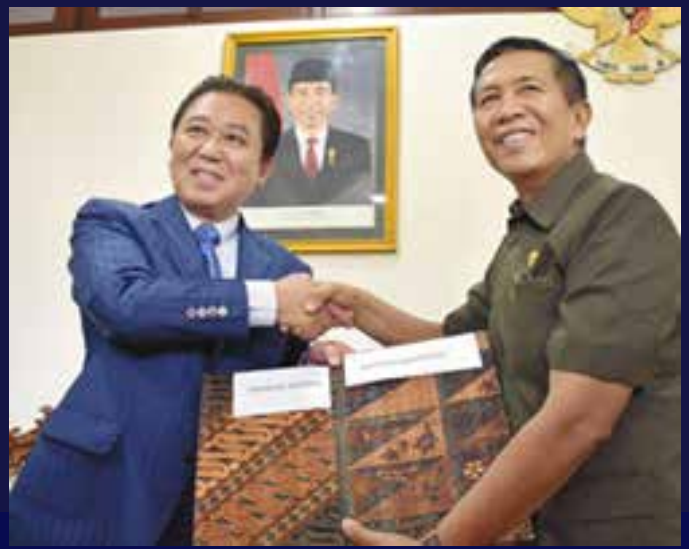
City-to-city Collaboration

TOYAMA & BALI SEMARANG



Overview of Toyama City

- Population: 418,686 people (2015 census)
- Area: 1,241.77 km2
- Diverse topography ranging from a sea depth of -1000 m (Toyama bay) to 2,986 m (Mt. Suishodake)
- FY2018 General Account Budget: 156.8 billion JPY

2008 Designated as “ Eco Model City”
2011 Designated as “ Future City”
2018 Designated as “ SDGs Future City”

Major Policies of Toyama City

1.Compact City

Toyama city construct a compact city with centralized bases based on public transportation by vitalizing public transportation including railways and accumulating various urban functions, such as residence, commerce, business, culture, on a railroad.

[Three Pillars of Toyama's Compact City Strategy]

① Revitalizing public transportation
② Encouraging dwelling along public transport lines
③ Revitalizing the city center

2.Renewable Energy

Toyama City is actively promoting renewable energy. One example is generating hydroelectric power by taking advantage of the abundant amount of melted snow from Mount Tateyama.

The city is also implementing micro hydroelectric generation and geothermal energy as part of advanced agriculture efforts, and developing smart residential communities with efficient and effective energy systems.

International Reputation

Toyama City's compact city policy and environmental measures are gaining a growing international reputation.

OECD

In the **Report on Compact City Policies** compiled by **OECD** in June 2012, Toyama City's compact city policy was recognized as that of one of five advanced cities.

SE4ALL

Toyama was the only Japanese city among the 13 international cities/regions that joined the **Global District Energy in Cities Initiative** of the **UN's SE4ALL** (Sustainable Energy for All) in September 2014.

Mayor Mori of Toyama City, Kandeh Yumkella UN secretary-general's special representative for SE4ALL and Ambassador Masahiko Horie for global environment affairs, Ministry of Foreign Affairs

100RC (Rockefeller Foundation)

In December 2014, Toyama became the first Japanese city selected as one of **"100 Resilient Cities,"** which strive to have strength to withstand and recover from natural disasters, crimes, terrorist attacks and other shocks and challenges faced by cities, by the 100RC, which is an organization established by the **Rockefeller Foundation.**

World Bank

On July 1, 2016, selected as a member city of the **City Partner Program** led by the **World Bank.**

International Cooperation of Toyama City

Technology・Know-how Toyama City and Companies

Tabanan, Bali, Indonesia

2014.3 Cooperation Agreements
(Renewable energy and Agricultural technology)
2017.11 Four micro hydropower generation systems installed
2019 Rice mill will be installed
2020 Waste management facility will be installed

