daigoji Temple

# City-to-City Collaboration Program

**[Basic concept]**

Pairing Japanese cities with partner cities abroad and promoting transfer of knowledge and experience for decarbonization in partnership with private solution providers.

**Private partners**

- Survey and identification of local needs
- Provide suitable technology solutions

**MOEJ**

- Financial support
- Program management

**Japanese city**

- Knowledge transfer and sharing good practices
- Advisory support on city administration

Collaboration

**Partner city**

- Coordination with relevant stakeholders
- Development/Implementation of climate actions

- Co-create low-carbon projects
- Support developing policies and plans to promote climate actions
- Build capacity for government staff
- Raise awareness of stakeholders

**Deliver net zero commitment**

**Deploy decarbonized technologies/infrastructure**

**Develop action plans and regulations**

# Cities taking part in the City-to-City Collaboration Program (FY2013～2022)

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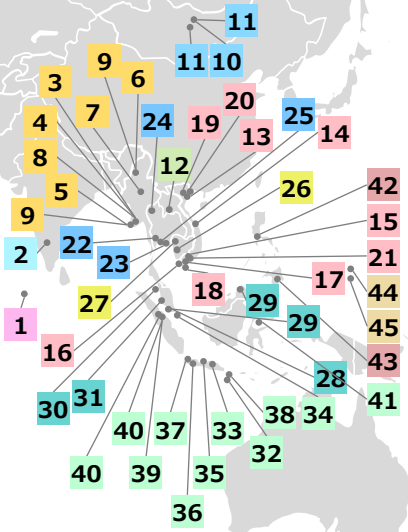
## Partnering 20 Japanese cities with 45 cities/regions in 13 countries

| | Foreign city | Japanese city |
|---|---|---|
| **Maldives** | | |
| 1 | Malé | Toyama |
| **India** | | |
| 2 | Bangalore | Yokohama |
| **Myanmar** | | |
| 3 | Yangon (region) | Kitakyushu |
| 4 | Yangon(city) | Kawasaki |
| 5 | Ayeyarwady | Fukushima |
| 6 | Sagaing | Fukushima |
| 7 | Mandalay | Kitakyushu |
| 8 | Yangon City | Fukuoka |
| 9 | Sagaing Region, Ayeyarwady Region | Fukushima |
| **Mongolia** | | |
| 10 | Ulaanbaatar | Sapporo・Hokkaido Government |
| 11 | Ulaanbaatar city and Tuv aimag | Sapporo |
| **Lao PDR** | | |
| 12 | Vieng chan | Kyoto |
| **Vietnam** | | |
| 13 | Hai Phong | Kitakyushu |
| 14 | Da Nang | Yokohama |
| 15 | Ho Chi Minh | Osaka |
| 16 | Kiên Giang and others | Kobe |
| 17 | Can Tho | Hiroshima |
| 18 | Soc Trang Province | Hiroshima |
| 19 | Hanoi City | Fukuoka |
| 20 | Quang Ninh | Shiga Prefecture |
| 21 | Ba Ria-Vung Tau | Sakai City |
| **Thailand** | | |
| 22 | Bangkok (Bangkok Port・Laem Chabang Port) | Yokohama (Yokohama Port Pier) |
| 23 | Rayong | Kitakyushu |
| 24 | Chiang Mai | Kitakyushu |
| 25 | Eastern Thailand(EEC) | Osaka |
| **Cambodia** | | |
| 26 | Phnom Penh | Kitakyushu |
| 27 | Siem Reap | Kanagawa |
| **Malaysia** | | |
| 28 | Iskandar Development Area | Kitakyushu |
| 29 | Iskandar Development Area・Kota Kinabalu | Toyama |
| 30 | Penang and others | Kawasaki |
| 31 | Kuala Lumpur | Tokyo, Saitama |
| **Indonesia** | | |
| 32 | Denpasar | Tokyo Union |
| 33 | Surabaya | Kitakyushu |
| 34 | Batam | Yokohama |
| 35 | Semarang※ | Toyama |
| 36 | Bandung | Kawasaki |
| 37 | Special Capital Territory of Jakarta | Kawasaki |
| 38 | Bali※ | Toyama |
| 39 | Rokan Hulu, Riau | Kawasaki |
| 40 | Rokan Hulu Regency and Pekanbaru City | Kawasaki |
| 41 | Gorontalo | Ehime |
| **Philippines** | | |
| 42 | Quezon | Osaka |
| 43 | Davao | Kitakyushu |
| **Palau** | | |
| 44 | Koror | Kitakyushu |
| 45 | Airai | Urasoe |
| **Chile** | | |
| 46 | Renca, Santiago | Toyama |

※ Joint project for Bali and Semarang




**Red: Ongoing projects in FY2022**

# JCM Model Projects formulated in the framework of City-to-City Collaboration Program

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## Myanmar

- Introduction of Waste to Energy Plant in Yangon City（Yangon City-Kawasaki City） FY2015
- Introduction of Energy Saving Brewing Systems to Beer Factory（Yangon City-Kawasaki City） FY2016
  Introduction of High-efficiency Once-through Boiler in Instant Noodle Factory（Yangon City-Kawasaki City） FY2016
- Rice Husk Power Generation in Rice Mill Factory in Ayeyarwady（Ayeyarwady Region-Fukushima City） FY2016

## Thailand

- Introduction of 12MW Power Generation System by Waste Heat Recovery for Cement Plant（Rayong Province-Kitakyushu City） FY2016
- Introduction of High Efficiency Once Through Boiler to Garment Factory（Eastern Thailand-Osaka City） FY2021

## Philippines

- Introduction of Energy Saving Air Conditioning System to Quezon City Hall Compound（Quezon-Osaka City） FY2021

## Vietnam

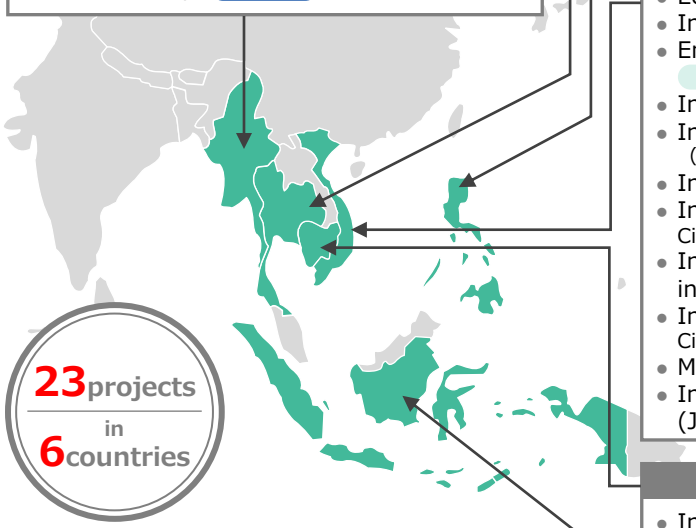
- Eco-Driving by Utilizing Digital Tachograph System（Ho Chi Minh City-Osaka City） FY2014
- Introduction of Solar PV System at Shopping Mall in Ho Chi Minh（Ho Chi Minh City-Osaka City） FY2015
- Energy Saving in Factories with Air-Conditioning Control System（Ho Chi Minh City-Osaka City） FY2015
- Introduction of High Efficiency Water Pumps in Da Nang City（Da Nang City-Yokohama City） FY2016
- Introduction of High Efficiency Air-conditioning System and Air Cooled Chillers to Office Buildings（Ho Chi Minh City-Osaka City） FY2019
- Introduction of High Efficiency Boiler System to Food Factory（Ho Chi Minh City-Osaka City） FY2020
- Introduction of High Efficiency Air-conditioning System to Hotel in Ho Chi Minh City（Ho Chi Minh City-Osaka City） FY2020
- Introduction of High Efficiency LED Lighting with Dimming and Tunable Function to Office Building in Ho Chi Minh City（Ho Chi Minh City-Osaka City） FY2021
- Introduction of 9.8 MW Rooftop Solar Power System in Industrial Park（Ho Chi Minh City-Osaka City） FY2021
- Mini Hydro Power Plant Project（Ha noi City-Fukuoka Prefecture） FY2022
- Introduction of 0.4MW Rooftop Solar Power System to Aluminum Wheel Manufacturing Factory (JCM Eco Lease Scheme)(Ho Chi Minh City-Osaka City) FY2022

