

< 12th Asia-Pacific Eco-Business Forum in Kawasaki >

PROJECT FOR LOW-CARBON CITY DEVELOPMENT THROUGH THE INTRODUCTION OF PACKAGE- STYLE WOODY BIOMASS POWER GENERATION IN PENANG STATE, MALAYSIA

マレーシア国ペナン州における 木質系バイオマス発電技術
のパッケージ型導入を通じた低炭素社会実現プロジェクト

For the future of people and nature



18-Feb. 2015

Company Profile - Kureha Ecology Management

Kureha Ecology Management Co.,Ltd.

Company Name : **Kureha Ecology Management Co., Ltd.**

Head Office : Iwaki-City Fukushima-Prefecture

Stock Holder : Kureha Corporation (100%)

Establishment : December 1, 1971

Capital : US\$ 2 million

Net Sales : US\$ 90 million (2014 JFY)

Number of Employees : 364

Plants (Waste Treatment Facilities)

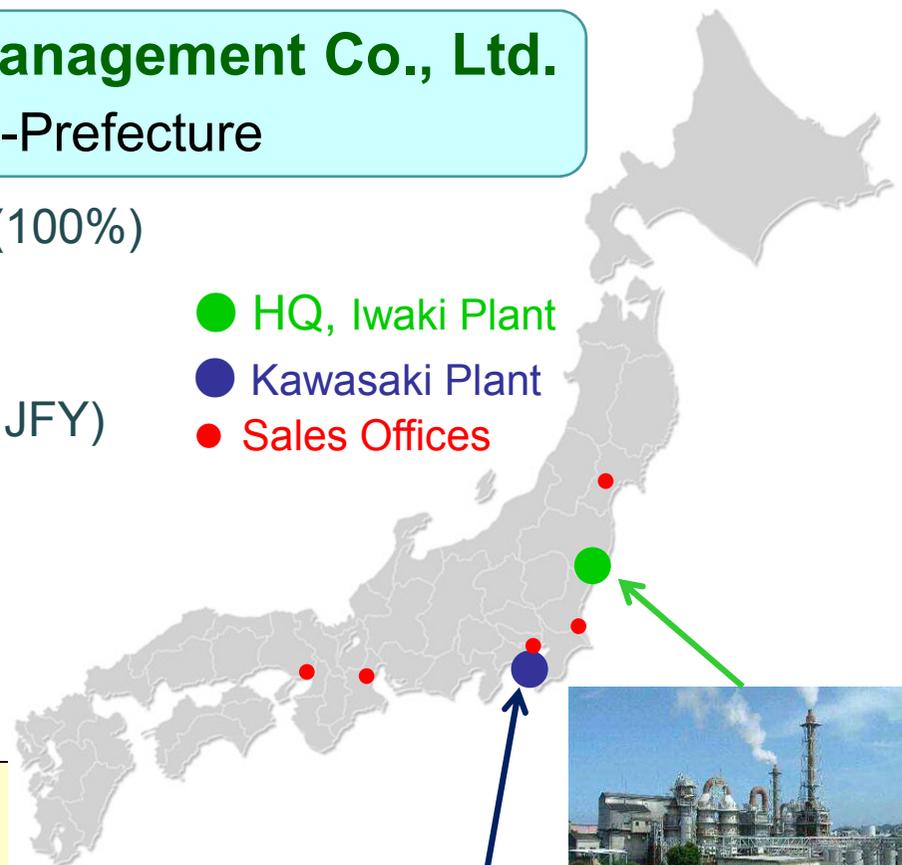
: *Iwaki, Fukushima*

: *Kawasaki, Kanagawa*

Activities :

- Waste Management Service
- Environment Engineering
- Environment Restoration Services
- **Low Carbon City Development Project**

- HQ, Iwaki Plant
- Kawasaki Plant
- Sales Offices



Company Profile - Kureha Ecology Management

Kureha Ecology Management Co.,Ltd.

*KEM is good at handling variety of difficult
(hazardous) industrial waste with
self-developed incinerators (Iwaki plant)
and*

*KEM has 40 years experience for the stable
operation incl. **pre-processing**.*

*Also, maintaining **4.8MW electric power
generation** from waste
(**partly using biomass waste**) in Kawasaki plant.*

Background of this Project

Kureha Ecology Management Co.,Ltd.

Based on the Collaboration between Penang State and Kawasaki City

Project for Developing a Low Carbon Society through 'Waste to Energy' Technology in Penang, Malaysia in JFY2013

(Implemented by Kawasaki City and Global Environment Centre Foundation)

- 1) Efficient woody biomass use
- 2) Small-scale biomass power generation
- 3) Recycle plastic fuels (RPF) development using mixed wastes and waste plastics
- 4) Composting
- 5) Waste plastics derived oils generation and disposal
- 6) Methane gas recovery from organic wastes
- 7) fluorescent light tubes recycling
- 8) E-waste disposal and recycling