Iskandar, Malaysia

2015.2 Cooperation Agreements
(Renewable energy and Public transport)
2018.2 Micro hydro and solar power generation installed

Semarang, Indonesia

2017.12 Cooperation Agreements
(Environment and Public transport)
2018.12 72 buses will be converted to CNG

Kota Kinabalu, Malaysia

2018.2 Cooperation Agreements
(Renewable energy and Agricultural technology)
2019 Off-Grid Project in Kobuni village will be completed

Klungkung, Bali, Indonesia

2017.11 Cooperation with Bali province and Udayana University
(Cooperation Agreements about Renewable energy)
2019 Irrigation pump by solarpower generation will be installed

Lebong, Indonesia

2019 The construction of Micro hydropower generation will start

Banda Aceh , Indonesia

Tebing Tinggi, Indonesia

Support request about renewable energy and rice mill machine

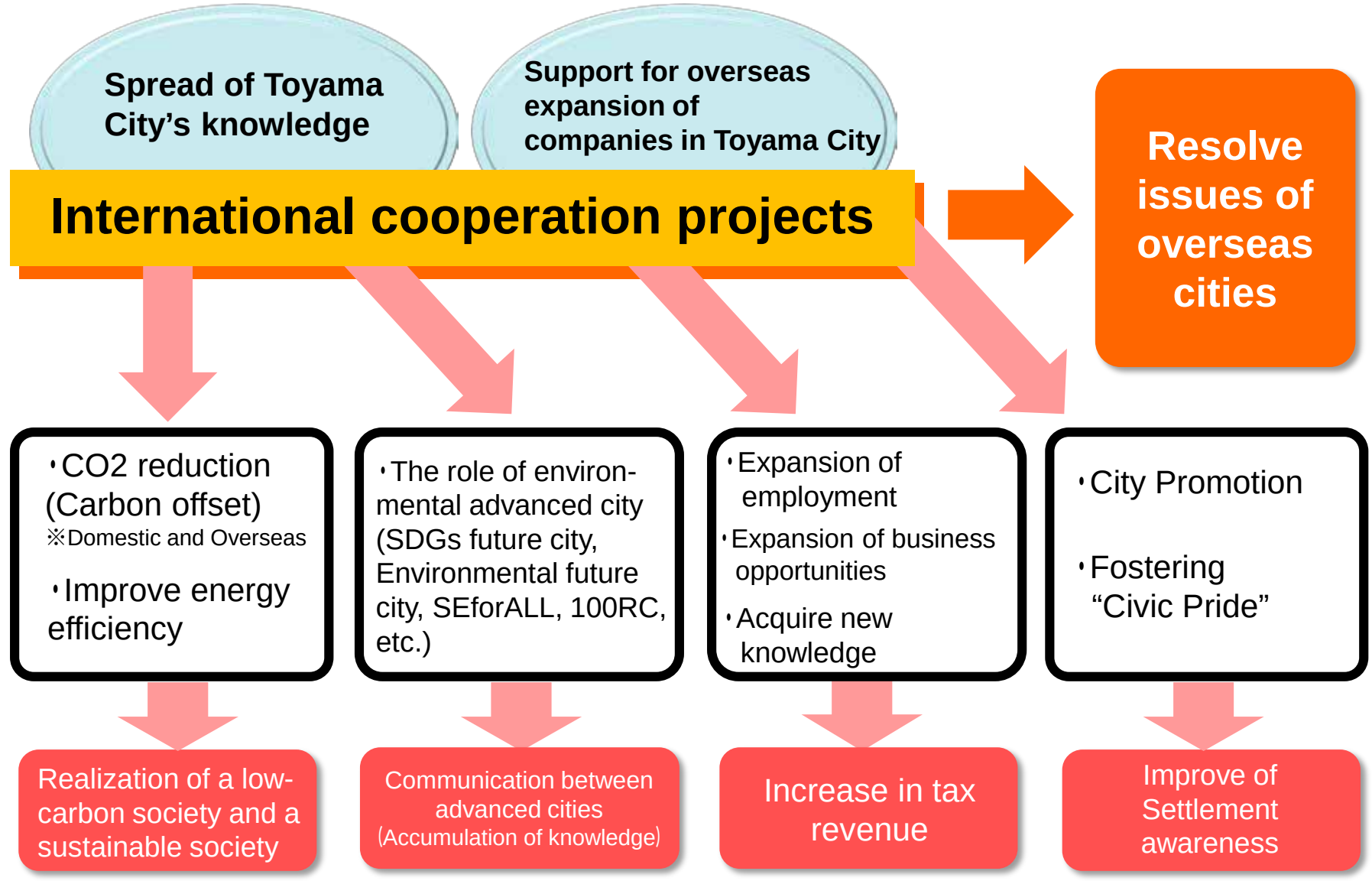
Letter of Appreciation from the Government of Indonesia

