Ministry of the Environment

Recent Development of the Joint Crediting Mechanism

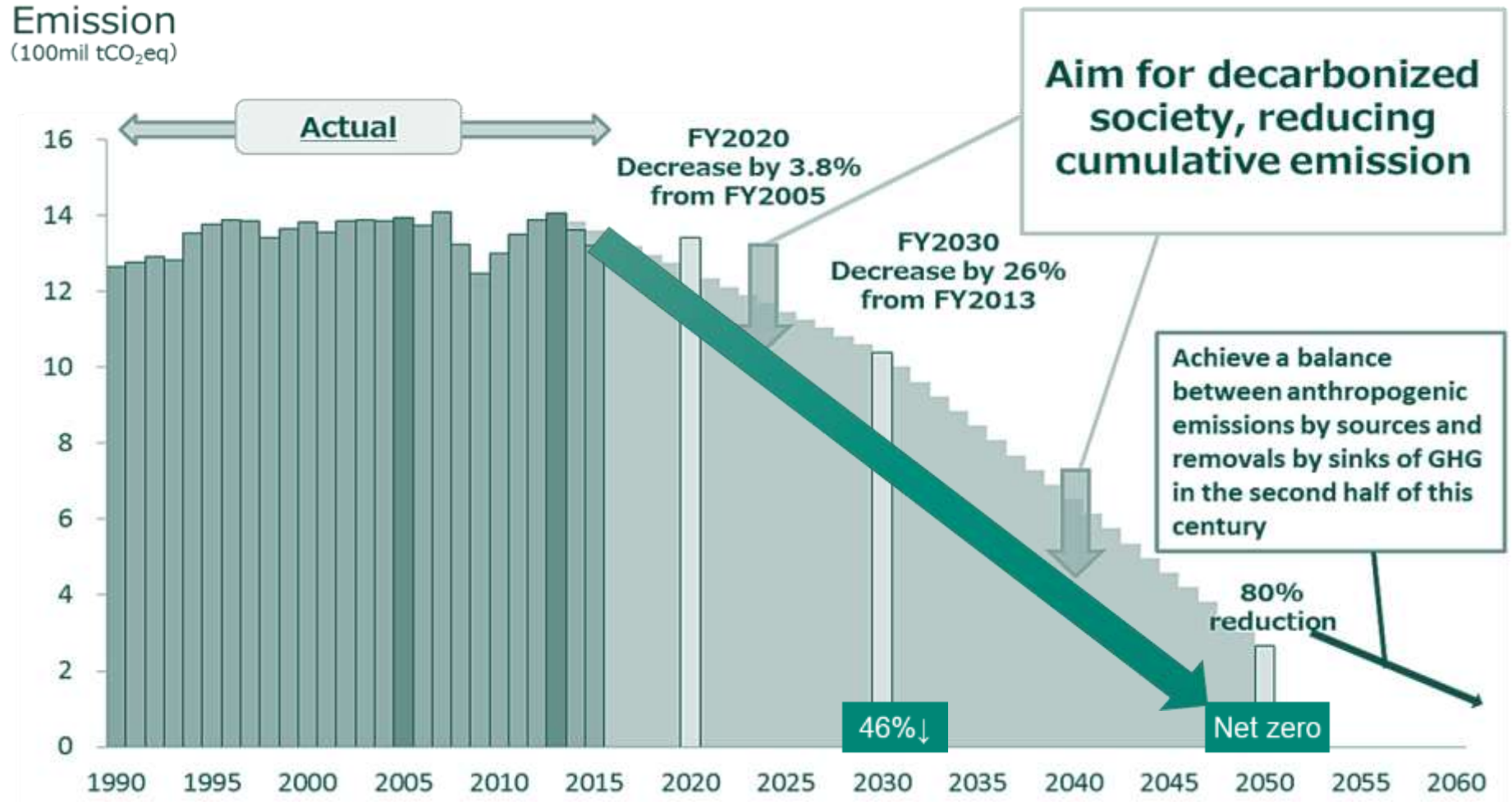
Webinar on the Joint Crediting Mechanism (JCM) implementation in the Republic of Kenya

