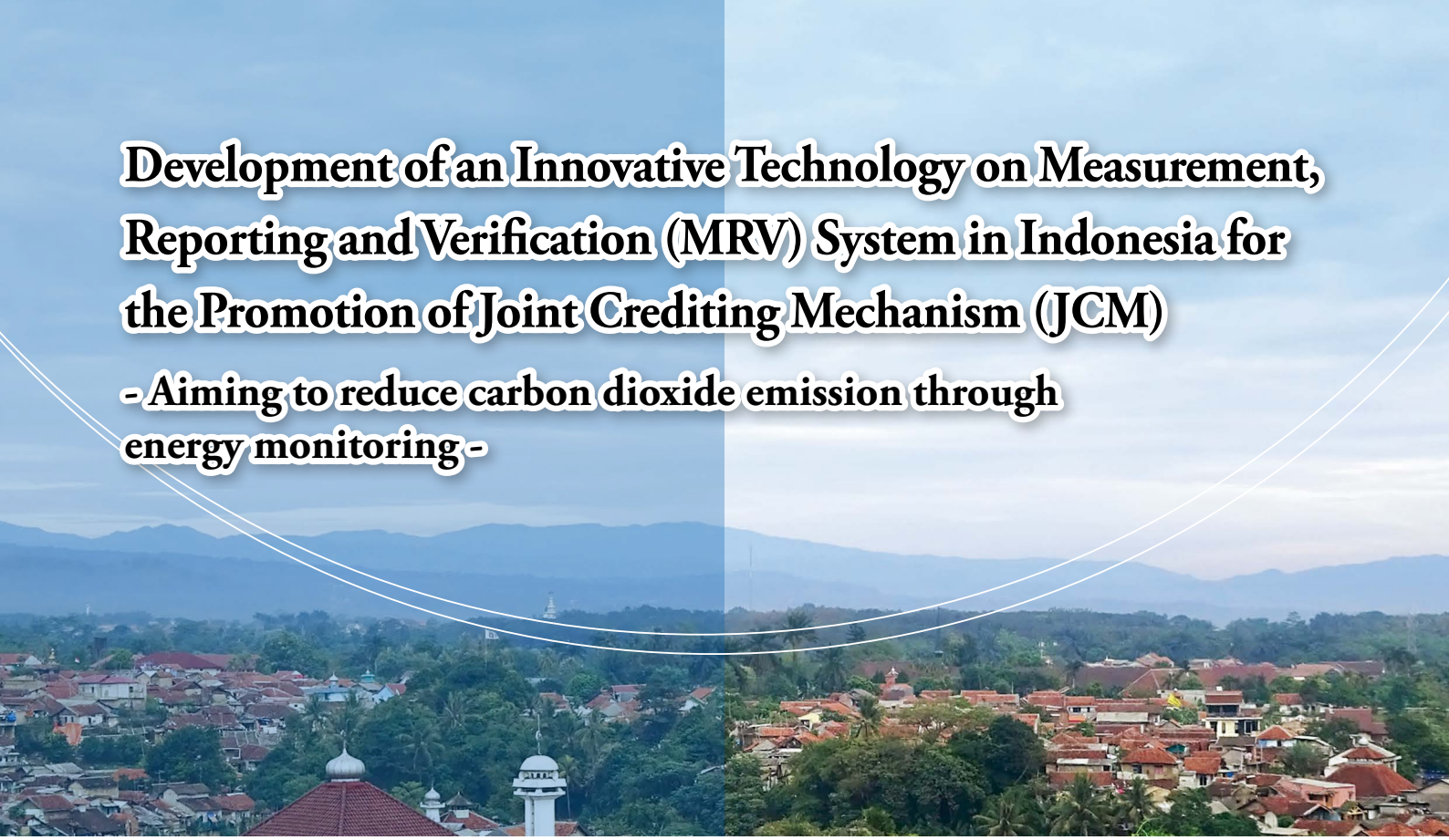


Development of an Innovative Technology on Measurement, Reporting and Verification (MRV) System in Indonesia for the Promotion of Joint Crediting Mechanism (JCM)

- Aiming to reduce carbon dioxide emission through energy monitoring -

Introduction

The importance of reducing energy consumption and its role on mitigating future carbon dioxide emission has become a significant topic of importance for both researchers and policy makers. To promote effective policy measures, there is a need to understand the current energy consumption pattern and formulate mechanism for improvement. This can also assist in promoting low carbon measures as advocated by the international community.