The contribution of Toyama city to Indonesia has been highly evaluated and a Letter of Application was presented from the Government of Indonesia.
Toyama city is the first Japanese local government to receive the same.

2018.9 Presentation of a Letter of Application at Ministry of Home Affairs of Indonesia

Representatives of related Local Governments attended to the Ceremony

Significance of international cooperation



City to City Collaboration Toyama and Bali

In March 2014, cooperation agreements for the implementation of “micro hydropower generation system” and “agriculture technologies (rice cultivation)” were concluded with Tabanan prefecture, Bali, Indonesia, to solve power shortage, decline of agriculture and other problems. In November 2017, four micro hydropower generation systems using agricultural water were completed by JICA project.


Cooperation agreement with Tabanan


Completion Ceremony


Cooperation agreement with Bali Province

In November 2017, technical cooperation agreements on environmental management were concluded between Toyama and Bali province.

Since then, various projects have started in Bali province with “City to City Collaboration” , and JCM project is one of them.

Outline of Project in Bali Province

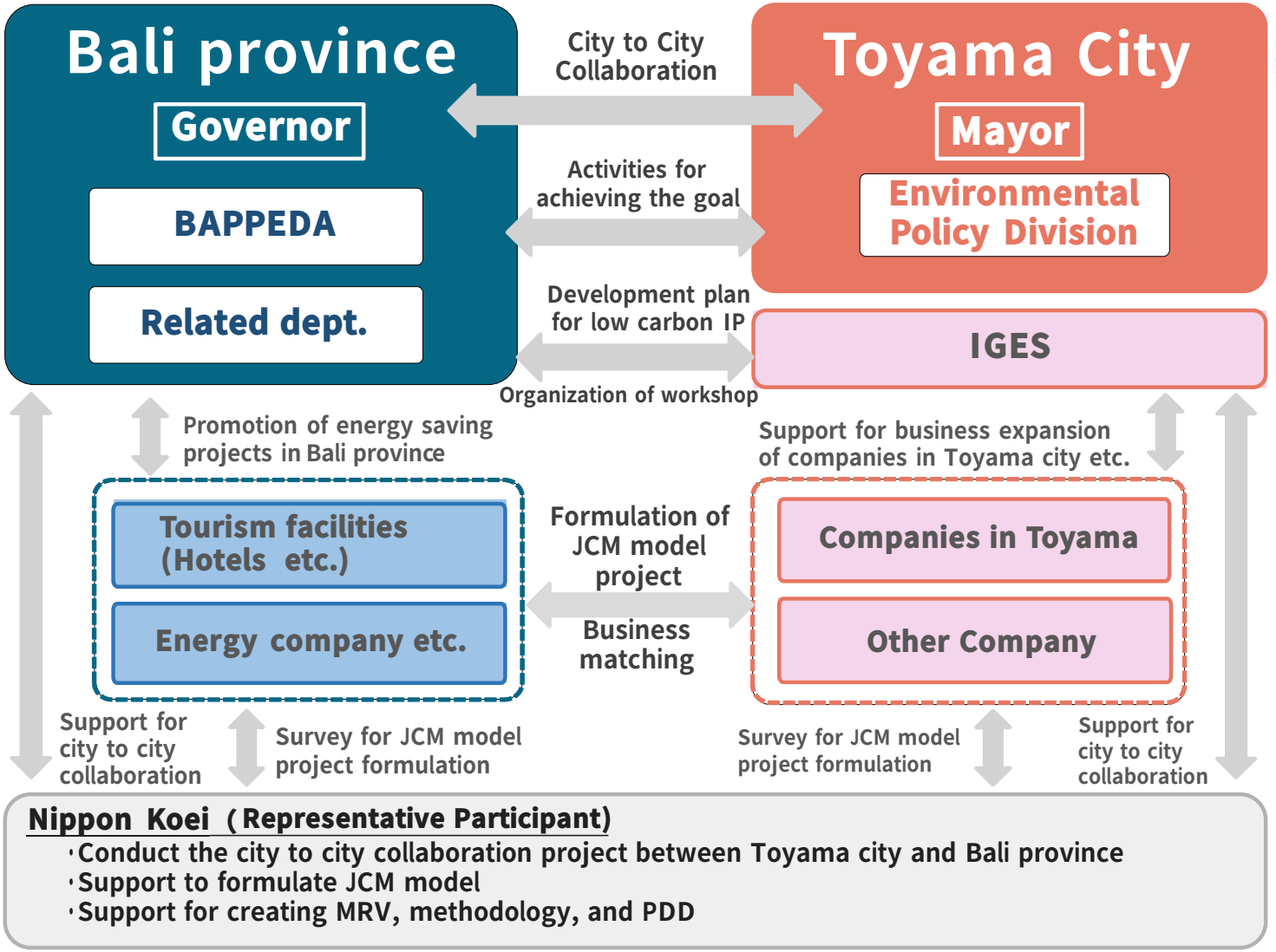
"Support on *Tourism Future City* of Bali Province through City-to-City Collaboration" (Representative Participant :Nippon Koei Co., Ltd.)

- In order to materialize a low carbon tourism city in Bali, the project will formulate energy saving / efficiency activities between Bali and Toyama entities.
- Especially, there are three projects considered as JCM model candidates.
  ① Energy saving project in tourism facilities (hotel etc.)
  ② Renewable energy project on additional power supply
  ③ Fuel switch project on public transportation system

Introduced technologies (example)

Activities	Outline	Image
Introduction of energy efficient equipment in tourism facilities	To consider energy saving/efficient in hotel facilities, such as air-conditioning system, hot water supply, boiler operation etc.	
Consideration of renewable energy project	To consider renewable energy project, such as small hydropower, solar power etc.	
Consideration of low carbon transportation system	To consider low carbon transportation system using fuel switch equipment (diesel oil/coal to CNG), urban transportation system etc.	

Implementation Structure



City to City Collaboration Toyama and Semarang

Semarang, Republic of Indonesia

Semarang, the capital of Central Java, was selected as one of The Rockefeller Foundation's 100 Resilient Cities (100RC), just like Toyama City. Semarang approached Toyama City for a cooperation agreement. And in 2017, with the support from the Ministry of the Environment, Toyama City became the first Asian 100RC to embark on a feasibility study to assess how Toyama City and its private sector can bring its technology and know-how to Semarang. The mayor of Semarang visited Toyama City to sign the cooperation agreement in December 2017.


