



NIPPON KOEI



Project for Development of Low-carbon City through City-to-City Collaboration between Batam and Yokohama since 2015

Promotion of Green Building Regulation and Optimization of Renewable Energy Utilization in Industrial Parks



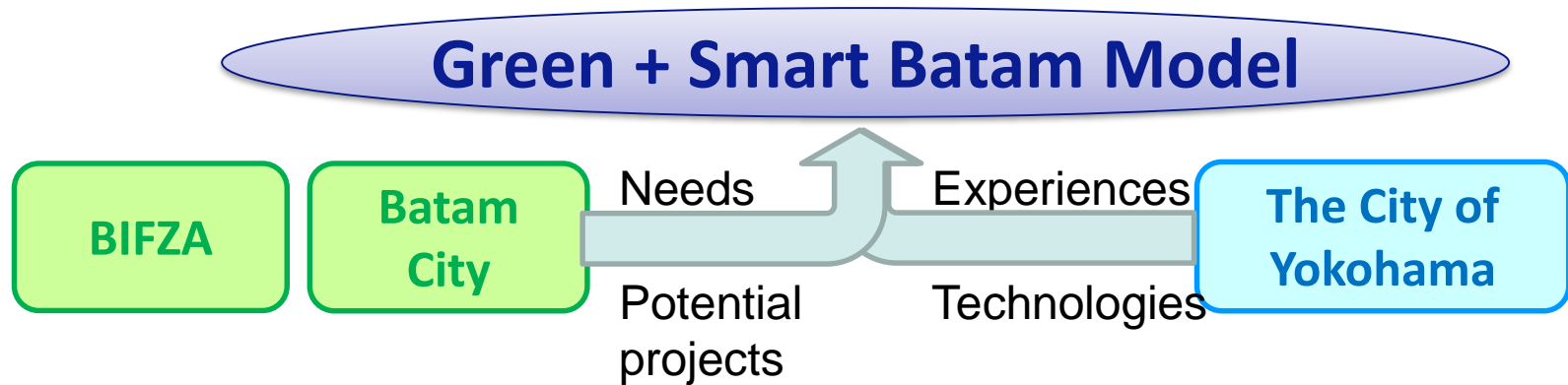
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City-to-City Collaboration

- Our projects aim to
 - support “*Green and Smart Island Batam*”
 - promote “*JCM project formulation*”



6 pillars for city to city collaboration

Green Planning

Green Water

Green Waste

Green Building

Green Industry

Green Transportation

6 pillars for city-to-city collaboration

Sector under city to city collaboration	Phase I: Building relationship and identification of collaboration needs		
	2015	2016	2017
	Initiation of city to city collaboration	Deepen of city to city collaboration	Project implementation under collaboration at planning scheme
6 pillars			
<u>Green Planning</u>	Information collection on needs of Batam side and discussion on collaboration framework	Development of 6 pillars of city to city collaboration for Batam's future vision as green city	<ul style="list-style-type: none"> • Development of green building regulation and standard for LED street light • Support of development of <i>water management MP</i>
<u>Green Water</u>	Sludge dehydrating FS		Water management FS
<u>Green Waste</u>	Spent bleaching earth treatment and bio-fuel production FS	Thermal Desorption Unit FS (Industrial waste management)	Thermal Desorption Unit project (proposed/not selected) Spent bleaching earth treatment FS Sustainability Evaluation: Waste Management
<u>Green Industry</u>			Solar PV system in industrial park (proposed/ not selected)
<u>Green Building</u>	Airport energy saving FS	Hotel energy saving FS Ferry terminal energy saving FS Hospital energy saving FS	Airport energy saving project (proposed/ withdrawn) Green building FS (Office building and Shopping mall)
<u>Green Transportation</u>			Smart LED street light FS

Activities in FY2016 - FY2018

Fiscal Year	Targeted Pillar	Contents of Project
FY2016	Green Waste	<ul style="list-style-type: none"> Introduction of thermal desorption unit into industrial waste disposal operators
	Green Building	<ul style="list-style-type: none"> Introduction of energy-saving air conditioning systems into hotels, ferry terminals, airport and hospitals
FY2017	Green Planning + Green Industry	<ul style="list-style-type: none"> Introduction of smart LED street lights and smart PV system into industrial parks Standardization of LED street lights in Batam
	Green Planning + Green Building	<ul style="list-style-type: none"> Introduction of energy-saving air conditioning systems into shopping malls and office buildings Drafting green building regulation in Batam
FY2018	Green Planning + Green Building	<ul style="list-style-type: none"> Development of green building regulation (PERDA) in Batam (the third one in Indonesia)
	Green Planning + Green Industry	<ul style="list-style-type: none"> Maximization of renewable energy utilization in a core industrial park (by introducing energy management system) Promotion on regional use of renewable energy in core industrial parks (by introducing digital grid)

