

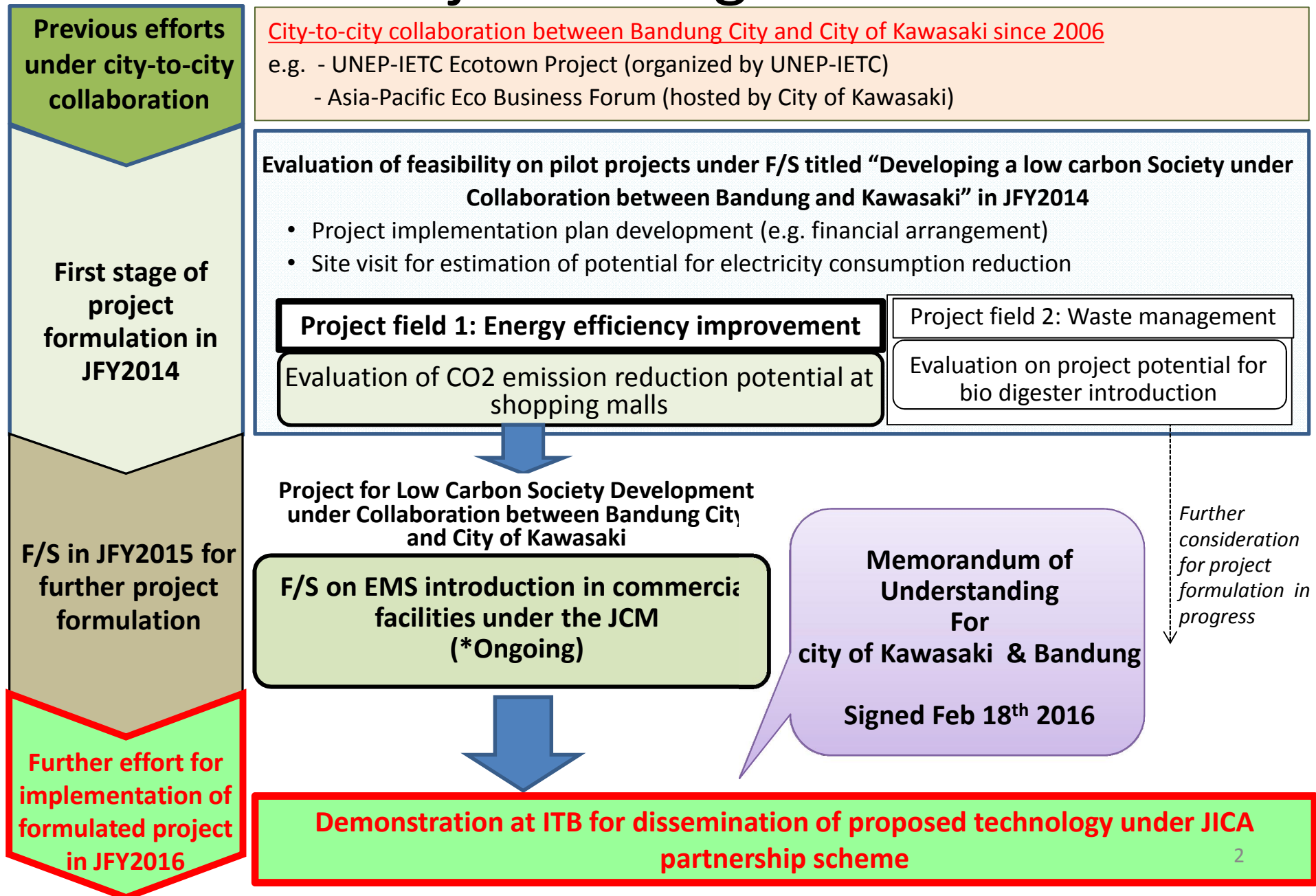


Low Carbon Society Development under Collaboration between Bandung City and City of Kawasaki: Introduction of EMS to Commercial Facilities under the JCM

Reporting Session for JCM Feasibility Studies in FY2015
Feb 22nd 2016

Institute for Global Environmental Strategies (IGES)
City of Kawasaki
Oriental Consultants Global Co., Ltd.
Kowa Company Ltd.
Tokyo Rectifier Company Ltd.