Resilient City Summit 2016


Conclusion of a cooperation agreement (2017)

PIONEERED BY THE ROCKEFELLER FOUNDATION
100 RESILIENT CITIES

JCM Feasibility Study (2017)

1. Transportation
2. Renewable energy
3. Energy Saving

Apply for JCM subsidy and adopted

Feasibility Study (2018)

Energy Efficiency

Ongoing

Outline of Project in Semarang City

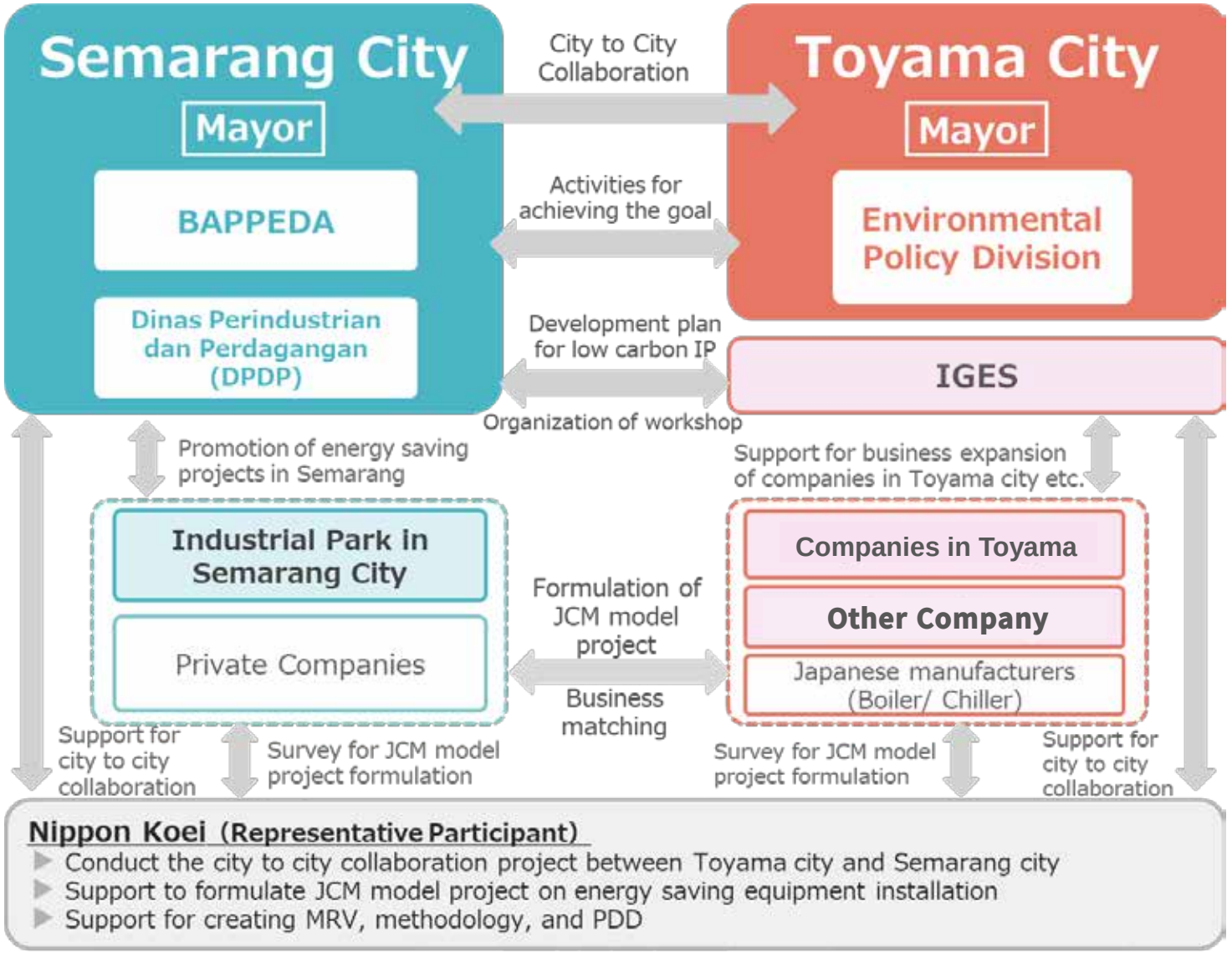
"Study for Low Carbon Society by the Introduction of Energy Saving Equipment in Industry Sector of Semarang City"
(Representative Participant :Nippon Koei Co., Ltd.)