March 1, 2023

Ministry of the Environment, Japan

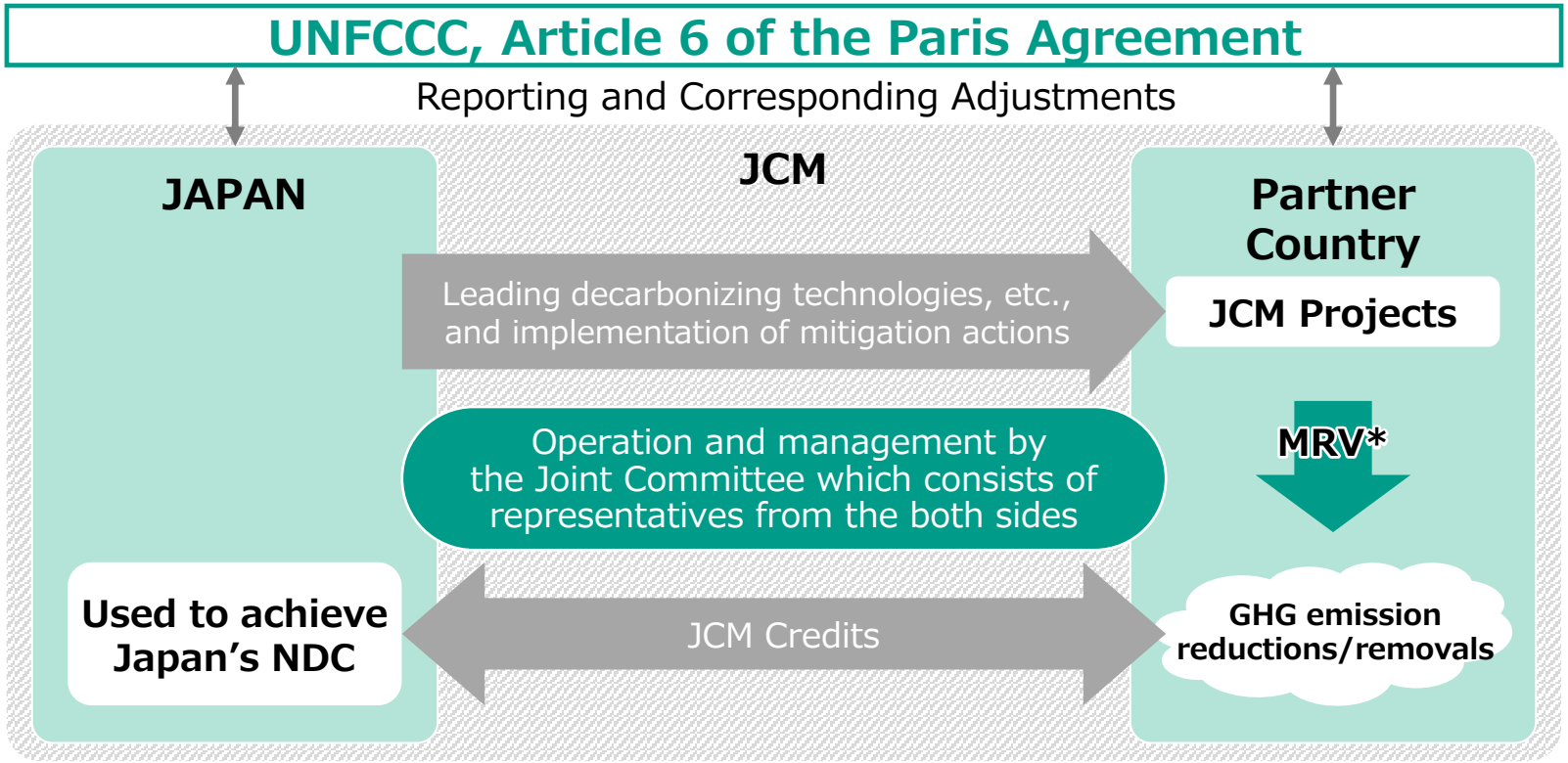
GHG emissions and target in Japan

- **Long-term goal**: **Net zero emissions by 2050** compared to 2013
- **Mid-term target**: **46% emission reduction by 2030** compared to 2013
- GHG emissions in 2020: 1,149 mil ton of CO_2 eq. (5.0% reduction to 2019, 18.4% reduction to 2013)
- **JCM target**: cumulative GHG emission reduction for **100 mil tons** of CO2 eq. by 2030



Basic Concept of the JCM

- Facilitate diffusion of leading decarbonizing technologies and infrastructure, etc., through investment by Japanese entities, thereby contributing to GHG emission reductions or removals and sustainable development in partner countries.
- Contribute to the achievement of both countries' NDCs while ensuring the avoidance of double counting through corresponding adjustments.
- Implement the JCM consistent with the guidance on cooperative approaches, referred to in Article 6, paragraph 2 of the Paris Agreement.



*measurement, reporting and verification

JCM Partner Countries (25 countries)

Mongolia
Jan. 8, 2013 （Ulaanbaatar）

Bangladesh
Mar. 19, 2013 (Dhaka)

Ethiopia
May. 27, 2013 (Addis Ababa)

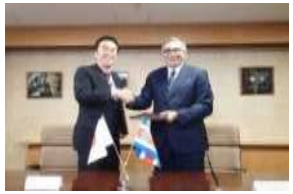
Kenya
Jun. 12, 2013 (Nairobi)

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

Renewable Energy

Solar power, FARMLAND Co., Ltd., Chile

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

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

Biomass Co-Generation System, Fuji-Foods Coporation, Thailand

Binary Power Generation Project at Geothermal Power Plant, MHI, Ltd., Philippines

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 [Industrial sector]

Optimization in petroleum refining plant, Yokogawa Electric Corp. Indonesia

Energy-saving of mobile communications base transceiver stations, KDDI Corp. Indonesia

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

Technologies Transferred through JCM (FY2013-2022)

- Total of **246** JCM Projects being developed in 25 partner countries (February 2023)
- 36% for energy efficiency, 55% for renewable energy, 4% for Effective use of Energy, Transport, Waste to energy, F-gas Recovery and Destruction and REDD+ project shares