**NEDO F/S
Project in 2014**



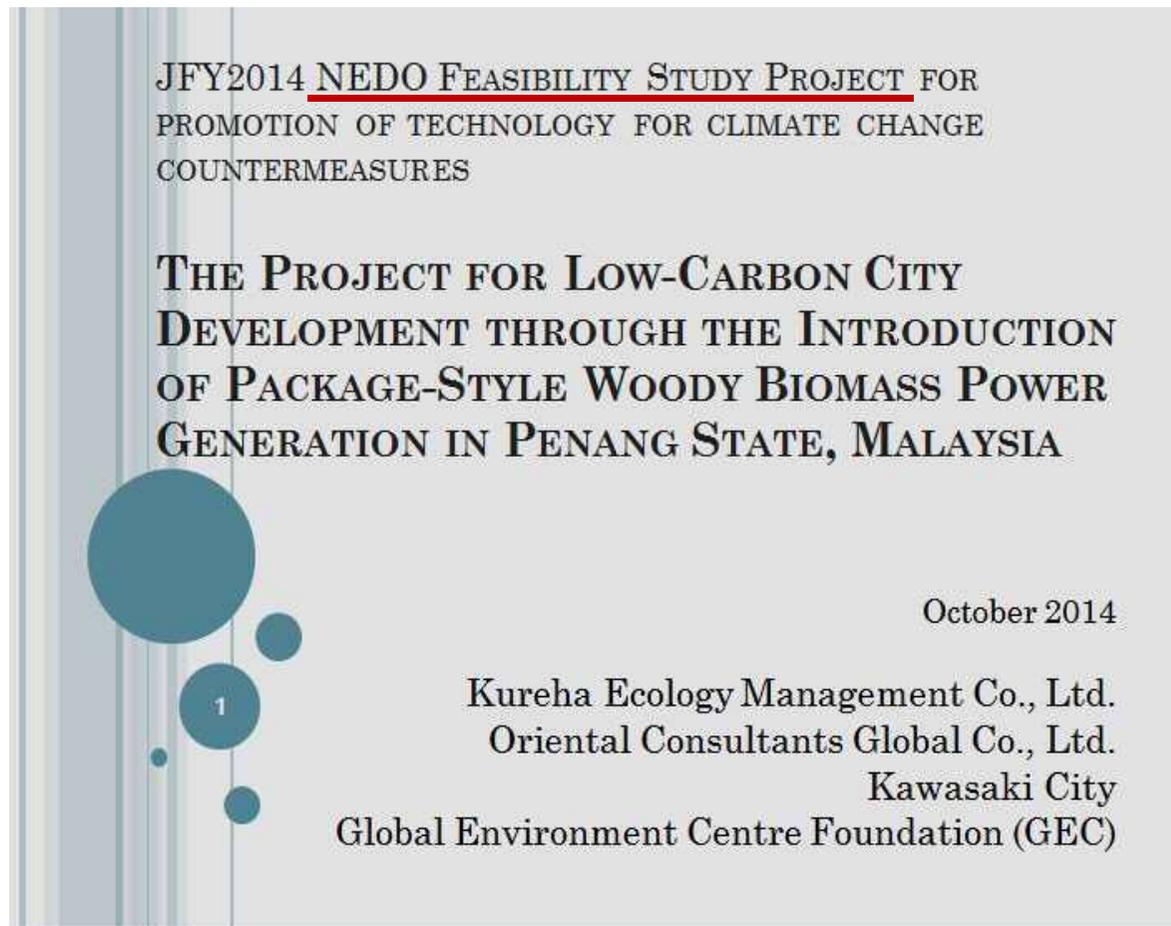
Signing of MoU for
collaboration btw. Kawasaki
City and Penang State

NEDO Feasibility Study 2014.Oct – 2015. May

Kureha Ecology Management Co.,Ltd.