- Project formulation for energy saving such as (1) **high efficiency boilers and fuel switch to gas** and (2) chillers are to be promoted in Semarang industrial parks
- Achievement of low carbon industry sector in Semarang City **utilizing experiences of Toyama** with the policy measures of Environment City
- Establishment of energy saving model factory in Semarang through JCM model project

Introduced technologies（example）

Equipment	Outline	Image
High-efficiency OT boiler	▶ **efficiency: approx. 95%** ▶ Controlling multiple boiler, optimized load operation ▶ Co-benefit (low NOx, CO), low noise ▶ **Fuel Switch from Diesel Oil/Coal to Gas**	
High Efficiency Centrifugal Chiller	▶ Economizer cycle, small compressor ▶ Refrigerant: Zero Ozone-depleting coefficient, ▶ Automatic absorption, leakage prevention	

Implementation Structure



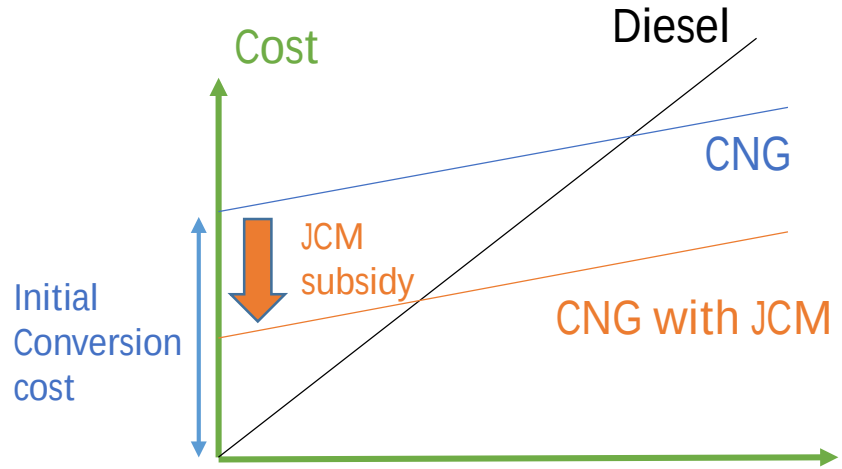
Adopted Project for JCM Subsidy 2018

"Introduction of CNG-Diesel Hybrid Equipment to Public Bus in Semarang"
(Representative Participant :Hokusan Co., Ltd.)

This is the first project in Indonesia as a public transport project of JCM, and also the first project for public sector.

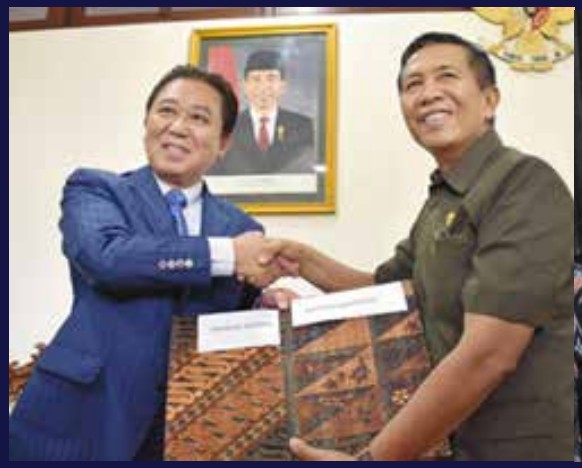
To reduce GHG emissions,
72 diesel buses owned by Trans Semarang are retrofitted from diesel engine to CNG&diesel hybrid engine.

	Bus	Fuel efficiency	Annual Mileage
Large size	25	2.0km/L Diesel	1,862,960km
Medium size	47	3.5km/L Diesel	3,906,595km



Conversion equipment

1 year Expected CO2 Emission Reduction
1,870 tCO2/year



Arigatou Gozaimasu = Terima kasih