

## FY2020 City-to-City Collaboration for Creating a Zero-carbon Society

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Feasibility Survey of promoting of carbon-free society and co-benefits through the implementation of EV vehicles in the state of Koror, Republic of Palau  
(City to City collaboration between Koror state and Kitakyushu city)

February 2021

Kitakyushu City (Asian Center for Low Carbon Society)

AMITA CORPORATION

EV Motors Japan Co., Ltd

Institute for Global Environmental Strategies

ATGREEN Co., Ltd

# City-to-city collaboration history between Koror State and Kitakyushu City

City-to-city collaboration between Koror State and Kitakyushu City has been ongoing since 2015 with the main theme is construction of resource recycling systems. This feasibility survey project will be carrying out and based on this collaboration and JCM scheme.

## Koror State

### Challenges of Koror (Our Assumption)

- Expansion of using renewable energy
- Improvement of environmental pollution in tourism sector
- Improvement of waste resource circulation
- Reduction of exhaust gas in transportation sector
- Lack of experience to construction the environmental plans and system
- Promoting SDGs Know-how



## Kitakyushu City

### Experience and know-how from Kitakyushu

- Experience of overcoming pollution
- Experience of establishment of recycling system
- Experience of EV-bus transportation in public transportation
- Experience to construction the environmental plans and system
- Experience and know-how of promotion of SDGs



## ● Past cooperation projects between Koror and Kitakyushu

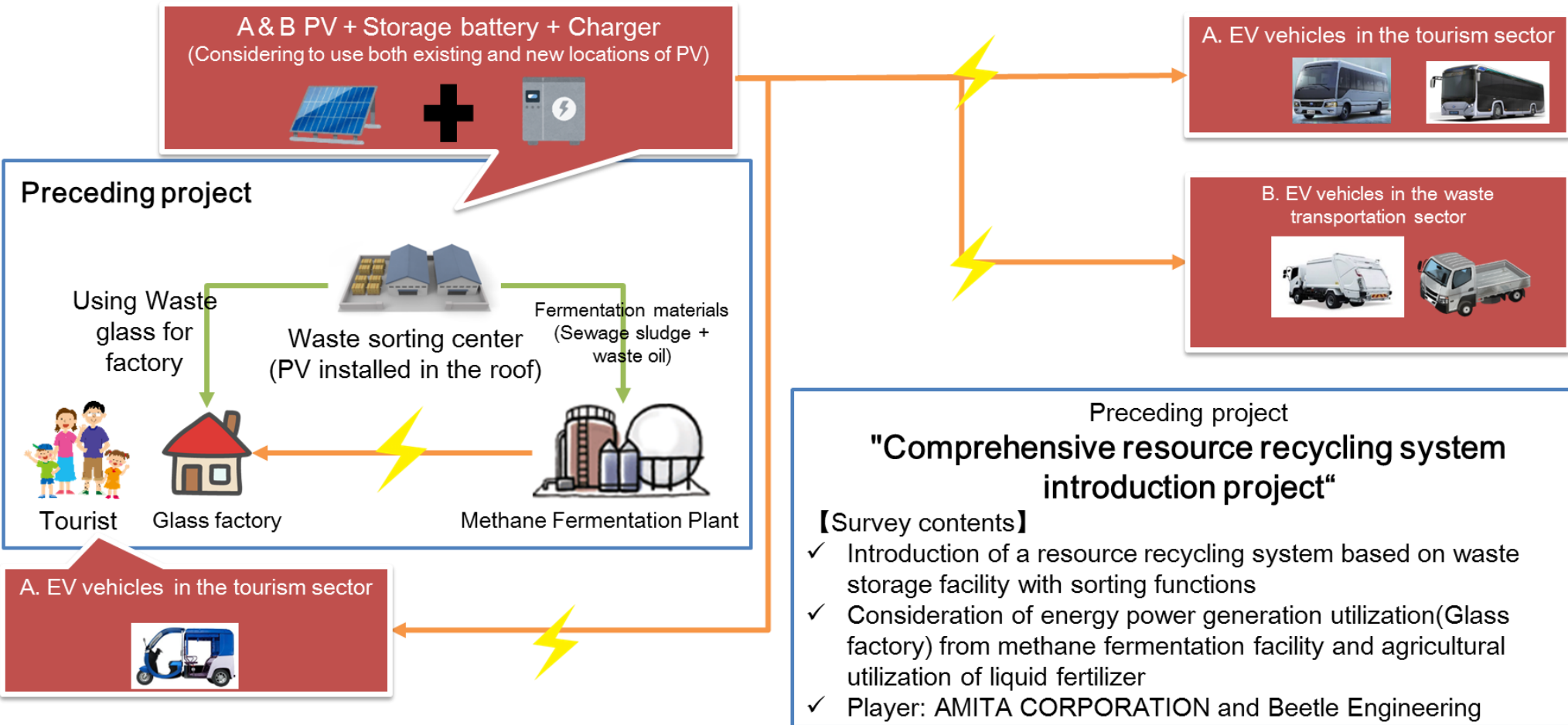
Project name	Member(s)	Year	Project Activities
Survey of waste treatment in islands (Ministry of the Environment Japan Project)	AMITA Institute for Sustainable Economies Co.,Ltd. Kitakyushu City	FY2015 ~ FY2017	<ul style="list-style-type: none"> <li>• Survey for landfill site (current waste treatment volume and processable volume)</li> <li>• Survey for recycling facility specifications and costs</li> <li>• Survey for waste treatment system design, estimation, preparation items for construction</li> <li>• Signing of partnership agreement (between AMITA Institute for Sustainable Economies Co.,Ltd. and Koror State)</li> </ul>
Feasibility Survey of introduction of small size methane fermentation plant in islands (JICA PJ)	VIOCE Co., Ltd Kitakyushu City	FY2017 ~ FY2018	<ul style="list-style-type: none"> <li>• Survey for raw biomass materials (garbage, resource crops, etc.)</li> <li>• Survey for methods of waste separation and collection scheme</li> <li>• Promotion for using liquid fertilizer</li> <li>• Survey for methane fermentation facility specifications and operational design</li> </ul>
Feasibility Survey on introduction of resource sorting and storage facilities in Koror State (Ministry of the Environment Japan Project)	AMITA CORPORATION BEETLE Engineering Co., Ltd Kitakyushu City	FY2019 ~ FY2020	<ul style="list-style-type: none"> <li>• Survey for introduction of resource sorting and storage facilities in Koror State</li> <li>• Survey for international recycling</li> </ul>