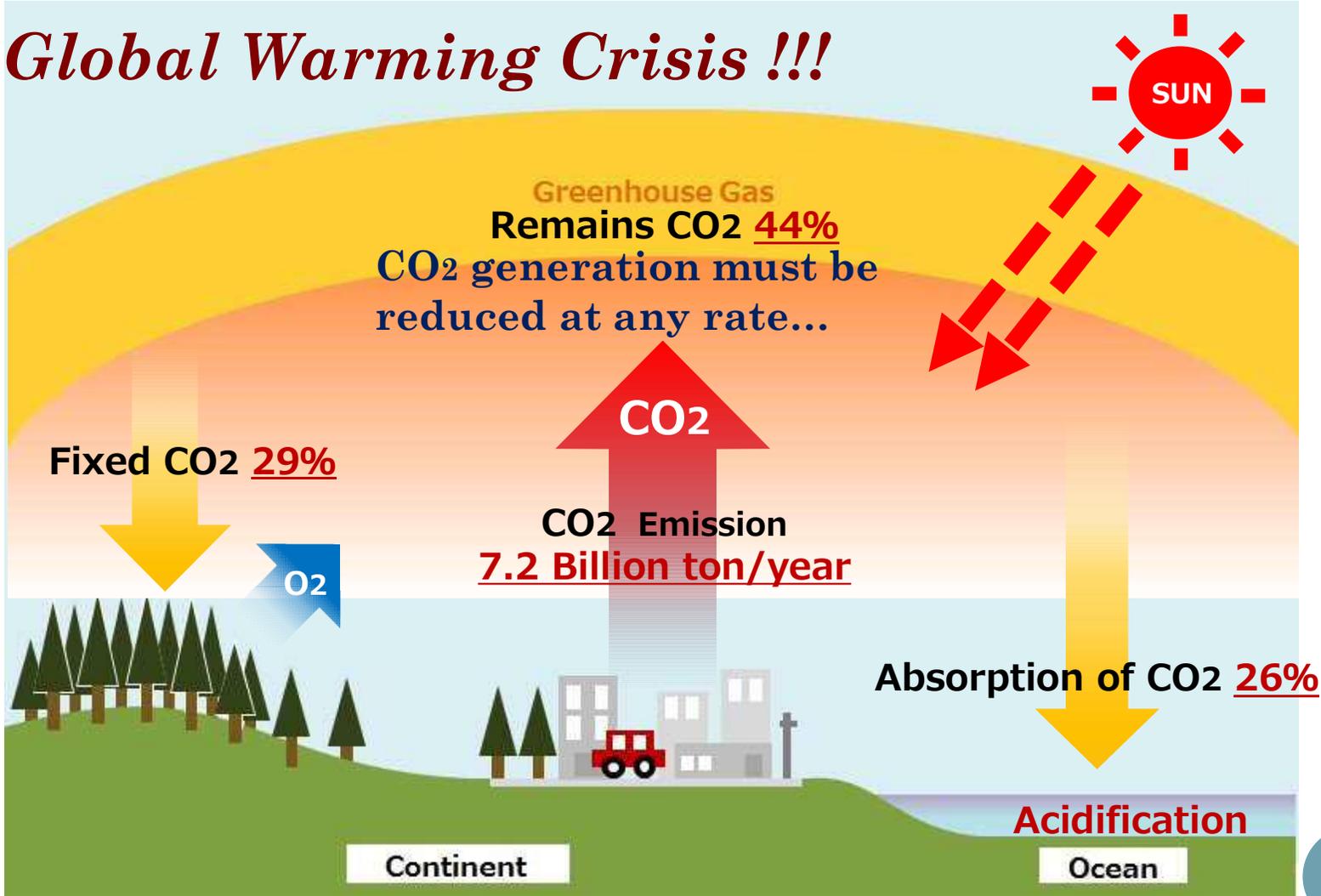
- KEM completed a NEDO FS Pj in **Penang State** successfully with Kawasaki City based on “*City to City collaboration*”

NEDO: New Energy and Industrial Technology Development Organization



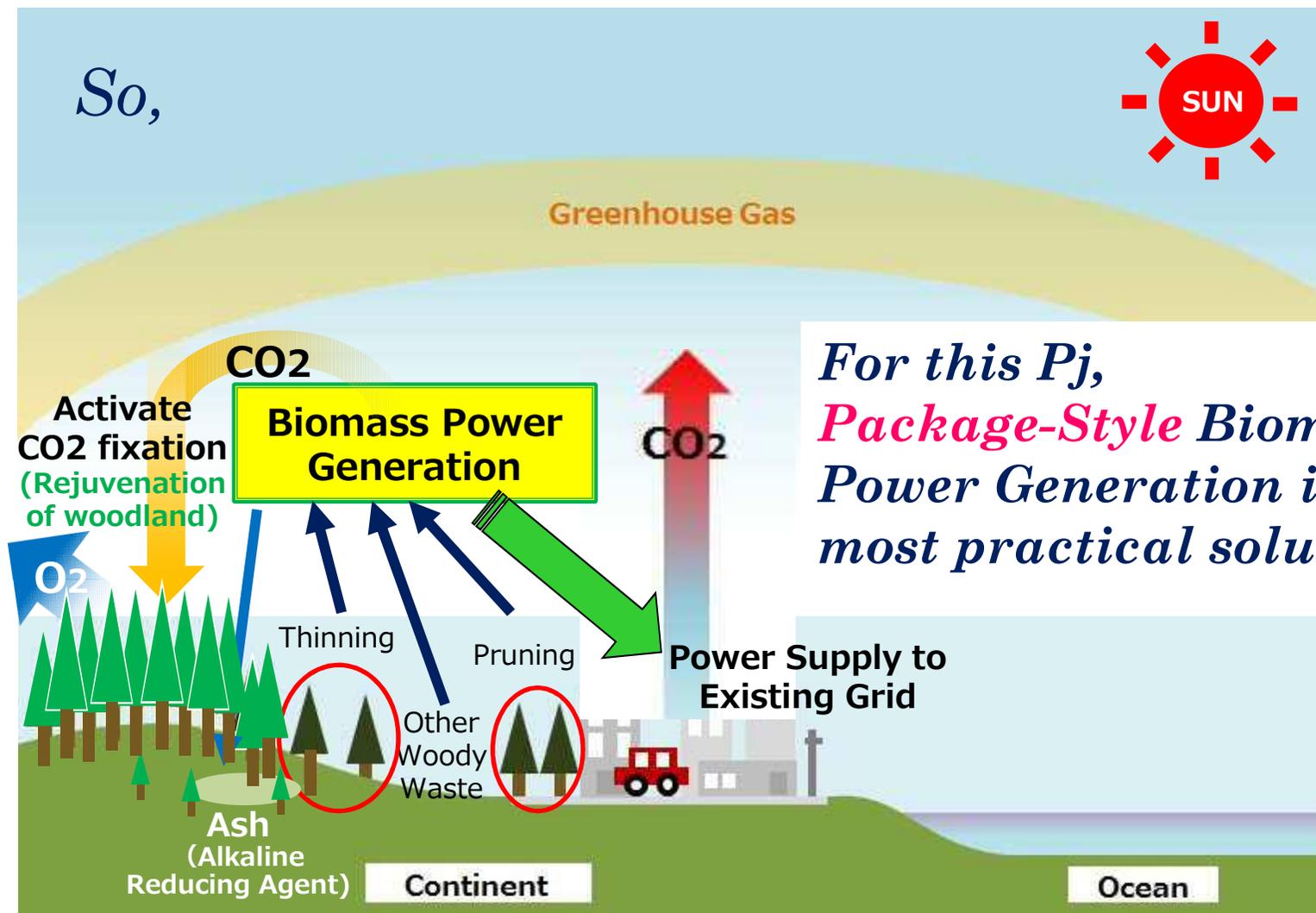
**Headquarters
of NEDO in
Kawasaki City**