## Cambodia

- Introduction of 1MW Solar Power System and High Efficiency Centrifugal Chiller in Large Shopping Mall（Phnom Penh Capital-Kitakyushu City） FY2016

## Indonesia

- Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller（Surabaya City-Kitakyushu City） FY2015
- Energy Saving for Industrial Park with Smart LED Street Lighting System（Surabaya City-Kitakyushu City） FY2015
- Introduction of CNG-Diesel Hybrid Equipment to Public Bus in Semarang（Semarang City-Toyama City） FY2018
- Introduction of High Efficiency Boiler System to Carton Box Factory（Jakarta-Kawasaki City） FY2019

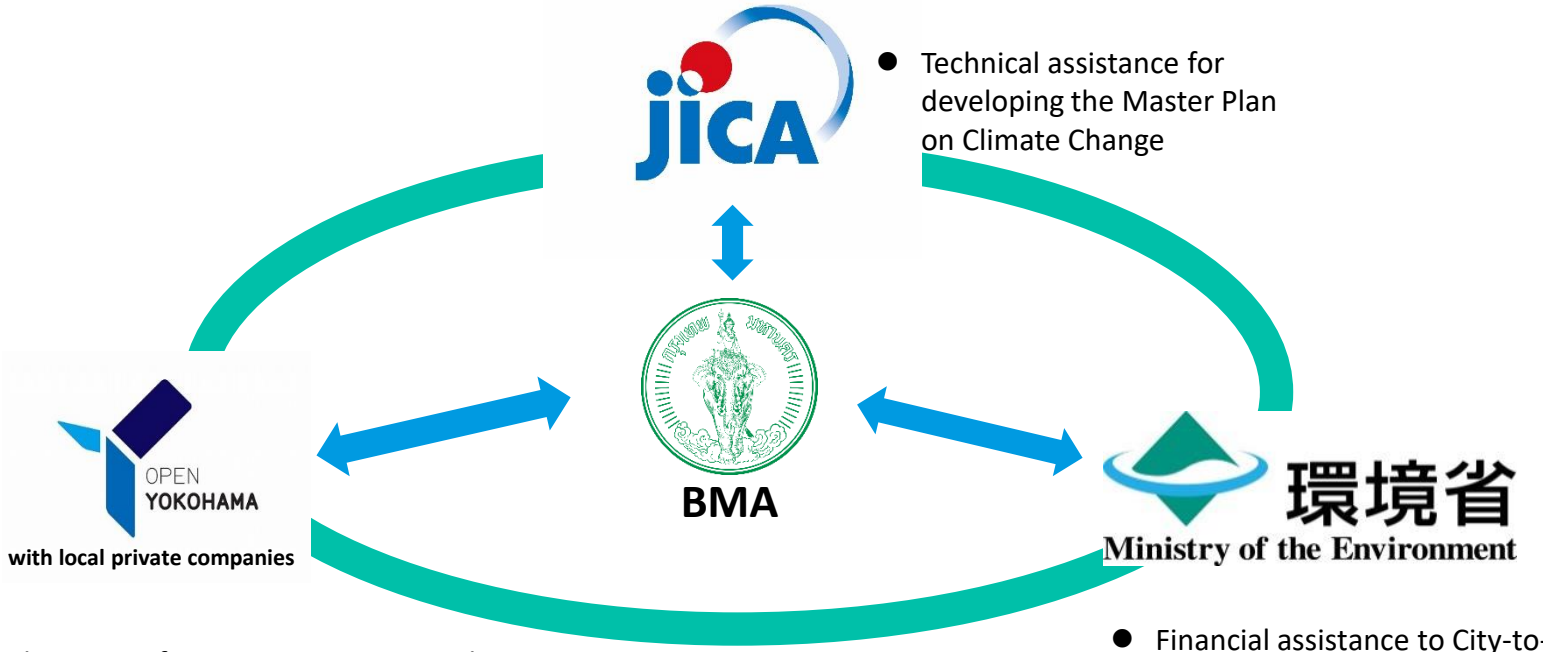



### No. of projects selected by year

| | | | |
|---|---|---|---|
| FY2014 | : 1 | FY2015 | : 5 |
| FY2016 | : 6 | FY2018 | : 1 |
| FY2019 | : 2 | FY2020 | : 2 |
| FY2021 | : 4 | FY2022 | : 2 |

# Comprehensive Support for Bangkok Metropolitan Administration

- **JICA** has a long history of cooperation with **Bangkok Metropolitan Administration (BMA)** that led to development of the **Master Plan on Climate Change** (2013-2023 and 2021-2030). **Yokohama City** has cooperated in dispatching an expert and providing a training.
- Yokohama City and BMA continued to engage in a **City-to-City Collaboration Program** for the implementation of the masterplan with financial support of MOEJ.
- **MOEJ** has further expanded the cooperation to involve **research institutions** and **private sector** of both countries in net-zero scenario analysis and GHG measurement and reporting (AIM and PaSTI).




- Technical assistance for developing the Master Plan on Climate Change

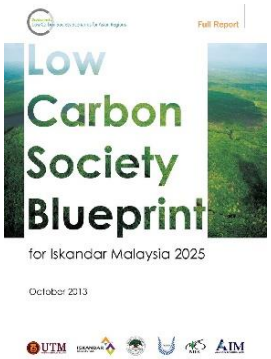
- Development of Energy Sector Action Plan
- Public-Private Platform for Carbon Credit, ESG finance, etc
- Feasibility Study on mitigation projects

- Financial assistance to City-to-City Collaboration
- Technical assistance on GHG scenario analysis and transparency enhancement

# Comprehensive Support for ISKANDAR

- Japan's Science and Technology Research Partnership for Sustainable Development (SATREPS) project funded by JICA and the Japan Science and Technology Agency(JST) announced "**The Low Carbon Society Blueprint 2025**" in 2012
- Through the City-to-City Collaboration Project, MOEJ is providing implementation support to achieve low carbon based on the Blueprint.

## SATREPS project




Supported by

JICA JST

And an international research team (including **AIM**)

ISKANDAR REGIONAL DEVELOPMENT AUTHORITY

**Decarbonization**

**58% GHG cut by 2025**

Supported by

**Kitakyushu City**

- ✓ Waste sectors
- ✓ Energy sectors
- ✓ Other sectors

Supported by

**Toyama City**

- ✓ Transportation sectors
- ✓ Other sectors

**MoEJ support**

# African Clean Cities Platform (ACCP)

The ACCP was established in April 2017, by the Ministry of the Environment of Japan (MOEJ), JICA and other partners, aiming to contribute to **sound waste management** in Africa, which leads to the achievement of the SDGs and the increase in investment.

## Member (As of December 2022)

- African 43 countries
- African 160 cities
- Ministry of the Environment of Japan
- JICA
- City of Yokohama
- UN-Habitat
- UNEP

AFRICAN CLEAN CITIES PLATFORM
PLATE-FORME AFRICAINE DES VILLES PROPRES

**MORE INFORMATION**
African Clean Cities Platform
http://africancleancities.org/


## Main activities

### Capacity building

- Training in Japan (2 times by year)
- Study tour (Addis Ababa, Ethiopia)

### Data Collection and Publications

**Field survey and pilot project in Africa**

- ACCP Model Project in Mozambique
  *Fukuoka Method - Semi-aerobic Landfill -*

### Sharing knowledge and experiences

- April 2017: Platform Preparation Meeting (Maputo, Mozambique)
- June 2018: 1st General Meeting (Rabat, Morocco)
- August 2019: 2nd General Meeting (Yokohama, Japan)
- July 2022: 3rd General Meeting (Online)

# Development of ODA Projects through JICA

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As part of ACCP's activities, projects related to related waste and sewage management are being developed in ACCP member countries. In the future, the results of activities and lessons learned will be shared through the ACCP network for mutual learning. (18 projects in 12 countries)