February 2023

Waste (4) 2%

- Waste to Energy
- Power Generation with Methane Gas

Transport (3) 1%

- Digital Tachographs
- Modal Shift
- CNG-Diesel Hybrid

REDD+ (2) 1%

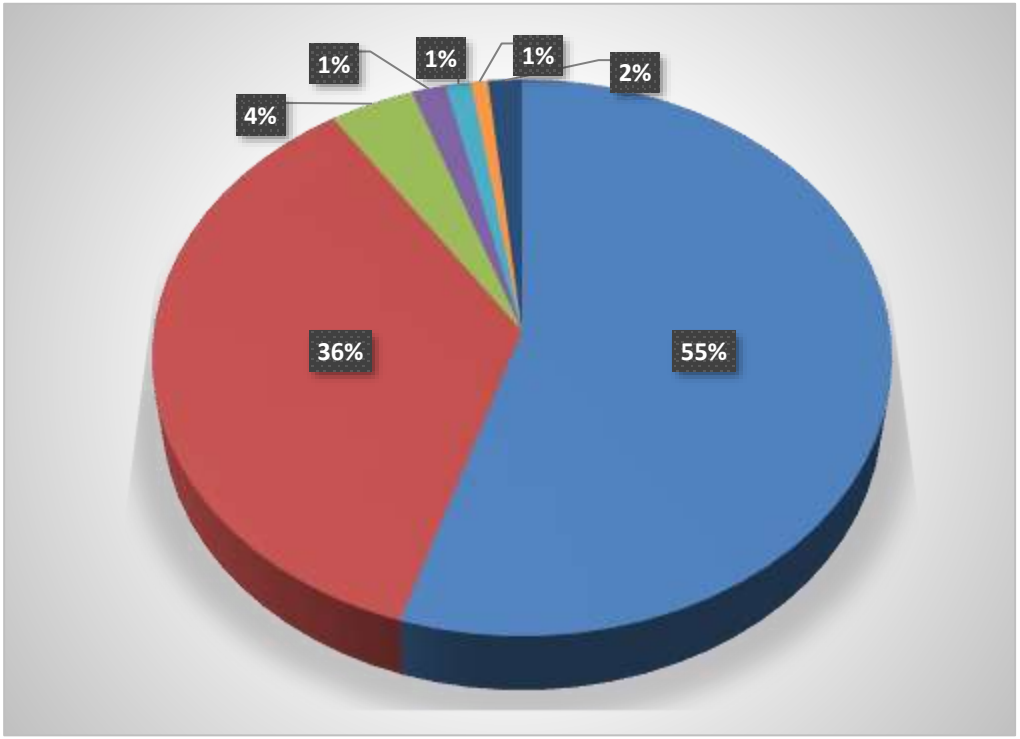
- Controlling slush and burn

Effective Use of Energy (10) 4%

- Waste Heat Recovery
- Gas Co-generation

Energy efficiency (88) 36%

- Boiler
- Air Conditioning
- Refrigerating/Chiller
- Looms
- Transformer
- LED Lighting



F-gas (4) 2%

- Recovery & Destruction

Renewable energy (135) 55%

- Solar(&Storage battery)
- Micro hydro
- Wind
- Biomass
- Geothermal

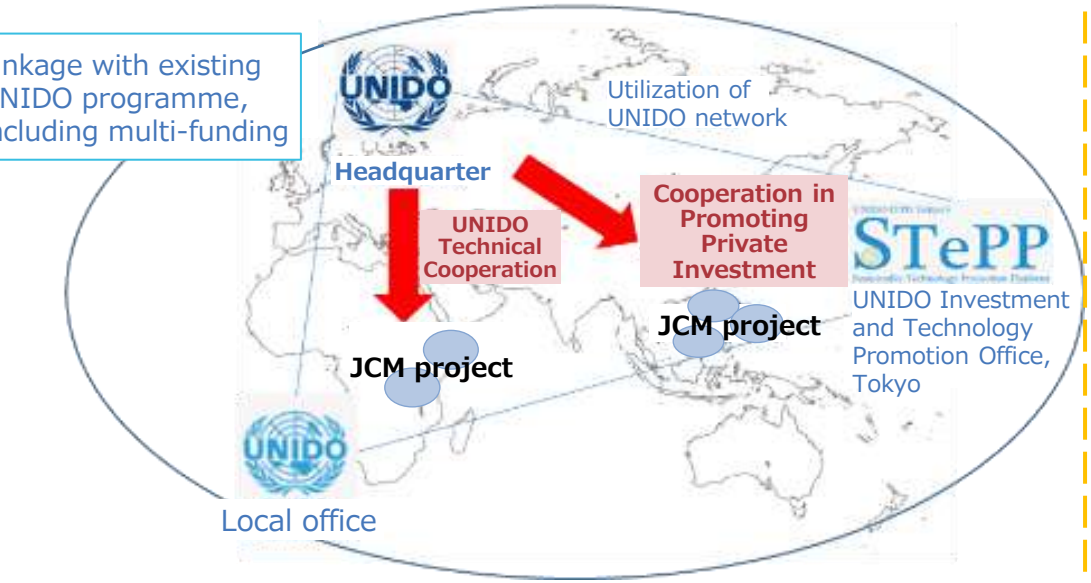
JCM Financing Programme by MOEJ

	JCM Model Projects (including ECO Lease scheme)	ADB Trust Fund: Japan Fund for JCM (JFJCM)	JCM F-gas Recovery and Destruction Model Project
Overview	Support projects which reduce GHG emissions by utilizing leading decarbonizing technologies in developing countries.	Provide the financial incentives for the adoption of advanced low-carbon technologies which are superior in GHG emission reduction but expensive in ADB-financed projects	Support projects that recover and destroy of F-gas (GHG except for energy-related CO2, etc.) from used equipment instead of releasing to air, and reduce emissions
FY2023 Draft budget (USD)	approx. 110 million in total by FY2025	approx. 7.3 million	approx. 0.44 million
Type of support	Subsidy	Grant (Sovereign) / Interest Buy-down (Non-sovereign)	Subsidy
More info	• https://gec.jp/jcm/kobo/ • https://www.carbon-markets.go.jp/eng/jcmgp/index.html	https://www.adb.org/what-we-do/funds/japan-fund-for-joint-crediting-mechanism	Please contact us.