GLOBAL WARMING MECHANISM



Data from IPCC AR4, 5

SOLUTION OF GLOBAL WARMING PROBLEM



“Package-Style” means a package of hardware construction and software (know-how) for stable operation.

Data from IPCC AR4, 5

Issues and Countermeasure of Waste Management in Penang State

Kureha Ecology Management Co.,Ltd.

■ Issues

- Increasing total amount of waste generation
- Increasing waste management cost for collection/transfer/treatment (landfill)
(occupies ~40% of state budget)
- No comprehensive facilities of waste treatment

■ Countermeasure

- ⇒ Separation and volume reduction of waste and improvement of waste treatment
- ⇒ Efficient use of woody biomass waste and reduction of GHGs

Survey implementation scheme

Kureha Ecology Management Co.,Ltd.

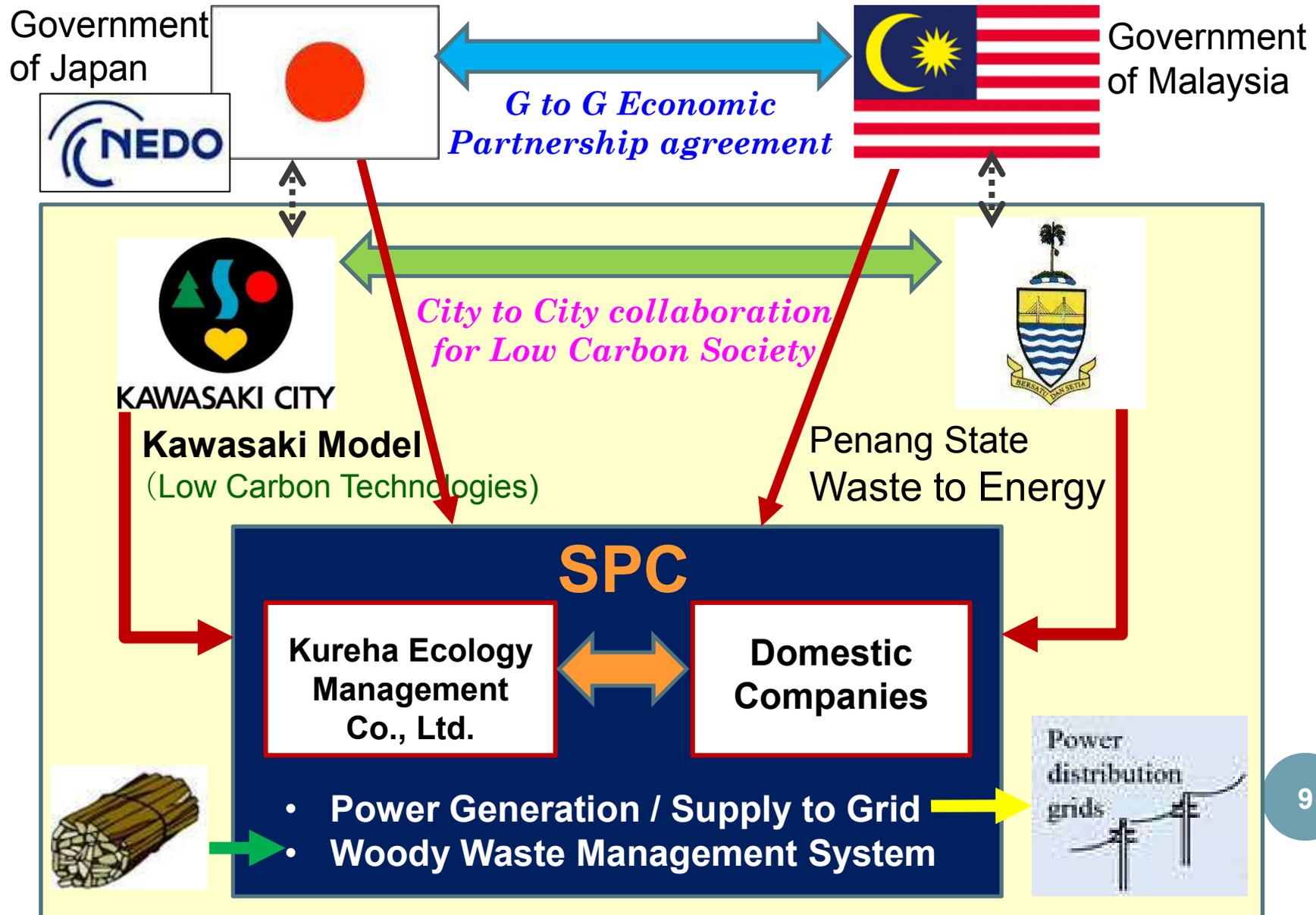


Penang State

F/S implementation

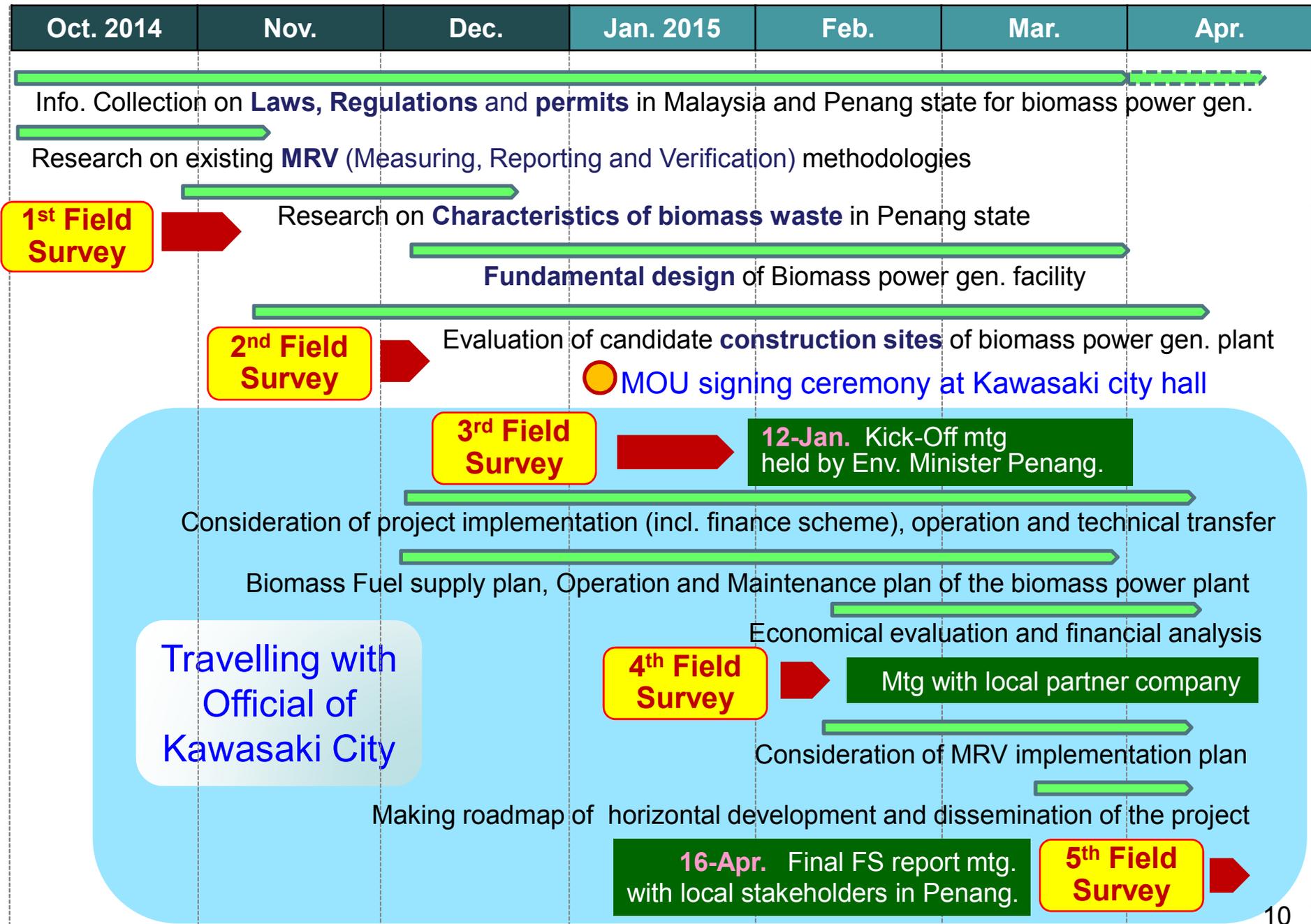


PROJECT IMPLEMENTATION MODALITY (PLAN)



Survey schedule and contents

Kureha Ecology Management Co.,Ltd.



MOU Signing Ceremony at Kawasaki City Hall

Kureha Ecology Management Co.,Ltd.

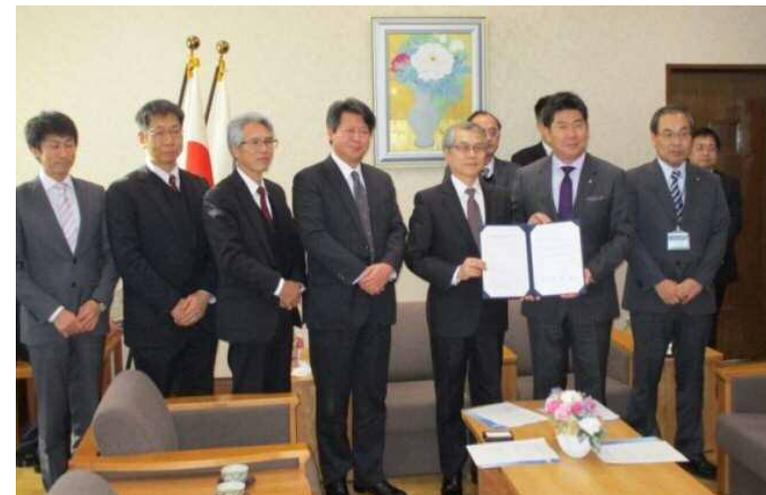
7-Jan. 2015



Mr. Nobuyuki Taniguchi
President
Kureha Ecology
Management Co., Ltd.