**Environmental Management Projects（January. 2023）**

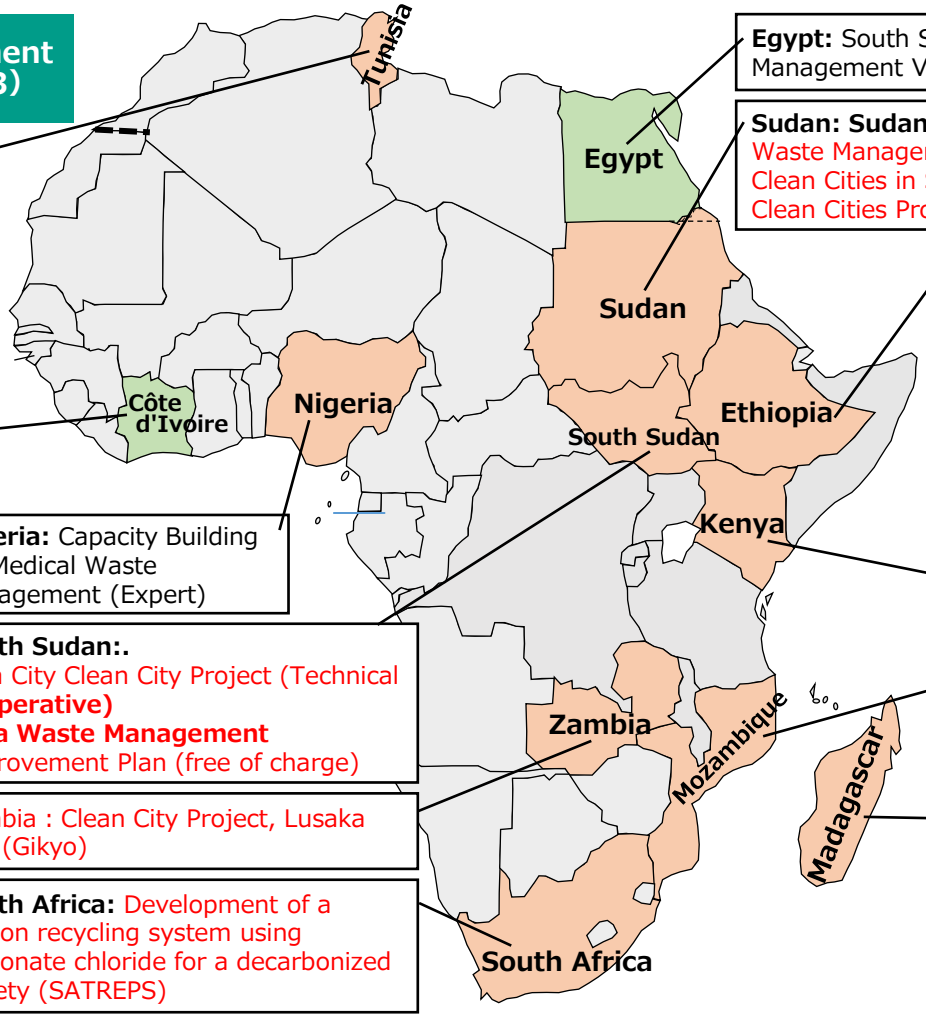
**Tunisia: Tunisia**
Advanced Sewage Treatment Facility Development Plan for Gabes Province (Free of Charge, Preparatory Survey)
Waste Management and Urban Sanitation for African Cities (Third Country Training)

**Côte d'Ivoire:**
Project for Planning and Improvement of Sustainable Waste Management in the Greater Abidjan Area (open access)

**Africa region (wide area)**
Core Human Resource Development Course for Clean Cities (long-term training)

Ongoing

Adopted / in preparation




**Egypt:** South Sinai Governorate Plastic Waste Management Value Chain Improvement Project (Gikyos)

**Sudan: Sudan**
Waste Management Equipment Improvement Plan for Clean Cities in Sudan (free of charge)
Clean Cities Project in Sudan (Gikyoso)

**Ethiopia: Ethiopia**
Improve waste management through the introduction of the "Fukuoka Method" (training)
Waste Management Advisor (Expert), City of Addis Ababa
Addis Ababa Water and Wastewater Management Capacity Improvement Project through the Revision of the Master Plan for Sewerage Management (Kaiho)

**Kenya:** Waste Management Improvement Advisor (Expert)

**Mozambique:** Maputo Metropolitan Region Integrated Waste Management Capacity Improvement Project (Technical Cooperation)

**Madagascar: Madagascar**
Strengthening Antananarivo Waste Management System Project (Giken)
Antananarivo, a beautiful city. Waste management equipment improvement plan (free of charge) for

**Nigeria:** Capacity Building for Medical Waste Management (Expert)

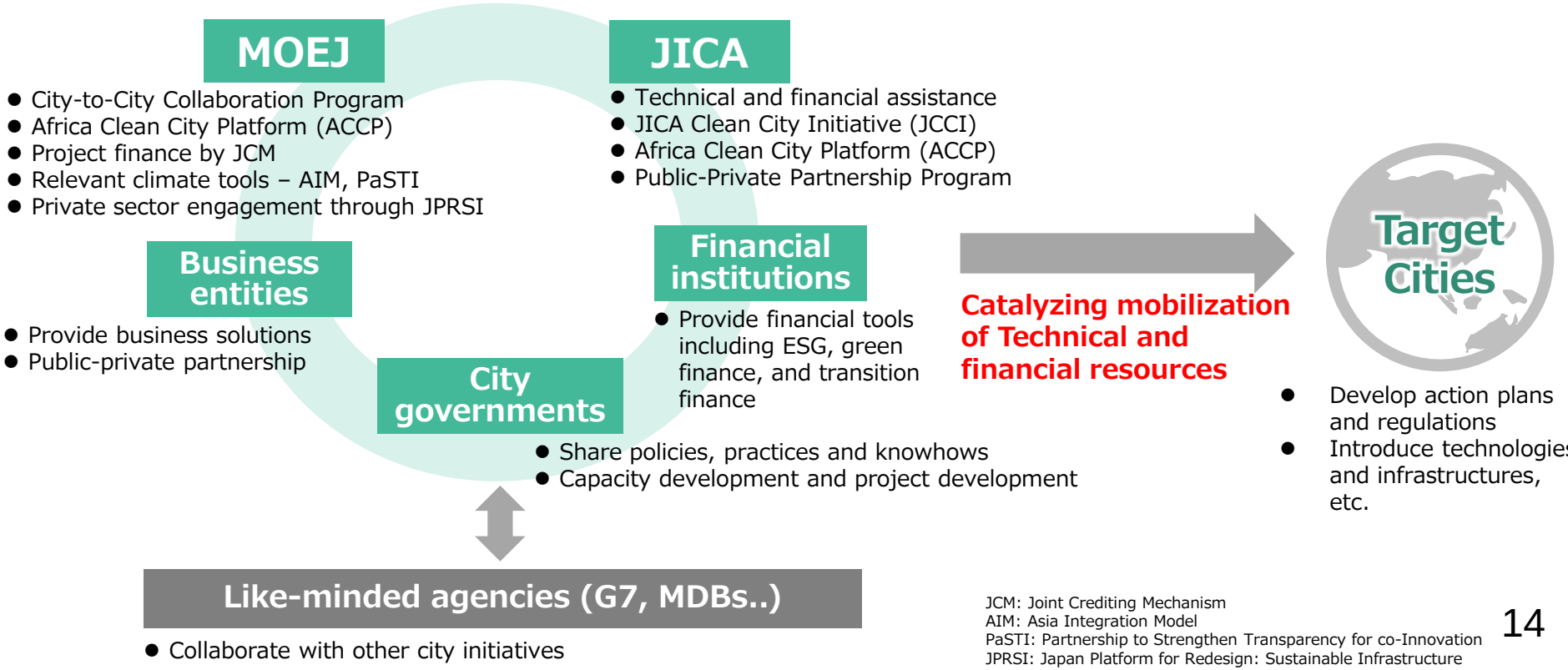
**South Sudan:.**
Juba City Clean City Project (Technical **Cooperative)**
**Juba Waste Management** Improvement Plan (free of charge)

Zambia : Clean City Project, Lusaka City (Gikyo)

**South Africa:** Development of a carbon recycling system using carbonate chloride for a decarbonized society (SATREPS)

# Clean City Partnership Program (C2P2)

- MOEJ and JICA, in partnership with other key stakeholders, roll out a **Clean Cities Partnership Program (C2P2)**, which:
- Mobilize **engagement of multi-stakeholders** on target cities.
- Provide a **comprehensive** and **synergetic support to urban agenda** including climate change, environmental pollution and circular economy.
- Collaborate with ongoing and new city initiatives by G7 members and MDBs.