Project background

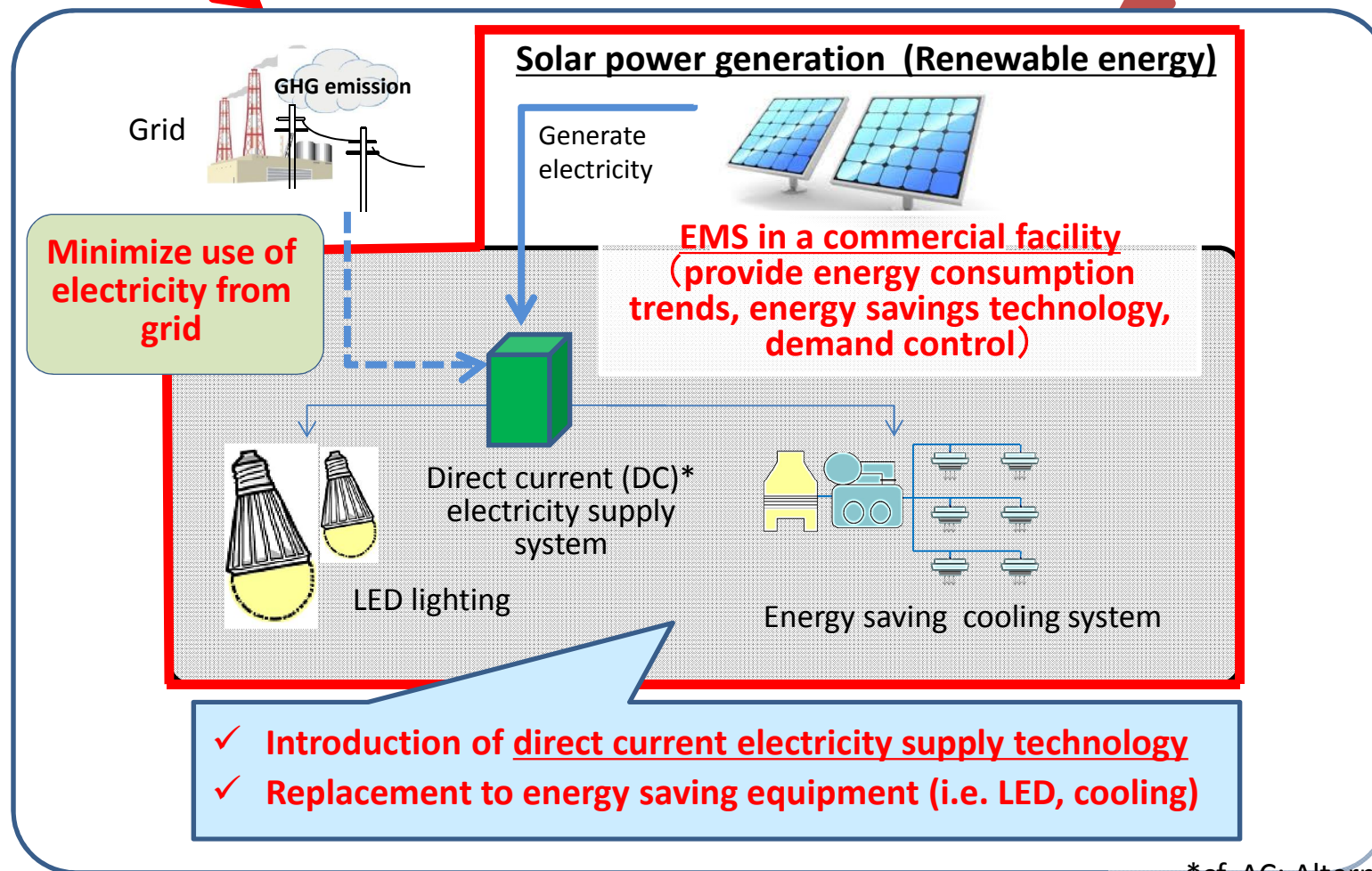


Overview of project activities

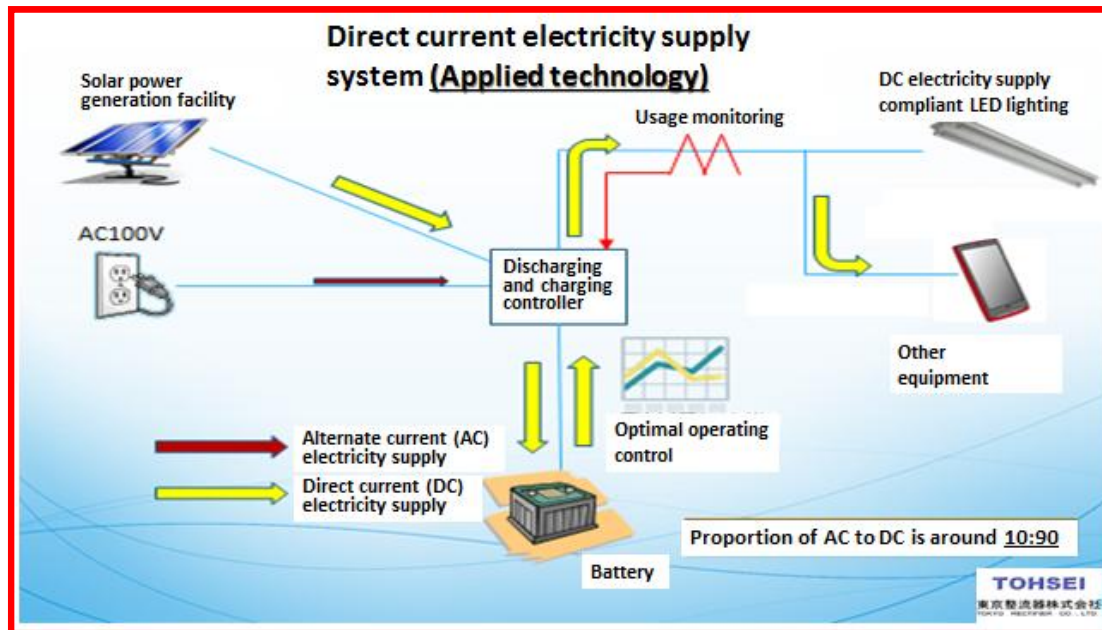
 **City of Kawasaki**
City-to-city collaboration with low carbon technologies from Kawasaki City

Joint project implementation by Japan and Bandung sides under city-to-city collaboration between City of Kawasaki and Bandung City

 **Bandung City**
Energy efficiency improvement in buildings under the city's climate change action plan