Major events

Site Tour of Smart Green Park in Japan
(Oct 2016) ↓



Site Tour of Plastic Recycling Facility in Japan (Jan 2017) ↓



Discussion with
Industrial Park
↓ (Nov 2017)



↑ Kick-off
Seminar
(Oct 2017)



↑ Courtesy Call
at Yokohama
(Dec 2017)



Final Workshop
↓ (Jan 2018)



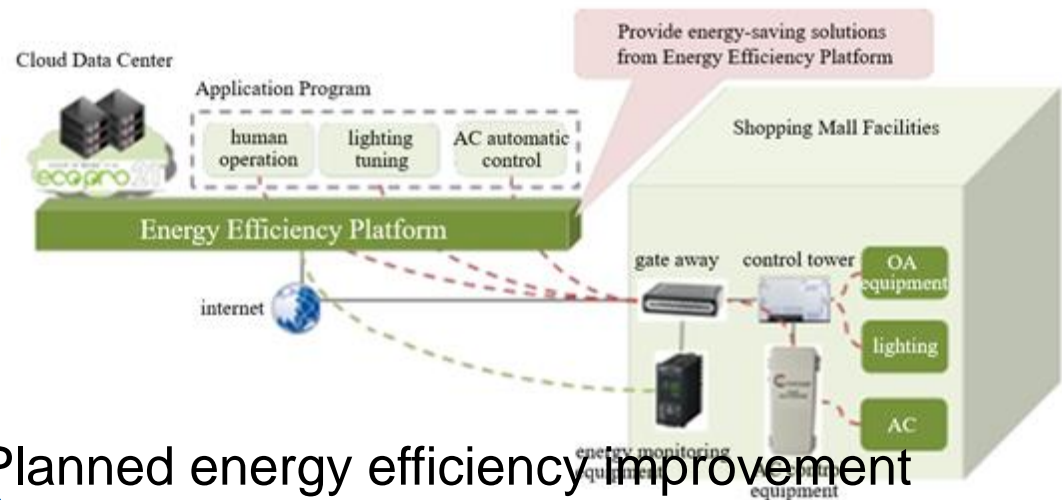
JCM project formed in FY2017 (1)

Items	Description
Project Title	Energy Saving for Air-conditioning Utility System in Shopping Mall by High-efficiency Control Equipment
Leading low-carbon technologies	<ul style="list-style-type: none"> - Monitoring and visualization system - Equipment and operational improvement - High-efficiency centrifugal chiller
Emission reduction	Approx. 1,300 tCO2/year
Tech Replicability	Very high (more than 2,500 buildings in Japan)

Successfully adopted



Mega Mall Batam Center



Planned energy efficiency improvement

JCM project formed in FY2017 (2)

Items	Description
Project Title	Installation of Smart LED street lights and PV solar power system into Batamindo Industrial Park
Leading low-carbon technologies	<ul style="list-style-type: none"> - Smart control system for LED street lights - PV with Sun tracking system (1.5 MW)
Potential emission reduction	Approx. 3,400 tCO ₂ /year

**To be proposed
in 2018**



Batamindo Industrial
Park



Planned LED lights (with smart control)
and PV module

JCM Feasibility study in FY2018

Items	Description
Project Title	Feasibility study on Maximization of PV Power Generation by Energy Management and Demand Response in Industrial Parks
Leading low-carbon technologies	Installing technologies/system regarding "Energy management" and "Demand response".
Potential emission reduction	Approx. 3,200 tCO ₂ /year



Target Industrial Park
(Batamindo)



Planned equipment (PV)