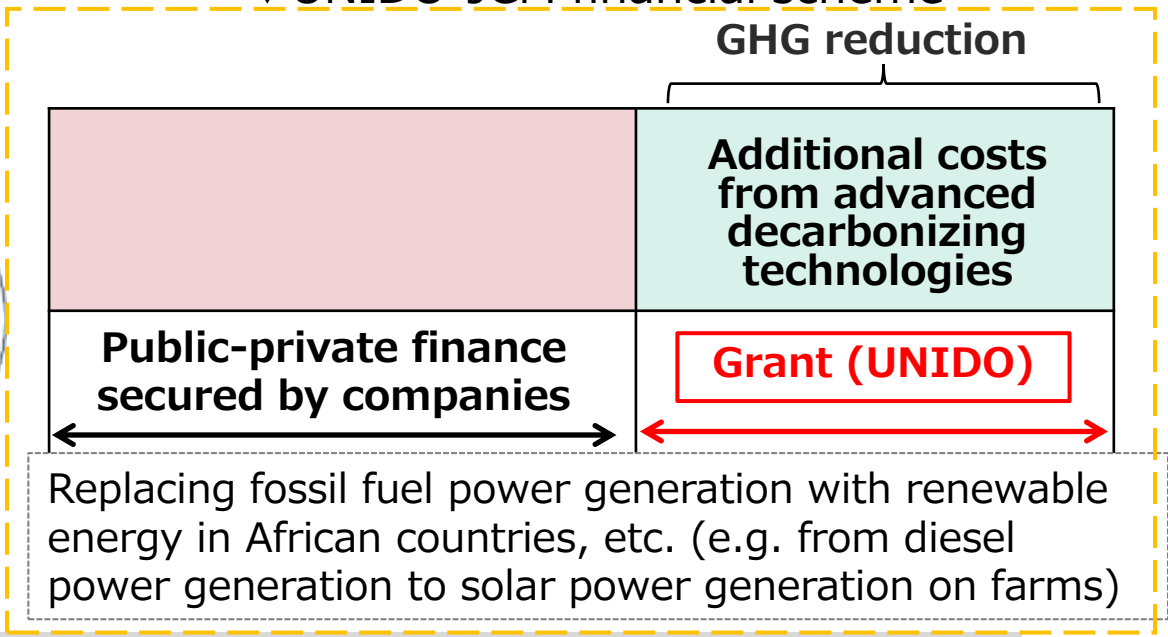
Need business partners? **JCM Global Match**: https://gec.jp/jcm/globalmatch/

Collaboration with UNIDO by the JCM

- Signed **Joint Declaration** on Environmental Cooperation in order to support the JCM. (Nov.10.2020)
- The UNIDO-MOEJ Project to support JCM related activities, including financial support for deploying the decarbonizing technologies in Africa and Asia.
  - UNIDO Technical Cooperation
  - Cooperation in Promoting Private Investment



▼UNIDO-JCM financial scheme



Comprehensive Set of Assistances from Upper Stream to Lower Stream

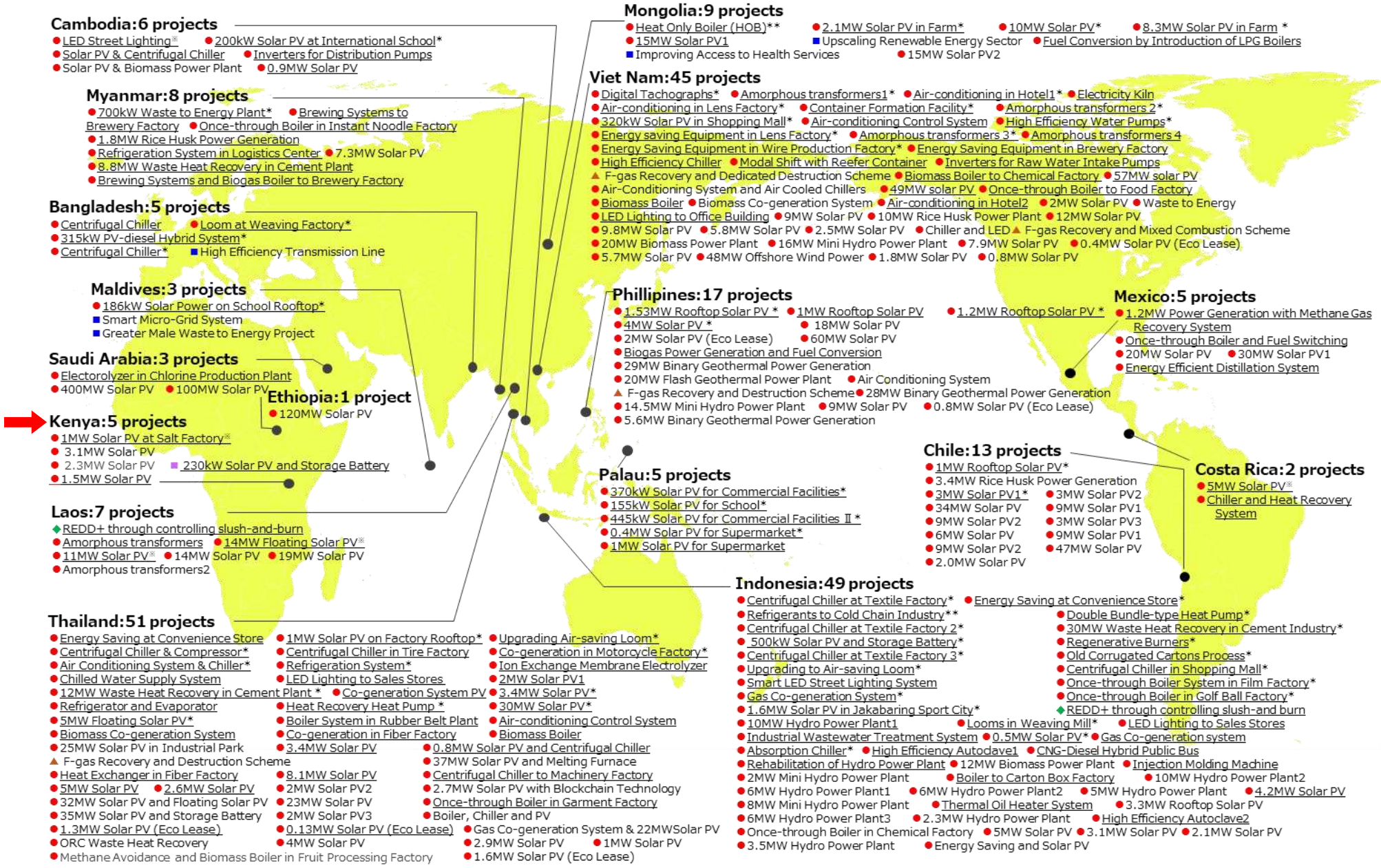
Policy Dialog → **Assistance for Planning and Legal System** → **Assistance for Project Formation** → **Assistance for Project Finance**