Overview of Direct current electricity supply technology

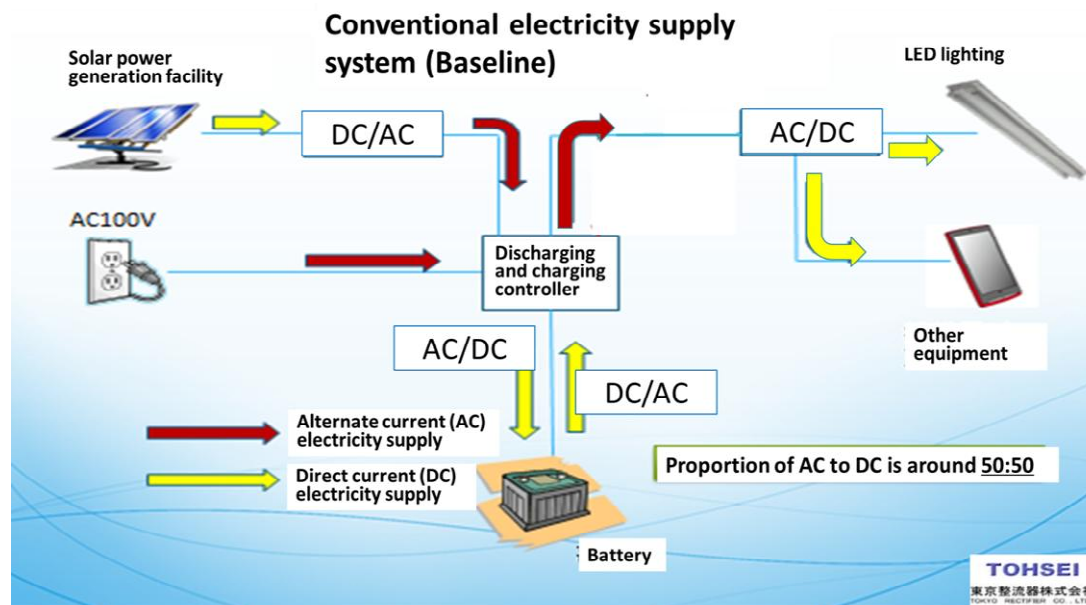


Direct current electricity supply system with EMS and solar power generation

i.e. Electricity supply from solar power generation panels to energy saving equipment with minimized number of DC/AC and AC/DC conversion in system (Electricity supply with minimized electricity loss)