JCM: Joint Crediting Mechanism
AIM: Asia Integration Model
PaSTI: Partnership to Strengthen Transparency for co-Innovation
JPRSI: Japan Platform for Redesign: Sustainable Infrastructure

# MOEJ support program

# Japan Platform for Redesign: Sustainable Infrastructure (JPRSI)

■ JPRSI is a public-private partnership platform established by the Ministry of the Environment of Japan in September 2020 to comprehensively support for partner country's governments and corporations, etc. to improve environment by introduction of Japanese environmental infrastructure.

## Overview

**Japan**
Corporations
Local governments
Financial institutions
(banks, Investors, etc.)
Consultants
Experts
Relevant ministries and agencies

**Sharing information**

**Matching needs and solutions**

**Partner countries**
Governments
Cities
Corporations

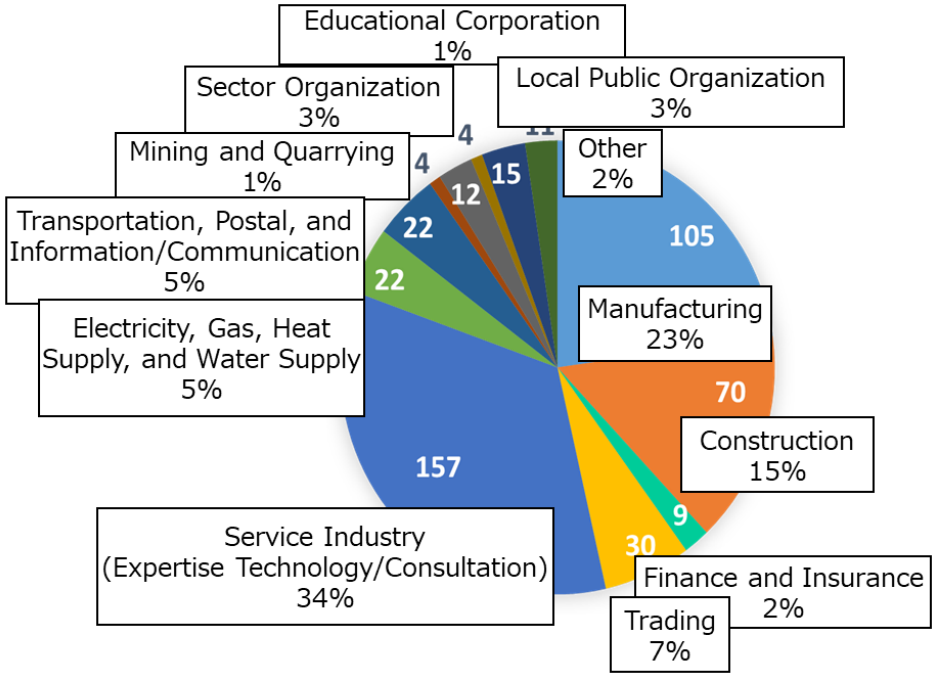
**International organizations/MDBs**
ADB, GCF etc.

1. Dissemination of technical information provided by Japanese companies
2. Matching local needs with Japanese corporations' solutions

Contact us

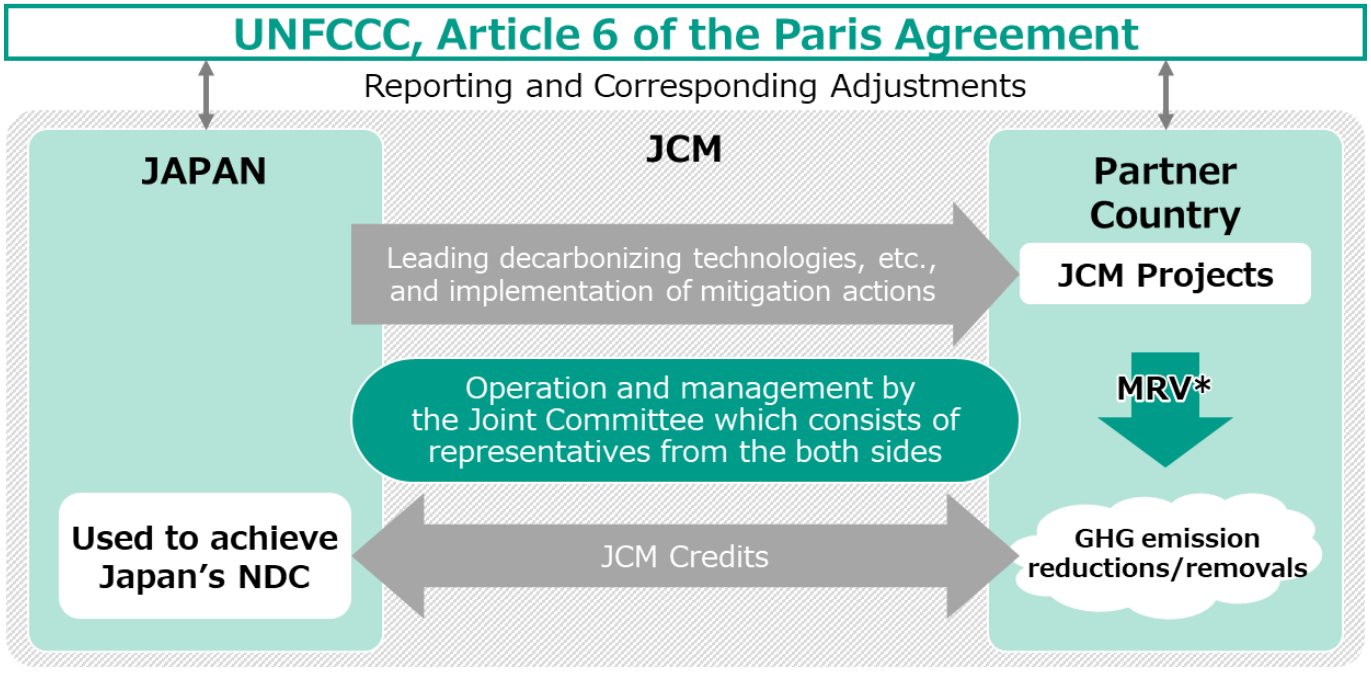
## Number of Entities Joined

471 entities have joined the platform (as of December 2022).



# Basic Concept of the Joint Crediting Mechanism (JCM)

- Since 2013, Japan has established the JCM with **25** partner countries and over **230** projects have been selected.
- Under the JCM scheme, Japan is facilitating diffusion of leading decarbonizing technologies and infrastructure, etc. as well as implementation of mitigation actions in partner countries. The JCM contribute to the achievement of both countries' NDCs while ensuring the avoidance of double counting through corresponding adjustments.
- For achieving the target of the JCM, accelerating consultations to expand partner countries up to approximately 30 countries worldwide by around 2025. (June 2022, Cabinet Decision)




# JCM Partner Countries

Mongolia
Jan. 8, 2013 （Ulaanbaatar）

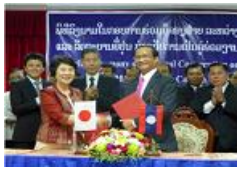
Bangladesh
Mar. 19, 2013 (Dhaka)

Ethiopia
May. 27, 2013 (Addis Ababa)

Kenya
Jun. 12, 2013 (Nairobi)

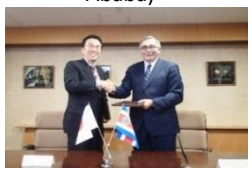
Maldives
Jun. 29, 2013 (Okinawa)

Viet Nam
Jul. 2, 2013 (Hanoi)
*The photo at the time of extension in Oct 2021.