Mr. Norihiko Fukuda
Mayor
City of Kawasaki

**Signing of MoU for
collaboration of this Project
btw. **Kawasaki City** and
**Kureha Ecology
Management Co., Ltd.****



Kick-Off Mtg Scenery at KOMTAR, Penang

12-Jan.2015



Exchange of
commemorative gift
with

YB Phee Boon Poh

*Penang State Executive
Council for Welfare,
Caring Society &
Environment*



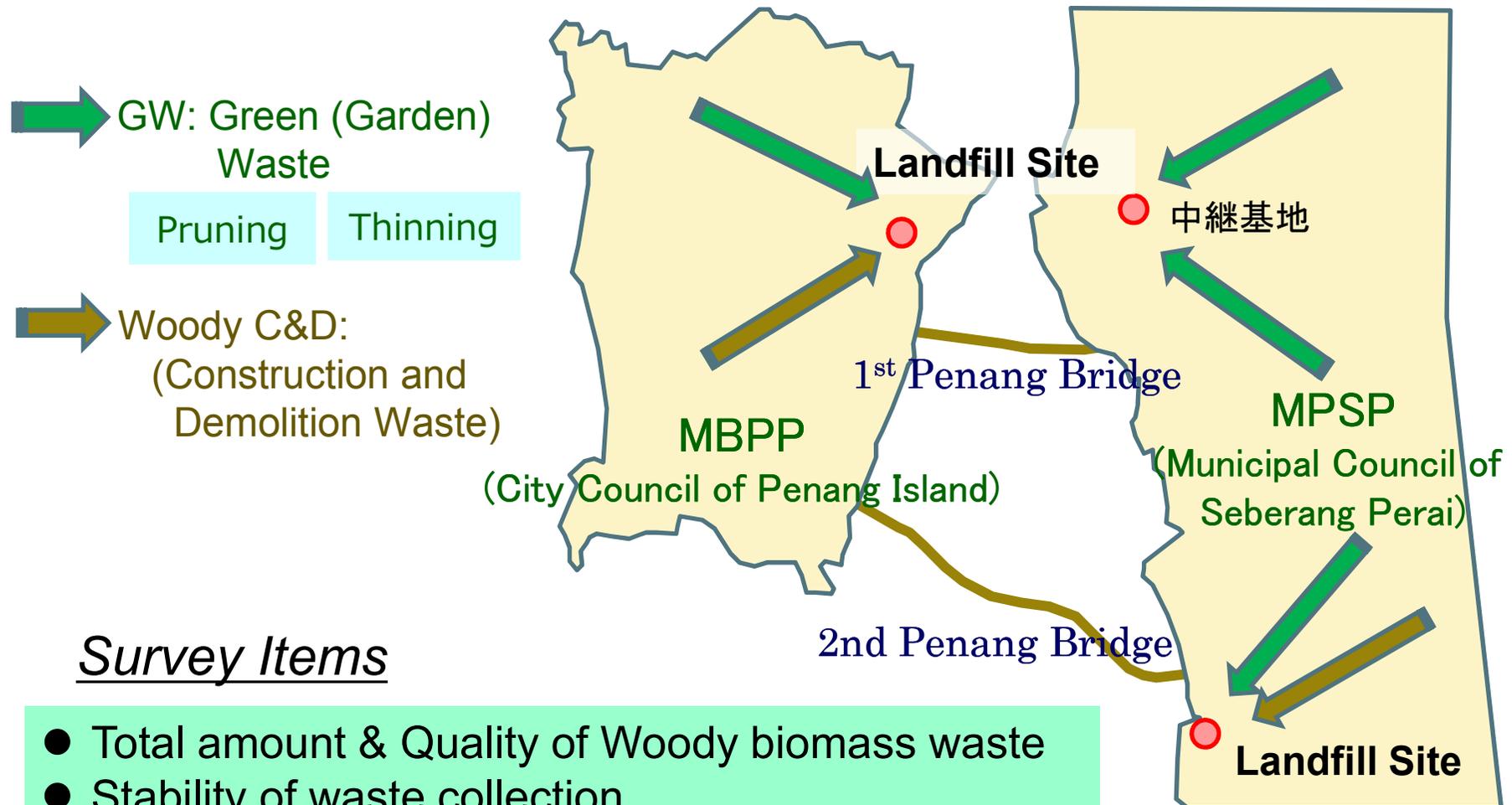
Mr. Kazuaki Aoki
*Manager, Kawasaki Environment
Research Institute, City of Kawasaki*



Mr. Nobuyuki Taniguchi
*President, Kureha Ecology
Management Co., Ltd.*

Feasibility Study of Woody Biomass Source for Power Generation

Kureha Ecology Management Co.,Ltd.