JCM Financing Programme by MOEJ (FY2013～2022) as of February 2023

Total 234projects (25 partner countries)

(●Model Project: 222 projects(including Eco Lease: 5projects), ■ADB: 5 projects, ■UNIDO: 1 project, ◆ REDD+: 2 projects, ▲F-gas: 4 projects) Other 1 project in Malaysia

138underlined projects have been started operation. **68 projects with *** have been registered as JCM projects.



Cambodia:6 projects
- LED Street Lighting※
- 200kW Solar PV at International School*
- Solar PV & Centrifugal Chiller
- Inverters for Distribution Pumps
- Solar PV & Biomass Power Plant
- 0.9MW Solar PV

Myanmar:8 projects
- 700kW Waste to Energy Plant*
- Brewing Systems to Brewery Factory
- Once-through Boiler in Instant Noodle Factory
- 1.8MW Rice Husk Power Generation
- Refrigeration System in Logistics Center
- 7.3MW Solar PV
- 8.8MW Waste Heat Recovery in Cement Plant
- Brewing Systems and Biogas Boiler to Brewery Factory

Bangladesh:5 projects
- Centrifugal Chiller
- Loom at Weaving Factory*
- 315kW PV-diesel Hybrid System*
- Centrifugal Chiller*
- ■High Efficiency Transmission Line

Maldives:3 projects
- 186kW Solar Power on School Rooftop*
- ■Smart Micro-Grid System
- ■Greater Male Waste to Energy Project

Saudi Arabia:3 projects
- Electorolyzer in Chlorine Production Plant
- 400MW Solar PV
- 100MW Solar PV

Ethiopia:1 project
- 120MW Solar PV

Kenya:5 projects
- 1MW Solar PV at Salt Factory※
- 3.1MW Solar PV
- 2.3MW Solar PV
- ■230kW Solar PV and Storage Battery
- 1.5MW Solar PV

Laos:7 projects
- ◆REDD+ through controlling slush-and-burn
- Amorphous transformers
- 14MW Floating Solar PV※
- 11MW Solar PV※
- 14MW Solar PV
- 19MW Solar PV
- Amorphous transformers2

Thailand:51 projects
- Energy Saving at Convenience Store
- 1MW Solar PV on Factory Rooftop*
- Upgrading Air-saving Loom*
- Centrifugal Chiller & Compressor*
- Centrifugal Chiller in Tire Factory
- Co-generation in Motorcycle Factory*
- Air Conditioning System & Chiller*
- Refrigeration System*
- Ion Exchange Membrane Electrolyzer
- Chilled Water Supply System
- LED Lighting to Sales Stores
- 2MW Solar PV1
- 12MW Waste Heat Recovery in Cement Plant *
- Co-generation System PV
- 3.4MW Solar PV*
- Refrigerator and Evaporator
- Heat Recovery Heat Pump *
- 30MW Solar PV*
- 5MW Floating Solar PV*
- Boiler System in Rubber Belt Plant
- Air-conditioning Control System
- Biomass Co-generation System
- Co-generation in Fiber Factory
- Biomass Boiler
- 25MW Solar PV in Industrial Park
- 3.4MW Solar PV
- 0.8MW Solar PV and Centrifugal Chiller
- ▲F-gas Recovery and Destruction Scheme
- 37MW Solar PV and Melting Furnace
- Heat Exchanger in Fiber Factory
- 8.1MW Solar PV
- Centrifugal Chiller to Machinery Factory
- 5MW Solar PV
- 2.6MW Solar PV
- 2MW Solar PV2
- 2.7MW Solar PV with Blockchain Technology
- 32MW Solar PV and Floating Solar PV
- 23MW Solar PV
- Once-through Boiler in Garment Factory
- 35MW Solar PV and Storage Battery
- 2MW Solar PV3
- Boiler, Chiller and PV
- 1.3MW Solar PV (Eco Lease)
- 0.13MW Solar PV (Eco Lease)
- Gas Co-generation System & 22MWSolar PV
- ORC Waste Heat Recovery
- 4MW Solar PV
- 2.9MW Solar PV
- 1MW Solar PV
- Methane Avoidance and Biomass Boiler in Fruit Processing Factory
- 1.6MW Solar PV (Eco Lease)