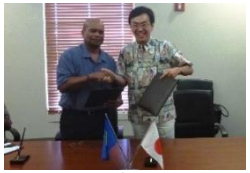


Lao PDR
Aug. 7, 2013 (Vientiane)

Indonesia
Aug. 26, 2013 (Jakarta)



Costa Rica
Dec. 9, 2013 (Tokyo)



Palau
Jan. 13, 2014 (Ngerulmud)

Cambodia
Apr. 11, 2014 (Phnom Penh)

Mexico
Jul. 25, 2014 (Mexico City)

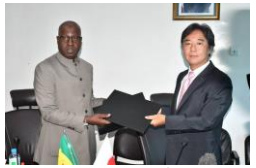
Saudi Arabia
May. 13, 2015

Chile
May. 26, 2015 (Santiago)

Myanmar
Sep. 16, 2015 (Nay Pyi Taw)

Thailand
Nov. 19, 2015 (Tokyo)

Philippines
Jan. 12, 2017 (Manila)



Senegal
Aug. 25, 2022 (Dakar)

Tunisia
Aug. 26, 2022 (Tunis)

Azerbaijan
Sept. 5, 2022 (Baku)

Moldova
Sept. 6, 2022 (Chisinau)

Georgia
Sept. 13, 2022 (Tbilisi)

Sri Lanka
Oct. 10, 2022 (Colombo)

Uzbekistan
Oct. 25, 2022 (Tashkent)


Papua New Guinea
Nov. 18, 2022
(Sharm-el-Sheikh)

# Projects supported by the JCM financing programmes

- Facilitating diffusion of leading decarbonizing technologies etc. through contributions from Japan and evaluating realized GHG emissions reduction or removal in a quantitative manner to use them for achieving Japan's emissions reduction target.
- Japan will address the high initial cost barrier of introducing advanced low-carbon technologies in the Partner countries (25 countries) through the JCM.

## Renewable Energy

Solar power ,Farmdo Co., Ltd., Mongolia

Floating Solar PV,TSB Co., Ltd., Thai

Hydro Power Plant, Toyo Energy Farm Co., Ltd., Indonesia

## Energy efficiency [Industrial sector]

Co-generation system, Toyota Tsusho Corporation, Indonesia,

Waste heat recovery in Cement Industry, JFE engineering, Indonesia

Regenerative Burners in industries, Toyotsu Machinery, Indonesia

Upgrading air-saving loom at textile factory, TORAY etc., Indonesia, Thai, Bangladesh

## Energy efficiency [Consumer sector]

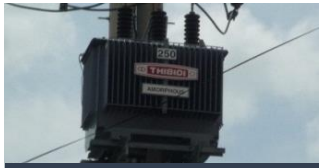
High-efficiency refrigerator, Mayekawa MFG, Indonesia

Energy saving at convenience stores, Panasonic, Indonesia

High-efficiency air-conditioning system, Hitachi, Daikin, Vietnam

## Energy efficiency [Urban sector]

LED street lighting system with wireless network control, MinebeaMitsumi, Cambodia



Amorphous transformers in power distribution, Hitachi Materials, Vietnam

## Waste

Power Generation with Methane Gas Recovery System, NTTDATA, Mexico

Waste to Energy Plant, JFE engineering, Myanmar

## Transport

CNG-Diesel Hybrid Public Bus, Hokusan Co., Ltd., Indonesia

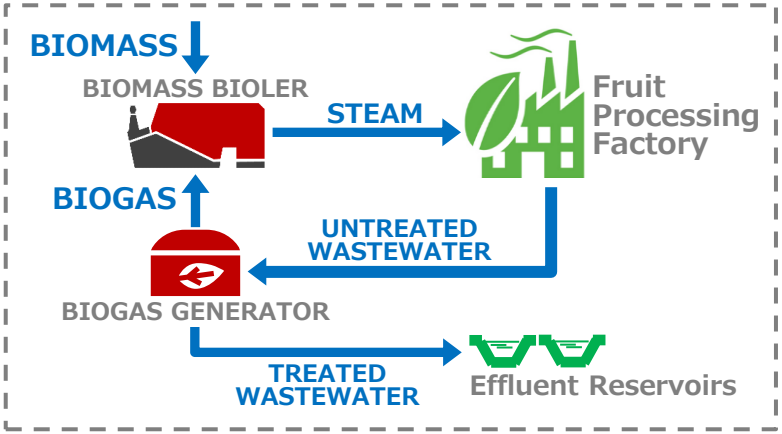
# JCM Model Project（FY2022）
# Partner Country: Thailand

**Thermal Energy Supply and Methane Avoidance Project Utilizing Biomass mixed with Biogas from Wastewater in Fruit Processing Factory**

PP (Japan): Dole Japan, Inc., PP (Thailand): BECIS Bioenergy (Thailand) Co., Ltd., Dole Thailand Ltd.

## Outline of GHG Mitigation Activity

This project aims to reduce greenhouse gas (GHG) emissions by replacing the existing fossil fuel boiler with an alternative heat generation process where biogas generated from wastewater discharged from the fruit processing factory of Dole Thailand in Hua Hin, Prachuap Khiri Khan Province is mixed and burned with coconut husk and other biomass in a newly introduced boiler.
Furthermore, the project avoids methane emission by introducing a new biogas generator to treat wastewater discharged from the factory into the effluent reservoirs at the factory site.

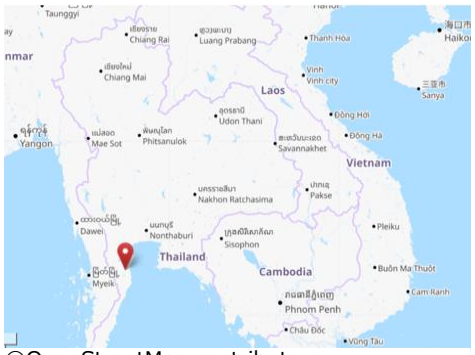



## Expected GHG Emission Reductions

**43,343 $tCO_2$/year**
= Reference GHG Emissions
– Project GHG Emissions

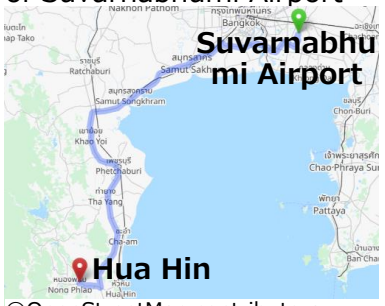
<Breakdown of GHG Emissions>
Fossil fuel replacement : 20,851 [$tCO_2$/year]
Methane avoidance : 22,492 [$tCO_2$/year]

## Sites of Project





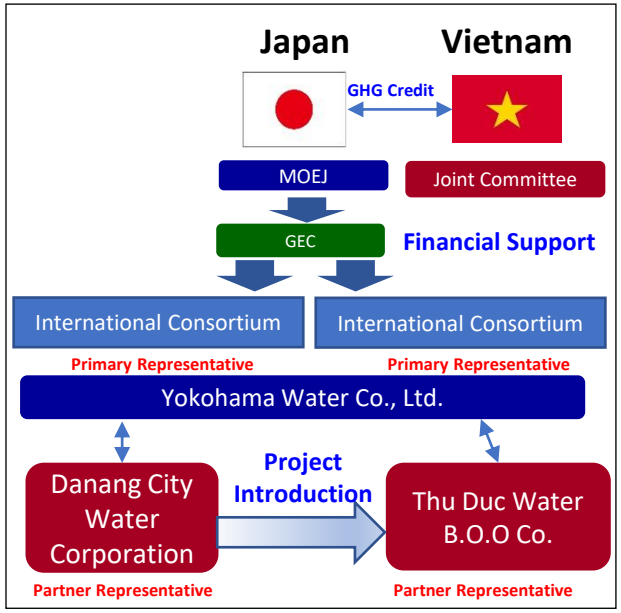
Approximately 230 km southwest of Suvarnabhumi Airport



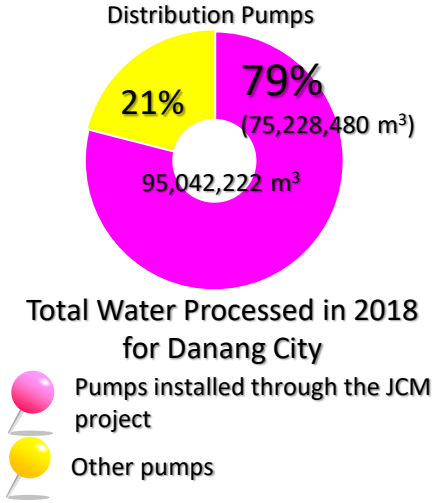
# Basic infrastructure of water business in Vietnam

- Yokohama City and Da Nang City signed a Memorandum of Understanding on Technical Cooperation for Sustainable Urban Development.
- Representative participant utilized JCM Model Project to introduce high efficiency pumps to Danang Water Supply Joint Stock Company. Monitoring is being conducted.
- Based on the achievement in Danang project, JCM Model Project is expanding to other cities in Vietnam, such as Ho Chi Minh and Hue.