To promote Joint Crediting Mechanism (JCM) and related Measurement, Reporting and Verification (MRV) project, National Institute for Environmental Studies (NIES) has been entrusted by Ministry of the Environment, Japan, since 2014 fiscal year to conduct a research project in Indonesia. The project focuses on energy consumption using a real time monitoring system developed by Fujitsu Limited, followed by research on the application of monitored data to enhance mitigation actions.

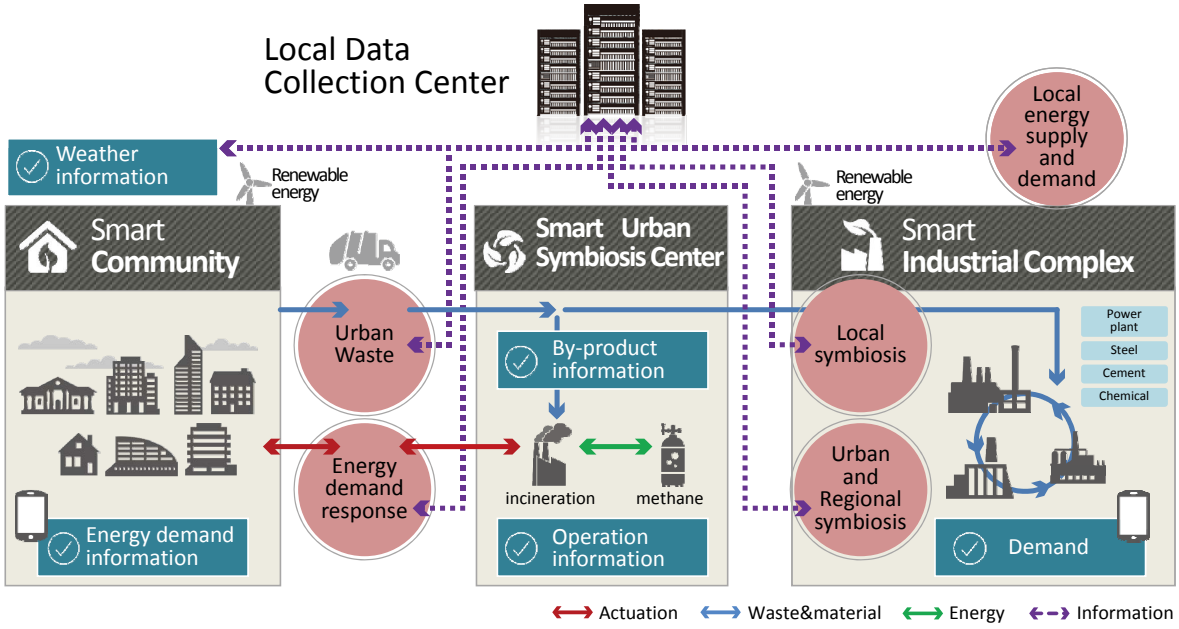
Overarching Objective

1. Building accountability and transparency in carbon emission management through an Innovative MRV system.
2. Visualization of energy usage to bring awareness and thus behavioral and technological change in the society.
3. Assist in meeting the requirements for emission reduction under the global climate framework.