Mongolia:9 projects
- Heat Only Boiler (HOB)**
- 2.1MW Solar PV in Farm*
- 10MW Solar PV*
- 8.3MW Solar PV in Farm *
- 15MW Solar PV1
- ■Upscaling Renewable Energy Sector
- Fuel Conversion by Introduction of LPG Boilers
- ■Improving Access to Health Services
- 15MW Solar PV2

Viet Nam:45 projects
- Digital Tachographs*
- Amorphous transformers1*
- Air-conditioning in Hotel1*
- Electricity Kiln
- Air-conditioning in Lens Factory*
- Container Formation Facility*
- Amorphous transformers 2*
- 320kW Solar PV in Shopping Mall*
- Air-conditioning Control System
- High Efficiency Water Pumps*
- Energy saving Equipment in Lens Factory*
- Amorphous transformers 3*
- Amorphous transformers 4
- Energy Saving Equipment in Wire Production Factory*
- Energy Saving Equipment in Brewery Factory
- High Efficiency Chiller
- Modal Shift with Reefer Container
- Inverters for Raw Water Intake Pumps
- ▲F-gas Recovery and Dedicated Destruction Scheme
- Biomass Boiler to Chemical Factory
- 57MW solar PV
- Air-Conditioning System and Air Cooled Chillers
- 49MW solar PV
- Once-through Boiler to Food Factory
- Biomass Boiler
- Biomass Co-generation System
- Air-conditioning in Hotel2
- 2MW Solar PV
- Waste to Energy
- LED Lighting to Office Building
- 9MW Solar PV
- 10MW Rice Husk Power Plant
- 12MW Solar PV
- 9.8MW Solar PV
- 5.8MW Solar PV
- 2.5MW Solar PV
- Chiller and LED
- ▲F-gas Recovery and Mixed Combustion Scheme
- 20MW Biomass Power Plant
- 16MW Mini Hydro Power Plant
- 7.9MW Solar PV
- 0.4MW Solar PV (Eco Lease)
- 5.7MW Solar PV
- 48MW Offshore Wind Power
- 1.8MW Solar PV
- 0.8MW Solar PV

Phillipines:17 projects
- 1.53MW Rooftop Solar PV *
- 1MW Rooftop Solar PV
- 1.2MW Rooftop Solar PV *
- 4MW Solar PV *
- 18MW Solar PV
- 2MW Solar PV (Eco Lease)
- 60MW Solar PV
- Biogas Power Generation and Fuel Conversion
- 29MW Binary Geothermal Power Generation
- 20MW Flash Geothermal Power Plant
- Air Conditioning System
- ▲F-gas Recovery and Destruction Scheme
- 28MW Binary Geothermal Power Generation
- 14.5MW Mini Hydro Power Plant
- 9MW Solar PV
- 0.8MW Solar PV (Eco Lease)
- 5.6MW Binary Geothermal Power Generation

Palau:5 projects
- 370kW Solar PV for Commercial Facilities*
- 155kW Solar PV for School*
- 445kW Solar PV for Commercial Facilities Ⅱ*
- 0.4MW Solar PV for Supermarket*
- 1MW Solar PV for Supermarket

Mexico:5 projects
- 1.2MW Power Generation with Methane Gas Recovery System
- Once-through Boiler and Fuel Switching
- 20MW Solar PV
- 30MW Solar PV1
- Energy Efficient Distillation System

Chile:13 projects
- 1MW Rooftop Solar PV*
- 3.4MW Rice Husk Power Generation
- 3MW Solar PV1*
- 3MW Solar PV2
- 34MW Solar PV
- 9MW Solar PV1
- 9MW Solar PV2
- 3MW Solar PV3
- 6MW Solar PV
- 9MW Solar PV1
- 9MW Solar PV2
- 47MW Solar PV
- 2.0MW Solar PV

Costa Rica:2 projects
- 5MW Solar PV※
- Chiller and Heat Recovery System

Indonesia:49 projects
- Centrifugal Chiller at Textile Factory*
- Energy Saving at Convenience Store*
- Refrigerants to Cold Chain Industry**
- Double Bundle-type Heat Pump*
- Centrifugal Chiller at Textile Factory 2*
- 30MW Waste Heat Recovery in Cement Industry*
- 500kW Solar PV and Storage Battery*
- Regenerative Burners*
- Centrifugal Chiller at Textile Factory 3*
- Old Corrugated Cartons Process*
- Upgrading to Air-saving Loom*
- Centrifugal Chiller in Shopping Mall*
- Smart LED Street Lighting System
- Once-through Boiler System in Film Factory*
- Gas Co-generation System*
- Once-through Boiler in Golf Ball Factory*
- 1.6MW Solar PV in Jakabaring Sport City*
- ◆REDD+ through controlling slush-and burn
- 10MW Hydro Power Plant1
- Looms in Weaving Mill*
- LED Lighting to Sales Stores
- Industrial Wastewater Treatment System
- 0.5MW Solar PV*
- Gas Co-generation system
- Absorption Chiller*
- High Efficiency Autodave1
- CNG-Diesel Hybrid Public Bus
- Rehabilitation of Hydro Power Plant
- 12MW Biomass Power Plant
- Injection Molding Machine
- 2MW Mini Hydro Power Plant
- Boiler to Carton Box Factory
- 10MW Hydro Power Plant2
- 6MW Hydro Power Plant1
- 6MW Hydro Power Plant2
- 5MW Hydro Power Plant
- 4.2MW Solar PV
- 8MW Mini Hydro Power Plant
- Thermal Oil Heater System
- 3.3MW Rooftop Solar PV
- 6MW Hydro Power Plant3
- 2.3MW Hydro Power Plant
- High Efficiency Autoclave2
- Once-through Boiler in Chemical Factory
- 5MW Solar PV
- 3.1MW Solar PV
- 2.1MW Solar PV
- 3.5MW Hydro Power Plant
- Energy Saving and Solar PV