Survey Items

- Total amount & Quality of Woody biomass waste
- Stability of waste collection
- Waste collection route
- Location of the biomass power plant

FS Result – Concept of Biomass Power Generation

Kureha Ecology Management Co.,Ltd.

Basic plan of Biomass Power Plant

Capacity: 5.7 MW (1 unit)

2nd unit (extra 5.7 MW) is under consideration depends on the availability of Woody Waste

Boiler Type: CFB (Circulation Fluidized Bed) boiler or Stoker boiler

The boiler type will be determined based on the condition of biomass source characteristics and needs from local

Plant area: ~ 34,000 m² (8.5 acre)

Securing enough space of drying Green (Garden) waste for moisture control incl. seasonal fluctuation of total amount of biomass waste available.

Option: Methane fermentation can be combined for improving the efficiency of the biomass power plant.

FS Result – Achievement and Issues

Kureha Ecology Management Co.,Ltd.

Achieved

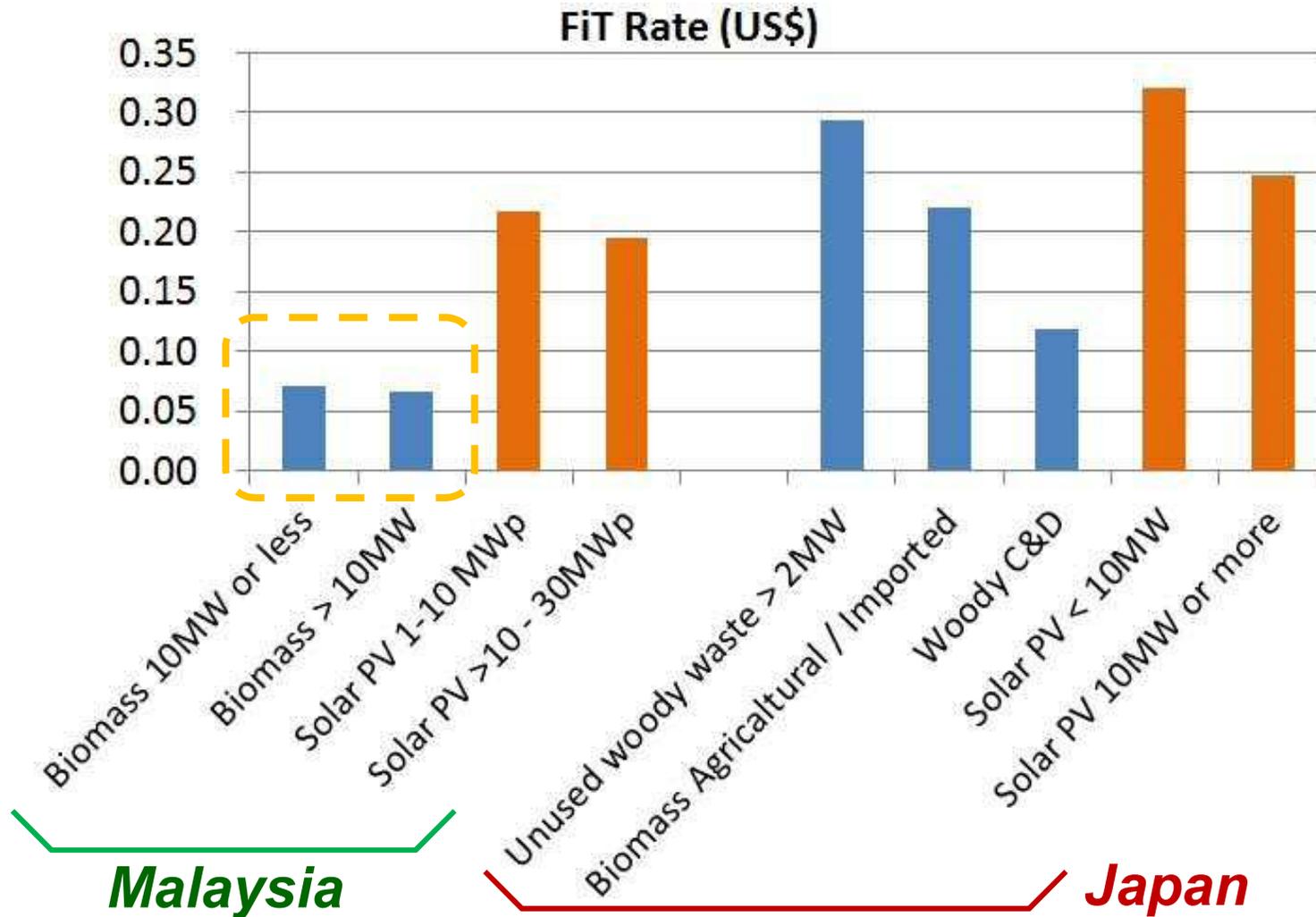
- Overall study of construction of biomass power generation plant in Penang incl. economical analysis
- Explanation of concept and plan of the **package-style biomass power plant** to City Council of Penang Island (MBPP), Municipal Council of Seberang Perai (MPSP) and Penang state → obtained basic understanding
- Local partner company → secured with secrecy agreement
- Construction cost of grid connection → solved
(will get support from a construction project of industrial park surrounding the power plant candidate site)

To be solved

- Subsidy from Japan Gov. for non-JCM country
- Securing 16 years stable woody biomass supply incl. backup plan with alternative biomass fuel (PKS, agricultural waste and other woody waste)
- Biomass FIT quota with improvement discussion of FiT rate
- Explanation to local residents