- LED lighting
- Cooling system
- Battery

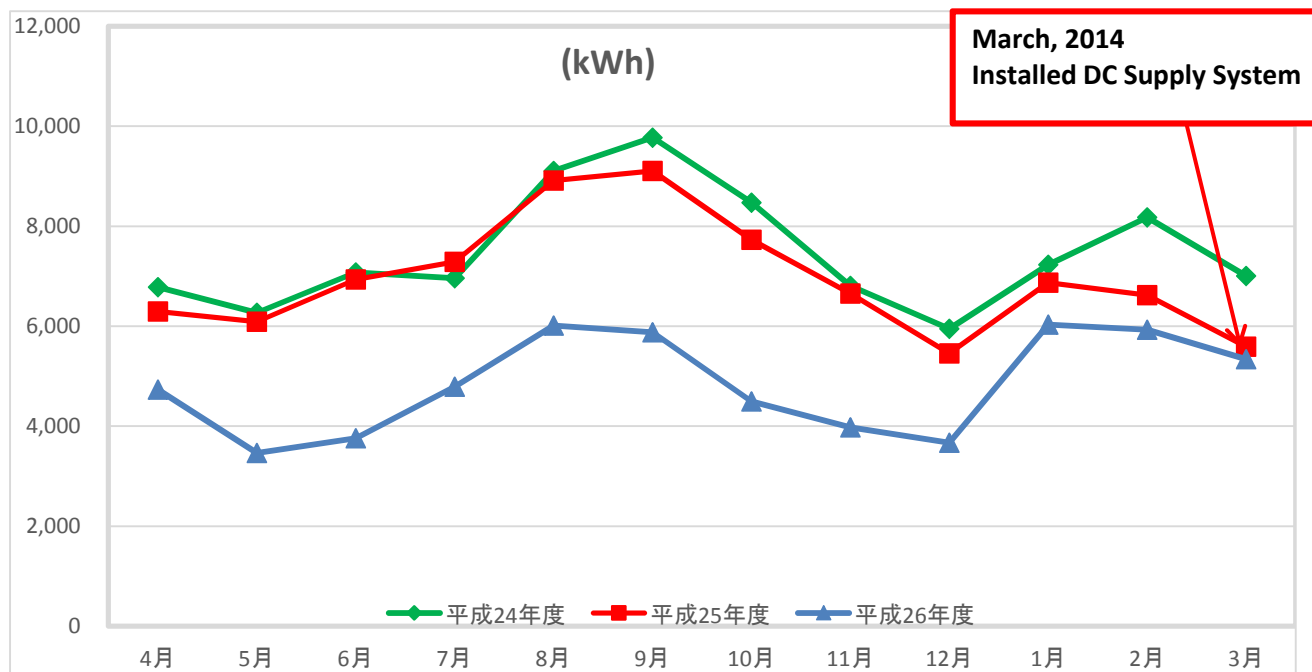
→ Overall energy saving both at individual equipment and electricity supply system levels



Projects on direct current electricity supply in Japan

Project example <BANK OFFICE>

Comparison of Annual Electric Consumption at YACHIYO BANK, NOBORITO BRANCH



電気使用量	April	May	June	July	August	September	October	November	December	January	February	March	Total	Last Year Comparison
2012 - 2013	6,780	6,269	7,077	6,962	9,104	9,768	8,474	6,804	5,949	7,230	8,179	7,006	89,602	
2013 - 2014	6,294	6,089	6,936	7,285	8,915	9,104	7,727	6,654	5,453	6,871	6,622	5,590	83,540	7%
2014 - 2015	4,731	3,462	3,759	4,788	6,014	5,880	4,494	3,977	3,667	6,032	5,930	5,342	58,076	30%
2015 - 2016														