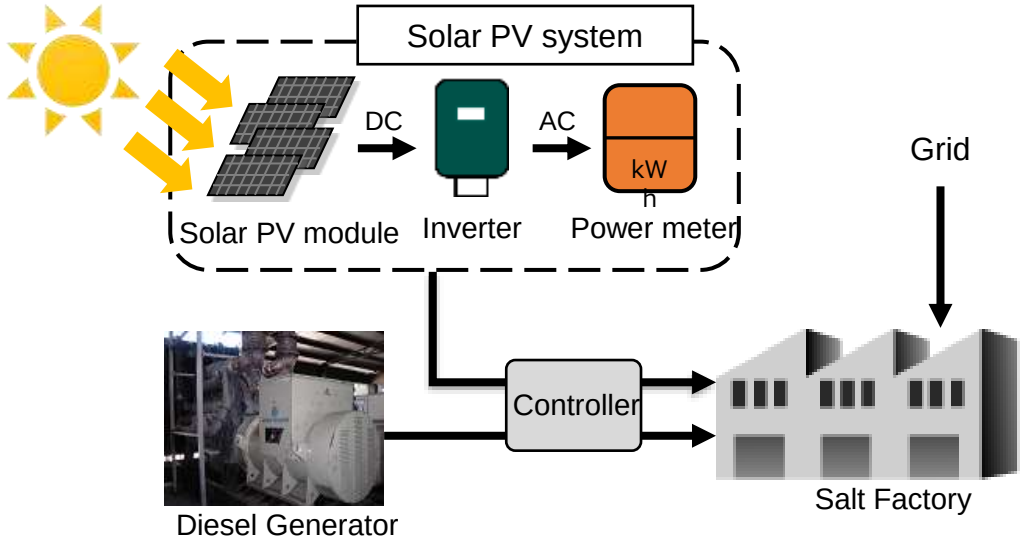
JCM Model Project（FY2015）

Introduction of Solar PV System at Salt Factory

PP (Japan): Pacific Consultants Co., Ltd., / PP (Kenya): Krystalline Salt Limited (Kaysalt)

Outline of GHG Mitigation Activity

This project aims to reduce CO_2 emissions by introducing a 991kW solar PV system at a salt factory of Krystalline Salt Limited (Kaysalt). All of the generated electricity is used in the factory.
The factory usually uses grid electricity but also uses captive diesel power generation during power outages. Therefore the project introduces a controller device which enables safe operation of the solar PV system together with the diesel generators. The generated electricity will displace electricity use from both grid and diesel generators.



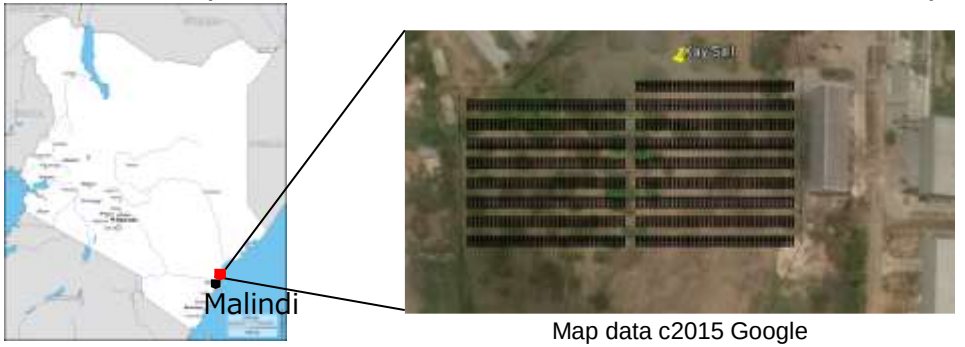
Expected GHG Emission Reductions

630 tCO_2/year

CO_2 emission reduction
= PV generation
× Reference emission factor

Sites of JCM Model Project

The salt factory is located 20km north of Malindi, Kilifi County



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(http://www.d-maps.com/carte.php?num_car=13932&lang=en)

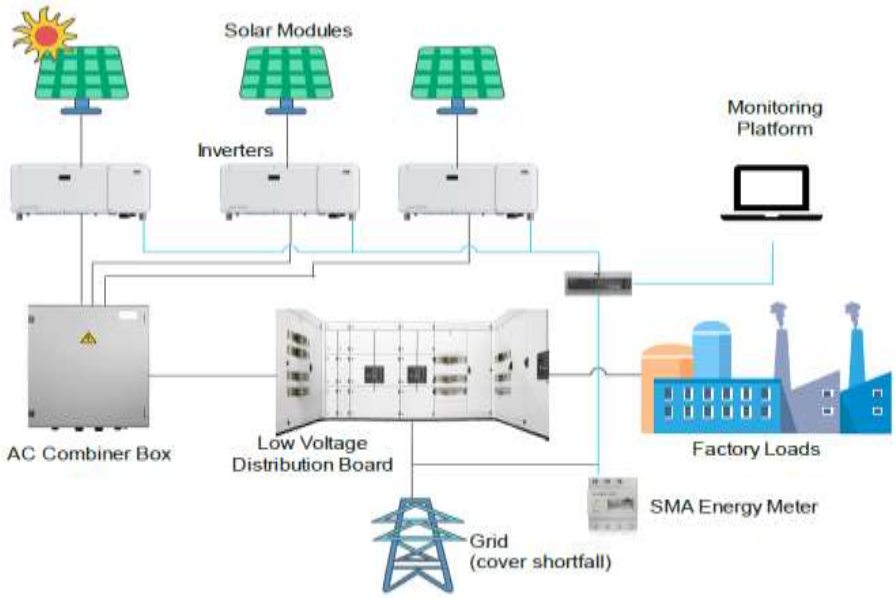
JCM Model Project（FY2022）

Introduction of 3.1MW Rooftop Solar Power System to Food Processing Facilities

PP (Japan): AAIC Japan Co., Ltd, AAIC Holdings Pte. Ltd.,
(Kenya): Unga Holdings Limited, Unga Limited, Unga Farm Care (E.A.) Limited