## Introduction of high efficiency pumps and inverters (Representative Participant: Yokohama Water Co., Ltd.)



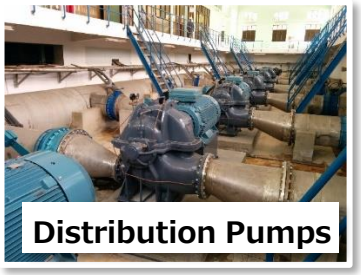

**Pumps installed through the JCM project process major part of Danang water demand.**




**[Danang City Water Corporation]**
Explained the effectiveness of JCM Model Project and high efficiency pump at a ceremony which gathered water-related parties

**[Ho Chi Minh City Water Treatment Plant]**
Using the ceremony as an opportunity, JCM Model Project demonstrated implementation of inverter at a water intake pump (project ongoing)


## High efficiency pumps (Da Nang City Water Corporation)





# ADB Trust Fund: Japan Fund for Joint Crediting Mechanism (JFJCM)

## Budget

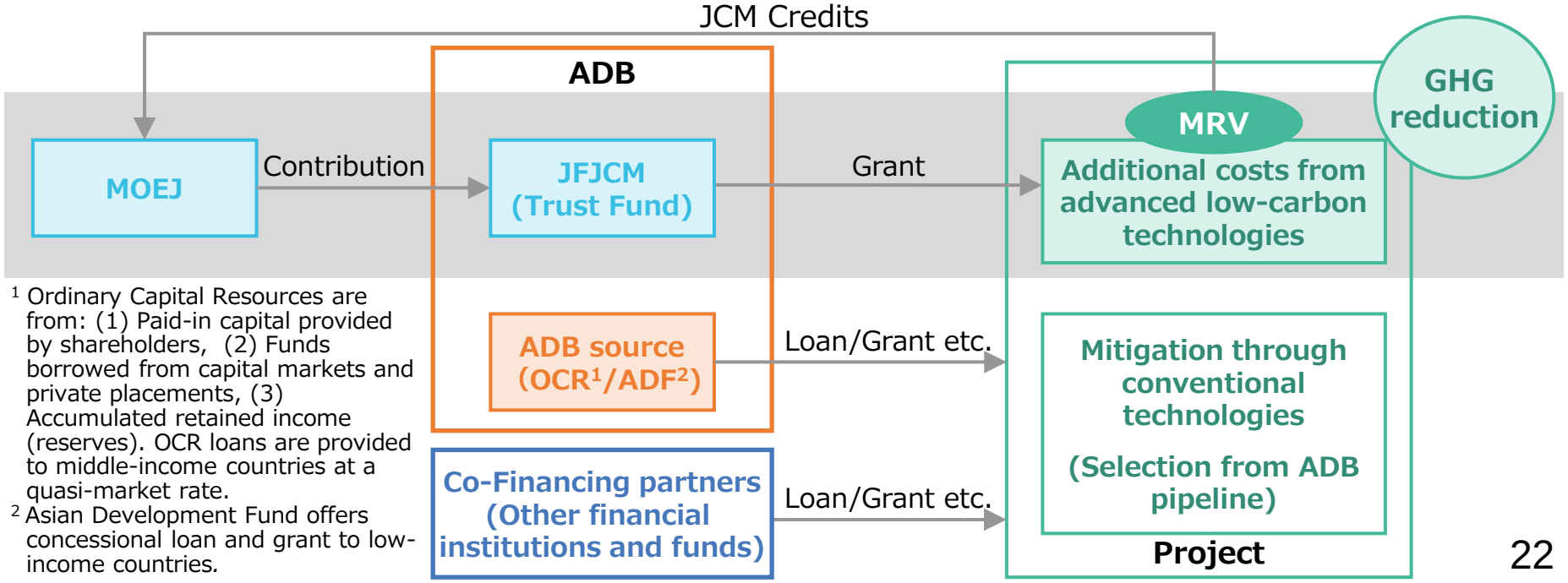
2022 Original : JPY 1 billion, 2022 Supplementary: JPY 2.8 billion, 2023 Original : JPY 0.2 billion

## Scheme

To provide the financial incentives for the adoption of advanced low-carbon technologies which are superior in GHG emission reduction but expensive in ADB(Asian Development Bank)-financed projects

## Purpose

To develop ADB projects with sustainable and low-carbon transition perspective by introducing advanced low-carbon technologies as well as to acquire JCM credits




[1] Ordinary Capital Resources are from: (1) Paid-in capital provided by shareholders, (2) Funds borrowed from capital markets and private placements, (3) Accumulated retained income (reserves). OCR loans are provided to middle-income countries at a quasi-market rate.

[2] Asian Development Fund offers concessional loan and grant to low-income countries.

# Smart Micro-Grid system for POISED Project in Addu atoll, Maldives

環境省

**ADB**

**ADB Grant** — USD 38MM

**ADB-administered Strategic Climate Fund (CIF SREP)** — USD 12MM

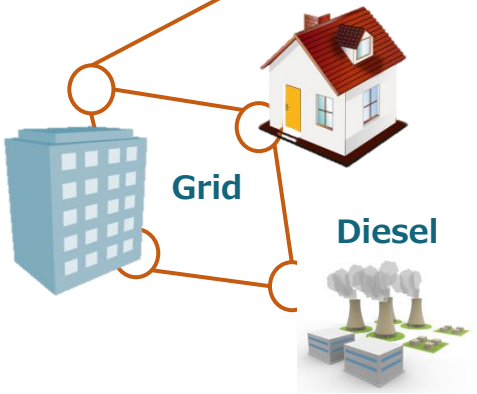
**Co-financing partner**

**European Investment Bank** — USD 50 MM

**Islamic Development Bank** — USD 10 MM

**Mitigation through conventional technologies**

**PV**



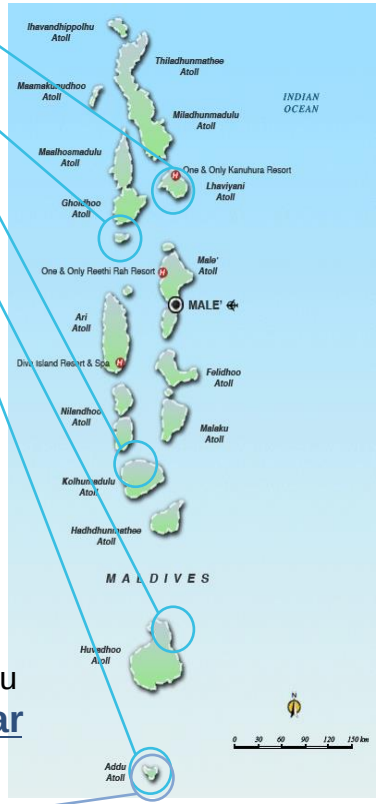

**Location (Atolls and Islands)**

POISED* Phase 1
5 islands

- Khurendhoo
- Goidhoo
- Buruni
- Vilingili
- Addu

Phase 2~4
Total 160 islands

**Maldives**




Improvement of energy efficiency and reduction of energy-derived CO2 emission in Addu

**Anticipated additional CO2 emission reduction; approx. 4,000tCO2/year**

**JFJCM (Japan Fund for JCM)** — USD 5 MM


**Adoption of advanced low-carbon technologies**

Addu

Addu has a population of over 23,000 inhabitants, the second largest habited island in Maldives.