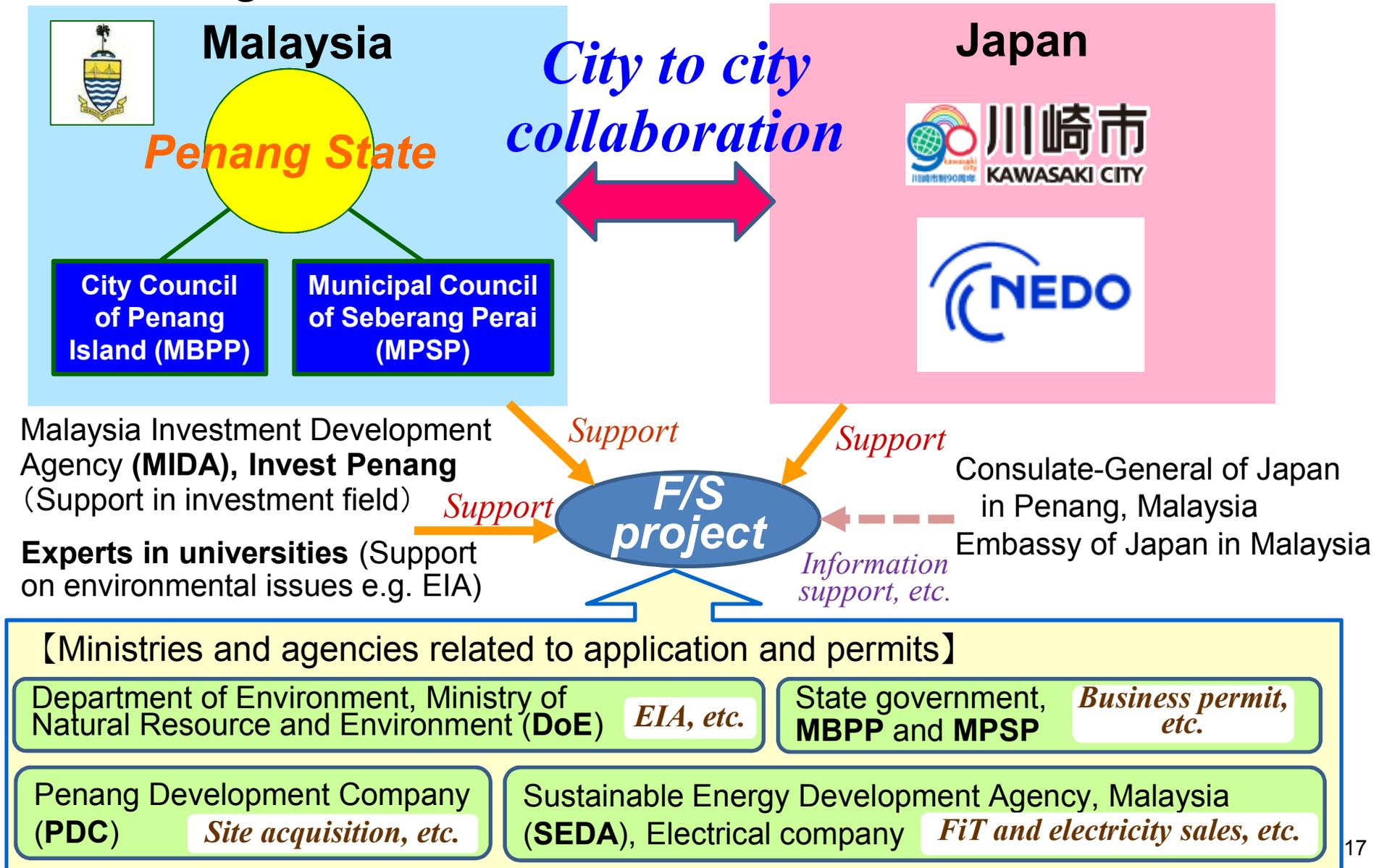
FiT rate comparison

Kureha Ecology Management Co.,Ltd.



Related ministries and agencies in Malaysia and Penang State

Kureha Ecology Management Co.,Ltd.



1. Relationship of Trust and Collaboration

Communication and information share with Penang government (MBPP, MPSP and Penang State) and local companies could be done smoothly with City of Kawasaki's full support via *City to City collaboration*.

2. Next Step

Get understanding and agreement of local residents will be required for the next step.

KEM's Eco Business Policy

Kureha Ecology Management Co.,Ltd.

It is indispensable to develop and utilize Renewable Energy efficiently and smartly by all means for our bright future living in our beautiful Earth (ONLY ONE !).

- **WIN – WIN** scenario is the Key for any business.
- **WIN – WIN – WIN** scenario for “Omi – 近江” merchants,
You I Public / Society
so called “三方よし - SAMPOU YOSHI”

➤ **WIN – WIN – WIN**
Local Gov. / Local Partner / Local Residence / Japan Gov. / My company / Society / Env.
scenario is necessary for **Global Eco Business**.
 **Sustainable Business (Society)**

Let's handover our beautiful Planet for our children!

*Sama-sama kita pelihara Bumi kita,
untuk generasi Akan datang*



Thank you very much

Terima kasih