Outline of GHG Mitigation Activity

3.1 MW solar power system is installed to reduce greenhouse gas (GHG) emissions by replacing a part of the electricity consumption at 4 grain milling facilities and 3 livestock feed production facilities in Nairobi, Eldoret, and Nakuru counties by the power supplied by the system.
This project contributes to the achievement of Kenya's policy for transitioning to 100% clean energy by 2030.



Expected GHG Emission Reductions

2,455 tCO_2 /year

= (Reference CO_2 emissions)
- (Project CO_2 emissions)

・Reference CO_2 emissions
= (Quantity of the electricity generated by the project) [MWh/year]
×Emission factor [tCO_2/MWh]
・Project CO_2 emissions
= 0 [tCO_2/year])

Site of Project

Eldoret Site (2 sites)
Approx. 16km North of Eldoret International airport

Nakuru Site (2 sites)
Approx. 162 km west of Nairobi City

Nairobi Site (3 site)
Nairobi City

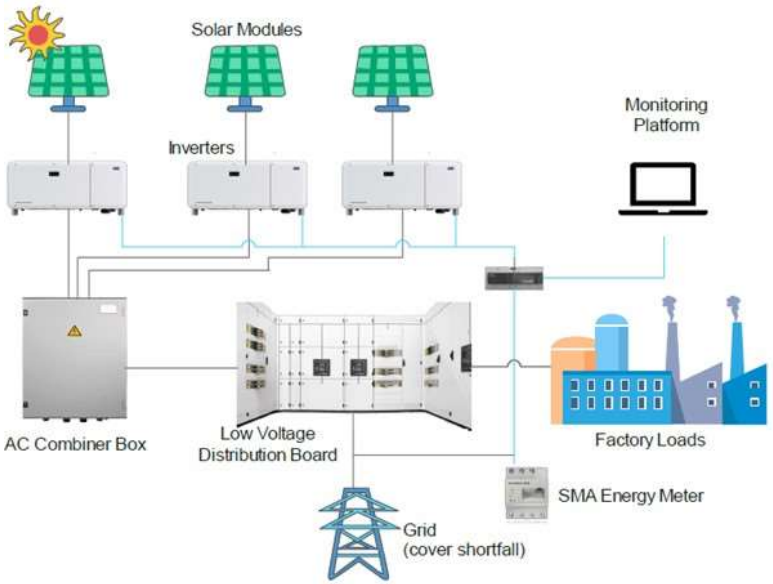
JCM Model Project（FY2022）

Introduction of 2.3MW Rooftop Solar Power System to Hatchery, Meat Processing and Battery Facilities

PP(Japan): AAIC Japan, AAIC Holdings Pte. Ltd. PP (Kenya): Kenchic Limited, Associated Battery Manufacturers (East Africa) Limited

Outline of GHG Mitigation Activity

2.3MW solar power system is installed to reduce greenhouse gas (GHG) emissions by replacing a part of the electricity consumption at one hatchery plant in Machakos county, one poultry meat processing facility in Kiambu county, one battery assembly plant in Nairobi county and one battery recycling plant in Machakos county by the power supplied by the system.
This project contributes to the achievement of Kenya's policy for transitioning to 100% clean energy by 2030.



Expected GHG Emission Reductions

1,741 tCO_2 /year

= (Reference CO_2 emissions)
- (Project CO_2 emissions)

・Reference CO_2 emissions
= (Quantity of the electricity generated by the project) [MWh/year]
×Emission factor [tCO_2/MWh]

・Project CO_2 emissions
= 0 [tCO_2/year])

Site of Project – 2 sites

4 sites in Nairobi and surrounding areas

Implementation of the Article 6 rules into domestic rules

➢ Establishment of the JCM Promotion and Utilization Council consisting of five relevant Ministries* (January 17,2022)

*Ministry of the Environment; Ministry of Economy, Trade and Industry; Ministry of Foreign Affairs; Ministry of Agriculture, Forestry and Fisheries and Ministry of Land, Infrastructure, Transport and Tourism

The Council's duties include:

1. the authorization of JCM credits as a Party to the Paris Agreement,
2. the determination of a method to apply corresponding adjustments to prevent double counting,
3. the revision of the Guidelines for the Implementation of the JCM.

➢ Formulation of the procedures on the authorization and corresponding adjustments (April 7, 2022)

- Establishment "Procedures for Authorization as a Party to the Paris Agreement regarding the Joint Crediting Mechanism (JCM)" and "Procedures for Corresponding Adjustments regarding the Joint Crediting Mechanism."

➢ Expansion of JCM Partner Countries (June 7, 2022)

- The Grand-design and Implementation Plan/Follow-ups of the New Capitalism (Cabinet Decision on June 7, 2022) stipulates "For the expansion the JCM, the government accelerates consultations with relevant countries, aiming to increase the JCM partner countries up to around 30 by 2025."

Thank you for your kind attention

Ministry of the Environment