Installed DC Supply System

Between 2015.9.21 ~ 2016.1.27

Shopping Mall



Government Bldg



Manufacturer



Manufacturer



Manufacturer



Bank



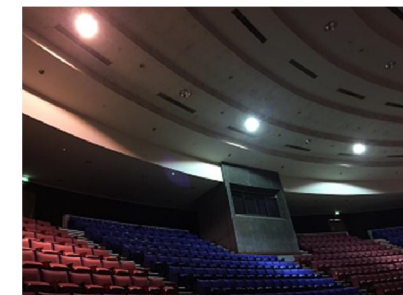
Hotel



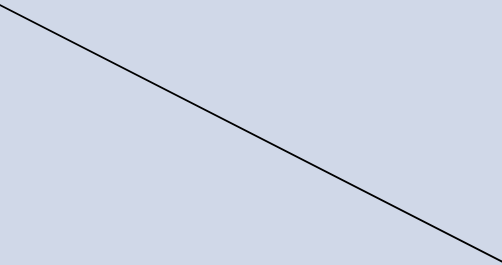
University



Conference Hall



Result of consultation with building/ facility owners in Bandung in 2015 JFY

Site name	Consultation result	Challenges for project formulation for project formulation under MOEJ subsidy scheme	1) Investment cost 2) Estimated electricity consumption reduction amount 3) Estimated GHG emissions reduction amount
1. Hotel	Hotel did not agreed on investment for project formulation.	Necessity in investment by BTC side	1) Around 362 thousand USD 2) 176,916kWh/year 3) 144t-CO2/year
2. Textile manufacturer	Manufacturer and MOEJ study team sides did not agreed on condition for project formulation including payout period.	a. Long project payout period b. Difficulty in acquiring financial documents	1) Around 2,966 thousand USD 2) 1,303,900kWh/year 3) 1,061t-CO2/year
3. Bank	Project formulation at the Bank is expected to be started after MoU between City of Kawasaki and Bandung City is signed in February 2016.	The MoU has not yet been signed. (To be signed in Kawasaki on 18 February 2016.)	

Result of consultation with building/ facility owners in Bandung in 2015 JFY

Site name	Consultation result	Challenges for project formulation for project formulation under MOEJ subsidy scheme	1) Investment cost 2) Estimated electricity consumption reduction amount 3) Estimated GHG emissions reduction amount
4. University	MOEJ study team and university will elaborate to formulate project under JICA scheme.	/	1) Around 500 thousand USD 2) 134,730kWh/year 3) 120.6t-CO2/year
5. Manufacturer	MOEJ study team will elaborate to formulate project with Manufacturer under a scheme other than MOEJ subsidy scheme.	Small amount of investment cost	1) Around 250-260 thousand USD 2) 100,800kWh/year (Provisional) 3) 82t-CO2/year (Provisional)
6. Manufacturer	MOEJ study team will elaborate to formulate project with Manufacturer under a scheme other than MOEJ subsidy scheme.	Small amount of investment cost	1) Around 100 or 127 thousand USD 2) 89,740 or 100,800 kWh/year 3) 73 or 82 t-CO2/year

Research result of MRV methodology

<Methodology>

With reference to the Joint Crediting Mechanism Guidelines for Developing Proposed Methodology) (JCM_ID_GL_PM_ver01.0) a draft MRV methodology was developed.

- Direct current supply system:

MN_AM001 Installation of energy-saving transmission lines in the Mongolian Grid

- LED lightings

ID_AM005 Installation of LED lighting for groceries

- Air-conditioning:

ID A004 Installation of Inverter-Type Air Conditioning System for Cooling for Grocery Store (Ver 1.0)

<Eligibility Criteria>

Number	Criteria
Criterion 1	The direct current supply systems and a solar power generator will be used
Criterion 2	Power supplied by the solar power generator will be used as the alternative for grid-based electricity
Criterion 3	Electricity consumed, watts, ampere and consumed length of time, electricity consumed by the lighting fixtures and the air-conditioners, electricity purchased from the grid, and the solar power generator are all factors that can be monitored using the energy management system

<Reference scenario>

A system using the conventional distribution switchboard as an alternative for the Direct Current Supply System, non energy efficient appliances and no solar power generator.

Regulation (s) and Policies

The EMS will contribute to

- 1) Indonesia's energy mix target for renewables
23% in 2025 31% in 2050
(reference: KEN by MEMR, 2014)
- 2) Solar based power generation target of **7GW** by 2020.
(reference: RUPTL 2011-2020 by PNL, 2011)

Others

- 1) SNI (Indonesian National Standard) Certification: Required for the Direct Current Electricity Supplier
- 2) Green Building Certification: The Mayor has defined all new infrastructure should be certified as "green buildings" when applying for the "Izin Mendirikan Bangunan (IMB)" (city building certification)
- 3) Finance Ministry implements tax and customs law for renewable energy (2010 PMK.011-21) gives benefits to renewable deployment - Tax depreciation for 30% of the investment amount, shorter depreciation period for assets, no customs, preferential tax treatment, etc.

Capacity Building to the Host Country

February 17th -19th 2016

Nine representatives including the Bandung Mayor mission
Kawasaki hosted event

- Kawasaki International Eco-Tech Fair
- Kawasaki Asia-Pacific Eco-Business Forum
- Information exchange “energy savings initiatives by the government”
- Information exchange “public private partnerships for hydrogen energy”
- Site visit to energy management system installed site

Conclusion and Next Steps

Bandung and Kawasaki City have signed an MOU on low carbon and sustainable city development which will expand the current collaboration. Am looking for the next source of funding for implementation of the projects as a result of this Feasibility Study

Terima kasih banyak!