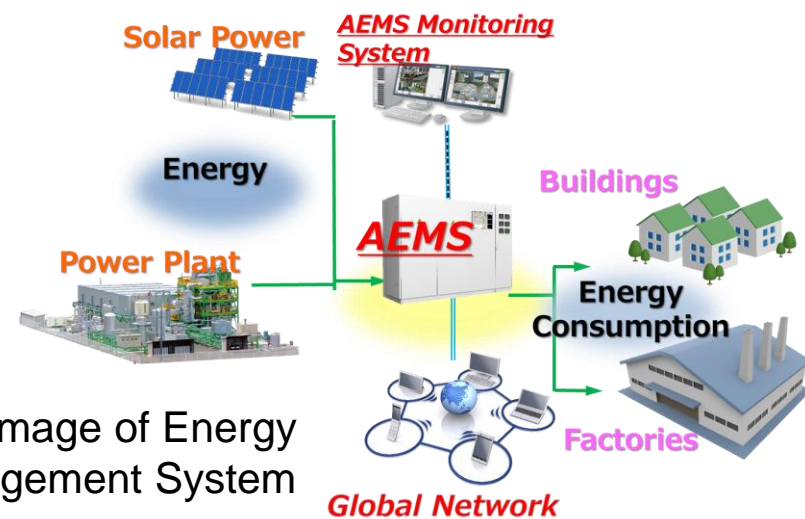
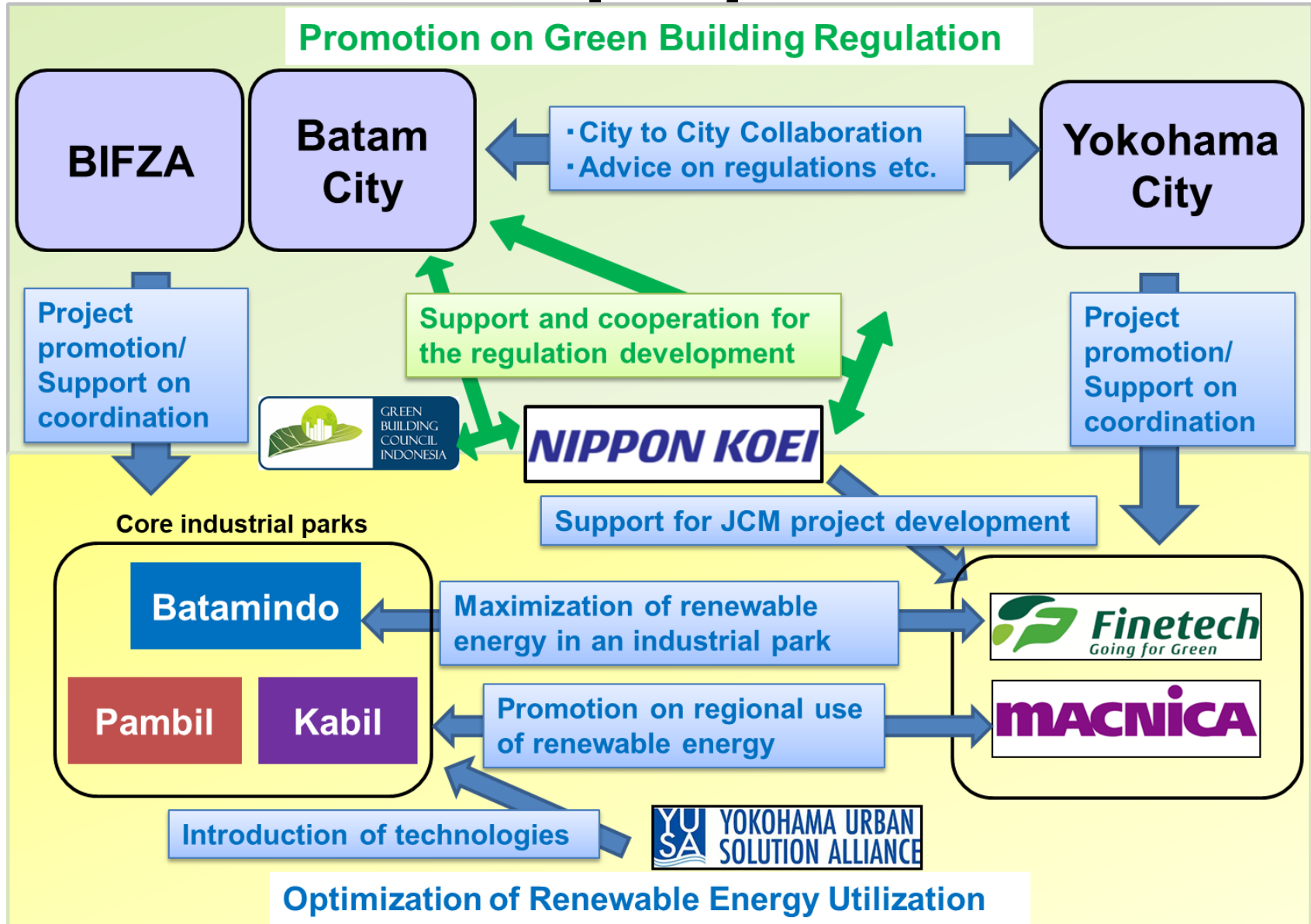


Image of Energy
Management System

Structure of the project



Way forward

3 Approach

		Phase II: Realization of Green & Smart Island Batam		
	Scope \ FY	2018	2019	2020
Green Industry	BATAMINDO Industrial Park (One of largest core industrial parks)	<u>JCM Model Project Smart LED+PV(1MW)</u> (to be proposed)	<u>JCM Model Project</u> •Maximization of PV power generation •Control of thermal power generation •Demand Response	<u>JCM Model Project</u> Regional optimization of energy utilization in Batam
	KABIL/PAMBIL Industrial Park (Core industrial parks)	<u>FS</u> • Maximization of PV power generation by energy management & demand response • Optimization of energy utilization among industrial parks		
	Other industrial parks + Large-scale facilities			
Green Building	Green Building (Energy saving in buildings)	<u>JCM Model Project</u> Energy saving in a shopping mall (Adopted)	<u>JCM/BtoB</u> Energy saving in complexes	
Green Planning	Support of Yokohama City	Development of green building (GB) regulation → Issuance of GB regulation (Perwal) → 1) Promotion of GB regulation 2) Capacity building for GB assessors Development of GHG emissions reduction plan		