Smart symbiosis initiatives for Eco-City innovation

Smart ICT network can promote and complement the synergetic network functions among stakeholders through;

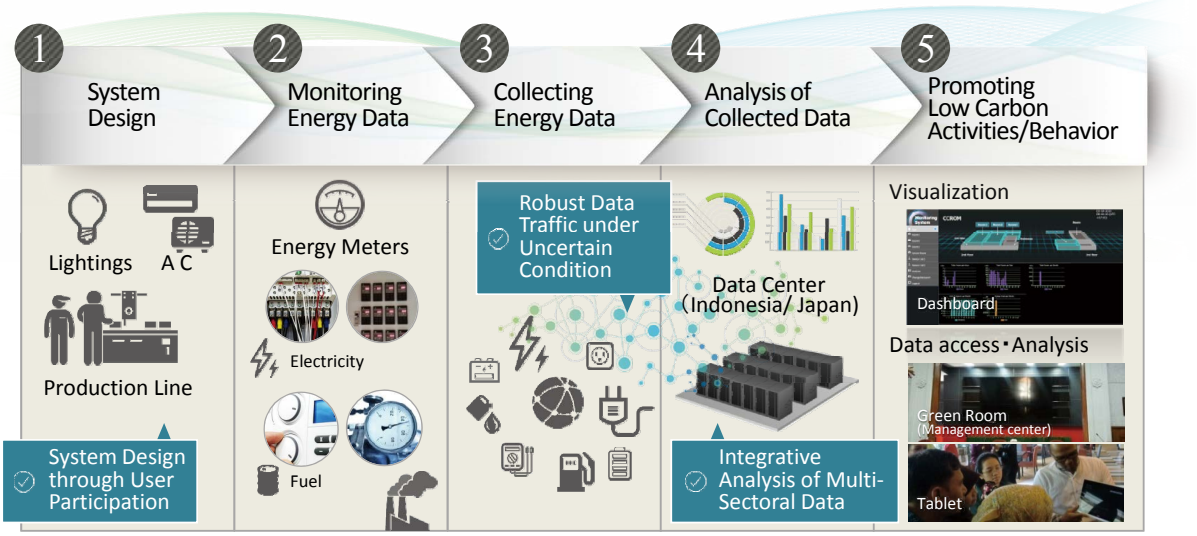
- Energy consumption demand control system
- Providing information support for optimizing local and regional material and energy circularization
- Providing smart industrial complex supported by synergetic information network among industries.



Ensuring transparency by developing an energy informational framework at a local level and identifying mitigation options

▶ Develop an ICT framework for an urban low carbon monitoring system in Asia

- Utilize and advance internet security technologies effectively
- Manage and protect the data transboundarily and while in transit
- Enhance the data recovery potential
- Strengthen data interoperability for cross analysis between different types of data



▶ Devices for monitoring energy consumption

1 Install current and voltage sensors in distribution board of houses and offices

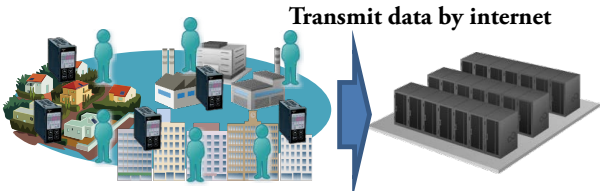
Both old and new distribution board exists in Indonesia

Sensor (Current・Voltage)

2 Gather observed data and report through internet

Green Terminal: Data could be saved if there is some technical problem with the monitoring

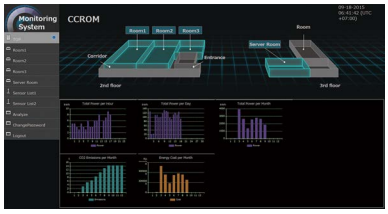
3 Arrange and analyze the data gathered from the server



Measure the energy consumption in houses, offices and factories

Accumulate data in server

4 Promote energy-saving action by visualizing real-time energy usage

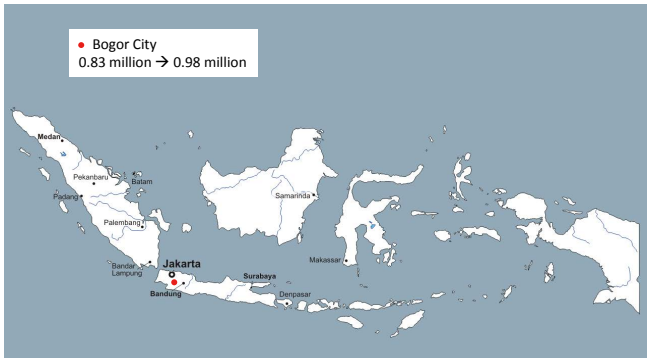


Effective energy-saving method could be identified by monitoring real-time consumption of each building and room

Pilot monitoring site – Bogor City, Indonesia

Bogor city is located in Java Island, Indonesia, about 60 km south to Jakarta (the capital). The population of Bogor city is around 1 million. The city is currently facing a population increase with corresponding increase in energy consumption.