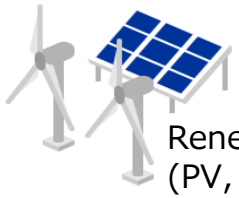
*POISED: Preparing Outer Islands for Sustainable Energy Development

# Pilot project for comprehensive support throughout the whole hydrogen supply chain abroad

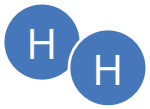
環境省

- **Produce and storage renewable hydrogen in a third country** where renewable energy is abundant, and transport to supply and use in island countries.
- Cultivate demand market by **supplying renewable hydrogen to island countries**, which will lead to JCM projects and help developing countries transition to a decarbonized society.

**Production** → **Storage & Transportation** → **Supply & Use**



Renewable Energy (PV, Wind farm)



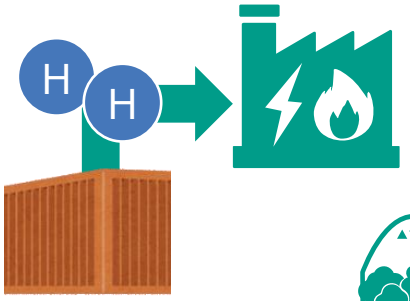

Hydrogen

Produce hydrogen by using surplus RE in a third country
※Large amount of surplus RE is needed. (ex. Australia)

Ship

Storage in some kind of career
(ex. Liquid hydrogen, Ammonia, Hydrogen absorbing alloy)

Transport




Replacement of existing diesel by hydrogen mixed-firing

Use in island countries

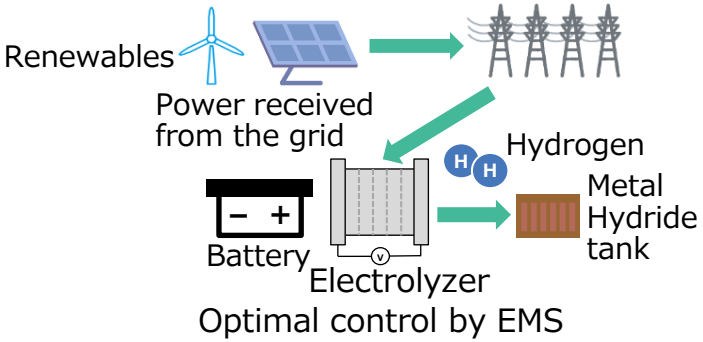
**Future Vision**
JCM project, horizontal expansion

※This project start from FY2021 as a part of JCM model project

# Hydrogen Pilot Project

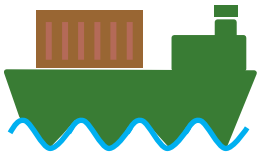
**<Pilot project1:Marubeni Corporation>**
Production of economical green hydrogen in South Australia, transportation of hydrogen by metal hydride to Indonesia and utilization of hydrogen through fuel cell in industrial town in Indonesia

## Production (South Australia)

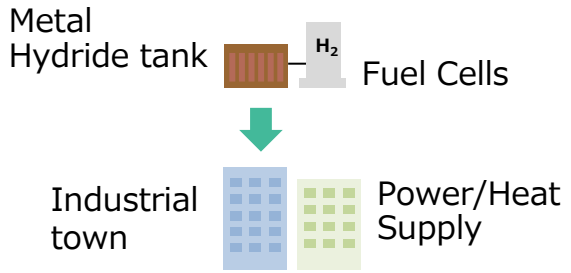



## Transportation

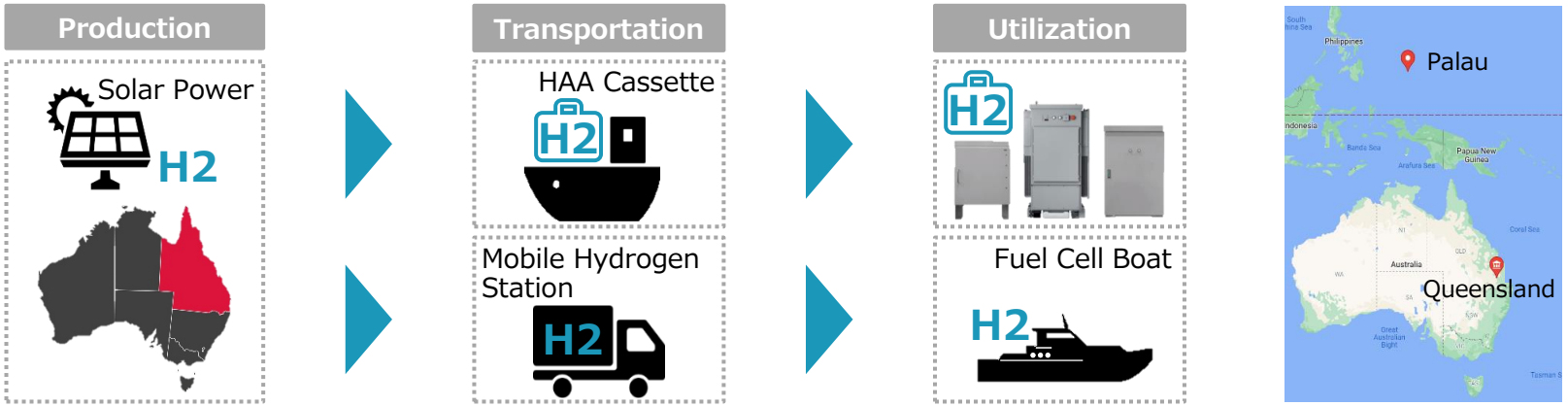
From South Australia to Indonesia



## Utilization (Indonesia)




**<Pilot project2:Sojitz Corporation>**
Demonstration Project on Green Hydrogen Production in Australia, its Transportation to Palau and Utilization by Fuel Cell and Fuel Cell Boat



# Model Project for Improvement of Water Environment in Asia

環境省

To **support the improvement of water environment** in Asia-Pacific **by disseminating appropriate water treatment and related technologies** by Japanese private sectors. (Total 0.8 million $)

**Public inviting of project proposals**

MOEJ decides approved projects and gives financial support.

First year

**Feasibility Study**

Second year

**Pilot Project**

Third year

**Developing Business Models**

- So far, a total of 33 projects have been approved.
- Approved projects are in the fields of; domestic wastewater treatment, Industrial wastewater treatment, Phosphorus resource recovery system, control of Non-point source pollution.

# Project for efficient industrial wastewater treatment at industrial park in Indonesia by using aerator

## Project developer

**EMATEC**

- EMATEC (Environmental Management and Technology Center) is a foundation for environmental monitoring in Osaka which is established by Osaka prefectural government.
- EMATEC is a representative of the consortium and in charge of environmental monitoring.

**MURC**

- MURC (Mitsubishi UFJ Research & Consulting Co., Ltd.) is a consulting company in Tokyo and a major member of Mitsubishi UFJ Financial Group.
- In the team, position of MURC is a project coordinator and in charge of $CO_2$ reduction.

**SUZUKI**

- SUZUKI (Suzuki Industry Co., Ltd.) is an environmental research and manufacturing company in Kyoto.
- Role of SUZUKI is to analyze situation in each treatment facility and to provide detailed aerator installation plan. Also, aerator is provided by SUZUKI.

## Background

- The target facility, wastewater treatment facility of UPT KULIT Magetan, collects industrial wastewater from around 100 leather processing factories and aerobically treats wastewater by conventional diffuser. Now, since leather production in each factory is increasing, amount of wastewater from factories are also increasing and reaching almost maximum capacity of wastewater treatment facility.

**Current condition of UPT KULIT**

## Project Outline

- Therefore, DISPERINDAG (Dinas Perindustrian Dan Perdagangan) Provinsi Jawa Timur and MOEJ (Ministry of the Environment of Japan) team agreed to substitute existing diffuser in UPT KULIT by aerator and increase wastewater treatment capacity without expanding aeration tank because there is no space for further new tanks.