# Overview of proposal project

We started feasibility survey of the introduction EV vehicle technologies as a means of decarbonization and co-benefits, based on the cooperate relationship between Kitakyushu City and Koror State.

[Proposal model and survey issues] \* In the red frame

- A. Introduction of EV vehicles (buses, etc.) in the tourism sector
- B. Introduction of EV vehicles (packer vehicles, truck, etc.) in the waste transportation sector
- C. Consideration of other technology solutions to contribute to carbon-free society and local issue



## Local issues related to this project (Assumed)

Palau is visited by many tourists. So, we assume that there are many local issues in Palau such as energy, tourism and waste sector.

Sector	Issues	Detail
Energy	High dependence rate for Fossil fuel	<ul style="list-style-type: none"> <li>• Impact of GHG emissions</li> <li>• Increased exhaust gas</li> <li>• The risk of changes in energy procurement costs</li> </ul>
	Increasing load on the electricity grid due to the introduction of renewable energy	<ul style="list-style-type: none"> <li>• Increasing load on grid due to acceleration of large-scale PV introduction</li> <li>• Response to surplus power and sudden output fluctuations</li> <li>• Risk of both short-period fluctuations and long-period fluctuations</li> </ul>
	Consideration for renewal for existing diesel power generation equipment due to aging	<ul style="list-style-type: none"> <li>• Power outage</li> <li>• Expanding for renewable energy according to national energy plan</li> </ul>
Sightseeing & Transportation	Seriously environmental impact due to increasing tourists	<ul style="list-style-type: none"> <li>• Increased waste, especially progress of marine pollution</li> <li>• Improving the landscape and environmental image of tourist destinations</li> </ul>
	Impact on the environment due to traffic jam	<ul style="list-style-type: none"> <li>• There are many means of transportation, but it is dispersed (e.g. Taxi, Shuttle Bus, Hotel pick-up service)</li> <li>• Increased exhaust gas and noise</li> </ul>
Waste Treatment	Increasing costs of waste transportation and treatment	<ul style="list-style-type: none"> <li>• Increased waste by tourists</li> <li>• Increased transportation costs to landfill site in Aimeliik State</li> <li>• Increased fossil fuel consumption due to transporting for landfill site</li> <li>• Energy recovery from waste</li> </ul>

# Overview of the EV vehicle technology

EV Motors Japan Co., Ltd (EVM) has the following strengths in electric vehicles.

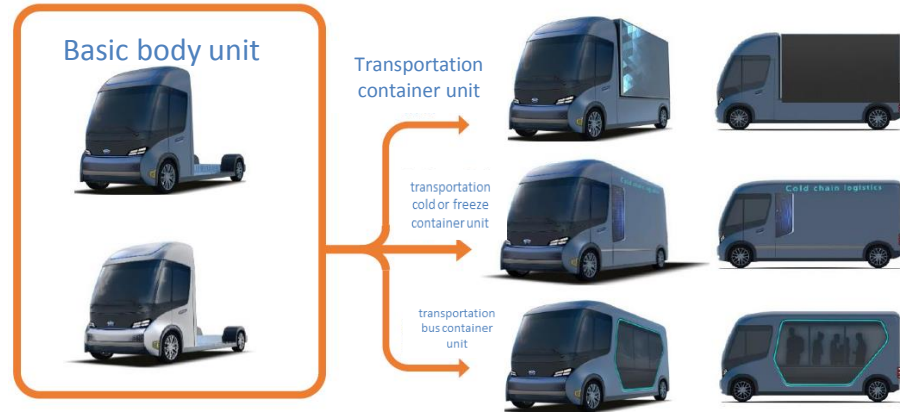
EV Motors Japan Co., Ltd

## 【Selling point】

- (1) Extensive commercial vehicle lineup and customizability
  - (2) EVM has high market value with the technology of parts selection and manufacturing processes
  - (3) EVM has superior CO2 reduction technology, such as battery load and vehicle weight reduction
  - (4) EVM has an experience of overseas expansion about EV vehicle
- (They have experience of verification project about EV bus in Cat Ba Island, Hai Phong, Vietnam)