Monitoring of electricity consumption is underway in several houses, offices, hotels and cafe in the campus of the Bogor Agricultural University (IPB) from 2014. Residents, office users and hotel managers are able to monitor the real-time electricity consumption by tablet, and identify the excess consumption due to human behavioral patterns. Specialists propose effective energy-saving schemes by analyzing the accumulated data.



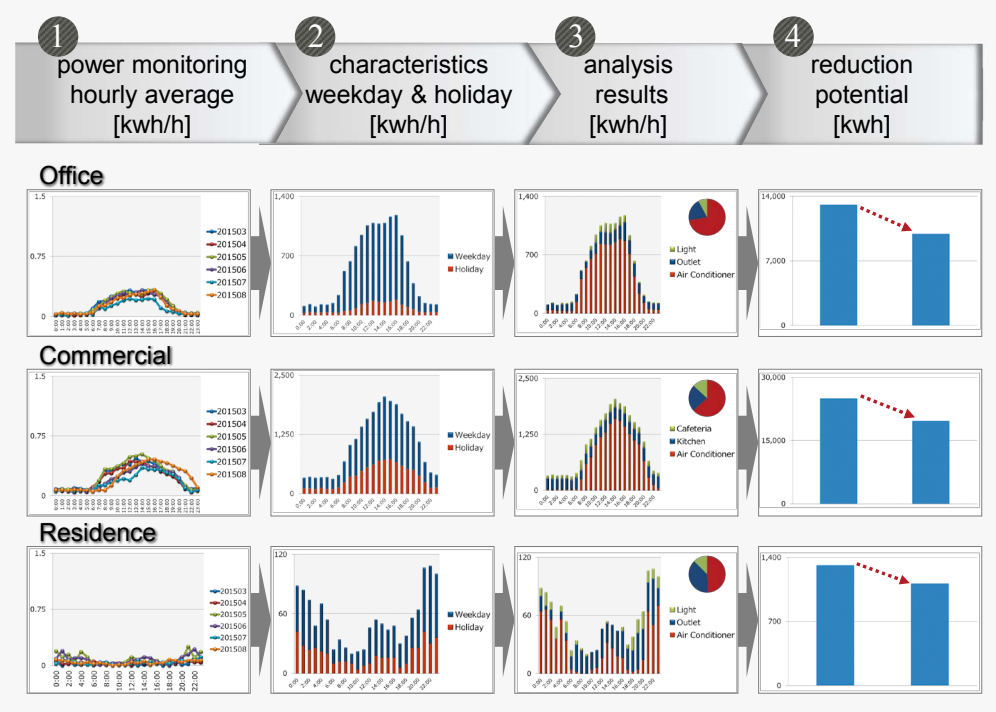
Location of Bogor City, Indonesia

The numbers in the map show the population change of the city from 2004 to 2014 (Source: Bogor City)

Monitoring results in progress and primary analysis

The initial results from the pilot monitoring site provided some information on the trends in energy consumption in Bogor.

- Energy consumption during daytime and night time varied in offices and residences. There was also variation in the consumption of electricity during weekdays and weekends. Energy consumption during night time was high in residences and low during morning hours during weekdays. Whereas, energy consumption was high in offices during daytime and on weekdays and less during night time.
- One of the major power consuming utility in offices and residences was the air conditioners. Hence, one recommendation is to preset the temperature proportionate to energy saving settings.
- If we take appropriate measures we can reduce energy consumption proximately by 20%.



Project Partners

National Institute for Environmental Studies (NIES), Japan
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Institute of Global Environmental Strategies (IGES), Japan

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