## Location

UPT KULIT Magetan (Kabupaten Magetan, East Jawa province)

## Outline of Technology

- Aerator increases concentration of dissolved oxygen (DO) in aeration tank by forming strong vertical wastewater and air circulation. By this function, BOD, COD and TN concentration in wastewater will be decreased compared with diffuser.
- Since pressure loss of aerator is much smaller than diffuser, aerator can reduce electricity consumption at blower by 30 to 50%.
- Since aerator needs no maintenance (e.g., regular change of diffuser), aerator can reduce maintenance cost compared with diffuser.
- In this project, semi-continuous operation of blower will be applied since aerator has enough aeration capacity for meeting wastewater regulation and 24 hour-operation is not necessary. This means aerator can reduce electricity consumption at blower, cost for electricity and $CO_2$ emissions from electricity use.

**Aerator R1 by SUZUKI**

**Installation of aerator**

## Expected output

- Following special features of the aerator R1 by SUZUKI will be demonstrated at UPT KULIT Magetan during 2016 – 2018FY and relevant data will be monitored through the project.

- ✓ Reduction of organic pollutants such as BOD, COD and TN in effluent wastewater
- ✓ Increase of wastewater treatment capacity (reduction of retention time for aeration)
- ✓ 30–50% Reduction of electricity consumption (electricity cost and $CO_2$ reduction)

# Support for conducting feasibility studies related to waste and recycling

環境省

- To support the overseas expansion of Japanese waste management and recycling industries, MOE Japan gives the support of the feasibility studies (FS studies), including waste quality analysis and market research .
- If the results of FS study is good, the project will be formed through detailed design, financing, and bidding by each project proponent.
- **MOE Japan will concentrate its support on projects that have high feasibility and lead to concrete projects in the future**.

## Manufacture of alternative raw materials for cement (Malaysia)

- Based on the results of a feasibility study conducted in FY2015, AMITA KUB-BERJAYA KITAR SDN. BHD. a joint venture with the Amita Group of Japan, opened a recycling plant in Selangor, Malaysia, in May 2017.
- Amita's proprietary "blending" technology is used to produce cement substitute materials from designated wastes collected from Malaysian arterial industry dischargers, mainly Japanese companies. Amita supplies the raw materials to major local cement companies.

## RPF (Refuse Paper & Plastic Fuel) production (Vietnam) (Production: approx. 10 tons)

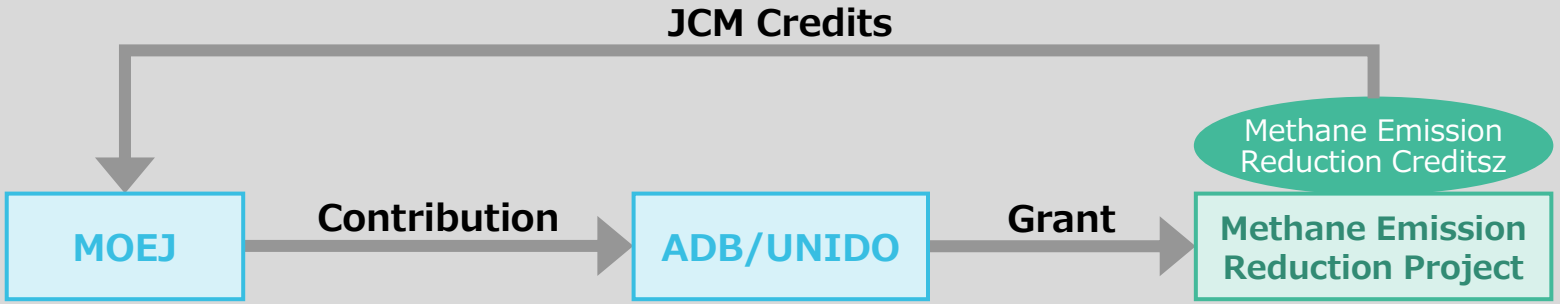
- Based on the results of feasibility studies conducted in FY2011-2012, Ichikawa Environmental Engineering established DAI DONG ENVIRONMENT SOLUTIONS CO., LTD. (DECOS), a joint venture with Hanoi Environmental Corporation in June 2016 in the country of Vietnam.
- Refuse Paper & Plastic Fuel (RPF) is made from waste plastic and paper sludge and sold to paper companies, feed companies, and companies that install boilers.

# Contributions for methane emissions reduction

- **Provide a new financial support for methane emission reduction projects** (USD 3 million) such as the "Fukuoka Method" and earn JCM credits according to their contribution.
- **USD 3 million is newly contributed to ADB and UNIDO**, utilizing existing schemes* for financial support for energy-derived CO2 emission reduction projects and acquisition of JCM credits.
- By **leveraging resources and know-hows of both institutions** and drawing on their co-financing, cost-effective structuring of the projects is expected.

Case Study of Improvement by Fukuoka Method in Mozambique Final Landfill Site

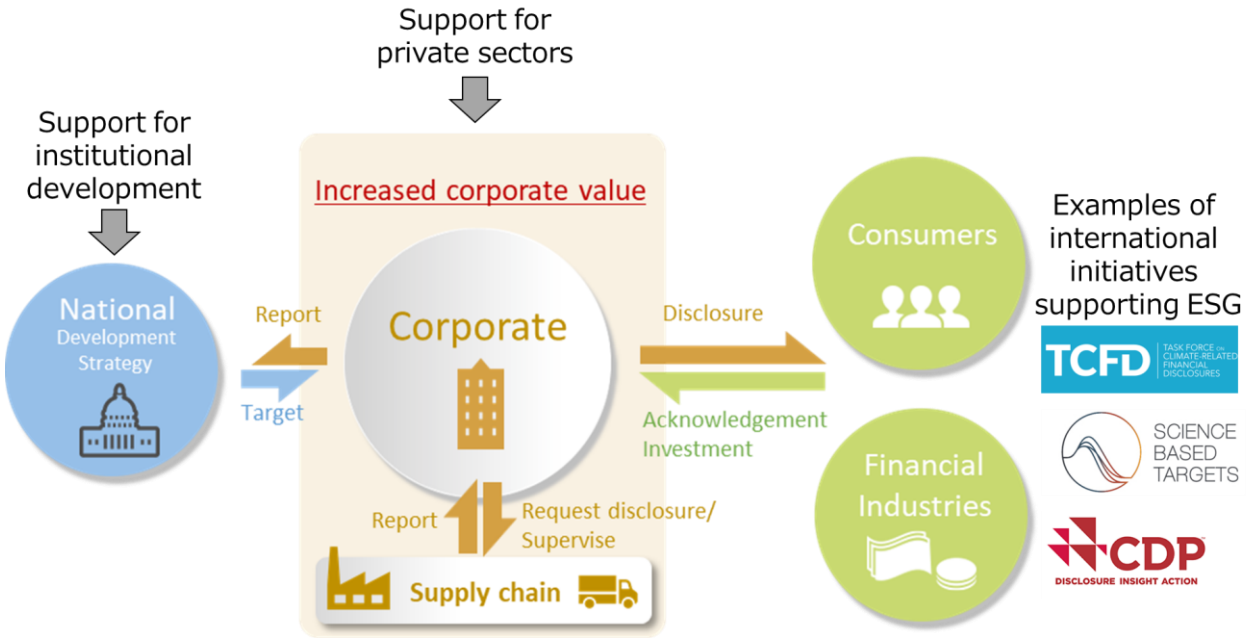
Scheme of contributions to ADB / UNIDO




※Credits are distributed according to the project implementing country and the ratio of financial contribution.
※ADB provides financial support for a portion of the costs of ADB-financed projects.

# Decarbonizing global supply chains

- With **mainstreaming of ESG finance in international markets**, demand for climate and nature-related financial disclosures by private sector are growing rapidly.
- Support Japanese private entities to make **climate and nature-related financial disclosures** and to set **decarbonization and nature-positive targets** throughout their global supply chains, including those of their overseas suppliers.
- Also aim to **standardize a regional rule-making of facility-level GHG measurement and reporting** through supporting national policies of partner countries and developing ASEAN-wide guidelines (PaSTI).
- Such efforts will lead to private-driven GHG reductions while increasing corporate values and attracting ESG finance.

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Ministry of the Environment