Basic body unit that connects to the container F8 series8-M



F 8 series2-City Bus Urban city e-BUS Specification  
8.5m / 10.5m / 12m Urban road Urban city bus specifications (Pure e-BUS )







F8series7-Driverless car Specification  
LEVEL-4 Small autonomous driving mobility EV  
F8 series7 (custom made model )






for Confidential

## Co-Benefit effects (expected)

If this project is advanced, there are expected many co-benefit effects .

Co-Benefit effects(expected)	
Emission mitigation	Zero exhaust gas from EV vehicles
Traffic jam mitigation	Traffic jam mitigation by reducing the number of vehicles
Energy cost reduction / local production for local consumption	Cost reduction by avoiding fossil fuel procurement and promoting for using local production energy
Maintenance cost reduction	EV vehicle is a simple structure without an internal combustion engine. It is expected to reduce maintenance costs.
Used as an emergency power source in the disaster	EV vehicle can be used as a mobile emergency power source in the disaster
Image up	<b>【For tourism sector】</b> Improving the image of tourists and promoting green tourism <b>【For waste treatment sector】</b> Renewable energy can be used throughout the waste recycling flow
Contribution for SDGs	<ul style="list-style-type: none"><li>Contribution to achieving for the SDGs in Koror</li></ul>    

## Project members and role in this project

Organization	Activity	role in this project
<p><b>Kitakyushu City (Asian Center for Low Carbon Society)</b></p> 	<ul style="list-style-type: none"> <li>● OECD selection “World model city for promoting SDGs”</li> <li>● Promote advanced initiatives in resource recycling, carbon-free, renewable energy utilization, social welfare, SDGs, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Overall coordination of city to city collaboration</li> <li>• Sharing experience and knowledge regarding the environment and SDGs</li> </ul>
<p><b>AMITA CORPORATION</b></p> 	<ul style="list-style-type: none"> <li>● Solution provider for sustainability</li> <li>● Waste recycling business</li> </ul>	<ul style="list-style-type: none"> <li>• Consideration of adding value to existing resource recycling project</li> </ul>
<p><b>EV Motors Japan Co., Ltd</b></p> 	<ul style="list-style-type: none"> <li>● Manufacture, sales and maintenance of EV vehicles (commercial vehicles such as buses and trucks) and charging stations</li> </ul>	<ul style="list-style-type: none"> <li>• Consideration of locally adapted technology and equipment</li> <li>• Business model examination</li> </ul>
<p><b>Institute for Global Environmental Strategies</b></p> 	<ul style="list-style-type: none"> <li>● An international research institute that conducts strategic policy research related to the environment and SDGs</li> </ul>	<ul style="list-style-type: none"> <li>• Consideration of other technology solutions to contribute to carbon-free society and local issue</li> <li>• Support for holding local workshops</li> </ul>
<p><b>ATGREEN Co., Ltd</b></p> 	<ul style="list-style-type: none"> <li>● Consulting service business for the environment, energy, waste sector</li> </ul>	<ul style="list-style-type: none"> <li>• Summary of the survey</li> <li>• Business model examination</li> <li>• MRV methodology creation</li> </ul>

## Survey progress and issues

At first, we planned to visit Palau 3 times in FY2020. Although, we were forced to change plan due to pandemic of COVID-19 virus. Currently, we are conducting the survey for the introduction of EV vehicles in the tourism and waste sectors with local corporations.

### **A. Introduction of EV vehicles (buses, etc.) in the tourism sector**

- We consider the possibility of introduction of a shuttle bus.(from the airport to hotels)
- A Japanese company operates Palau International Airport.
- This EV project in tourism sector may be a partnership with the airport company.
- Currently, we are estimating the cost of vehicles , charge equipment, renewable power energy generation.

### **B. Introduction of EV vehicles(packer vehicles, truck, etc.) in the waste transportation sector**

- We are considering the possibility of introducing garbage trucks and loading trucks.
- We plan to use these mobilities for waste collection and transporting to the landfill site.
- This EV project in waste transportation sector may be a partnership with the Koror States.
- Currently, we are estimating the cost of vehicles, charge equipment, renewable power energy generation.

### **Introduction issues of EV vehicles**

- ✓ Reduction for initial costs
- ✓ Maintenance system
- ✓ Promotion organization