ISAP(International Forum for Sustainable Asia and the Pacific) 2014

International Climate Regime in 2020 and Initiatives in Asia:

International Collaborative Research for Innovative Modelling and Monitoring for Low Carbon Society and Eco-Cities in Indonesia

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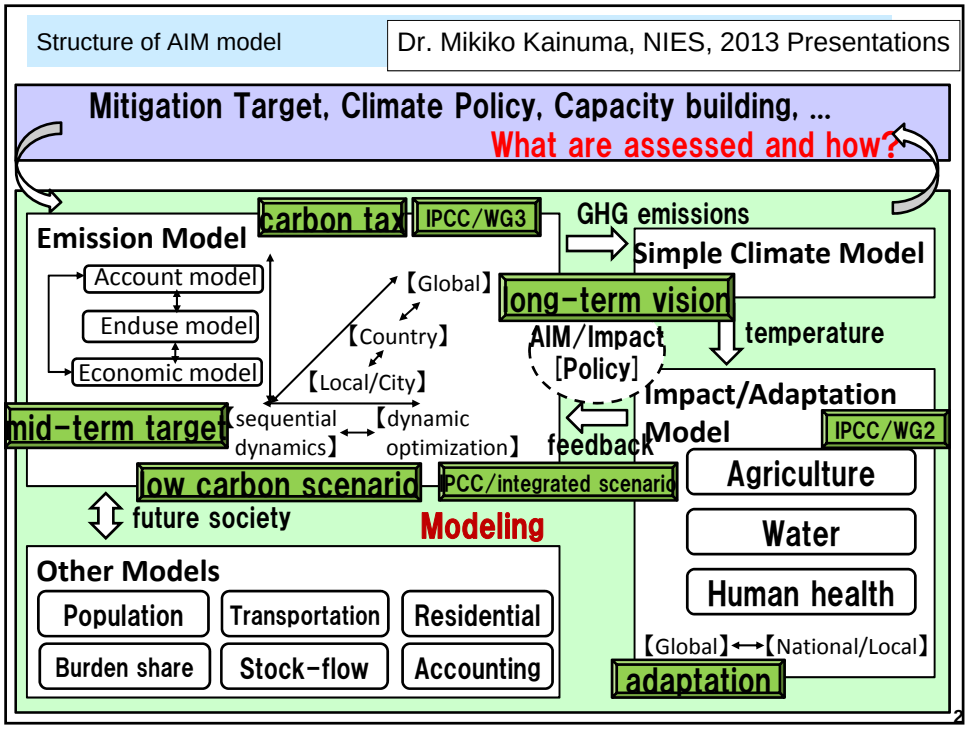
Structure of AIM model

Dr. Mikiko Kainuma, NIES, 2013 Presentations



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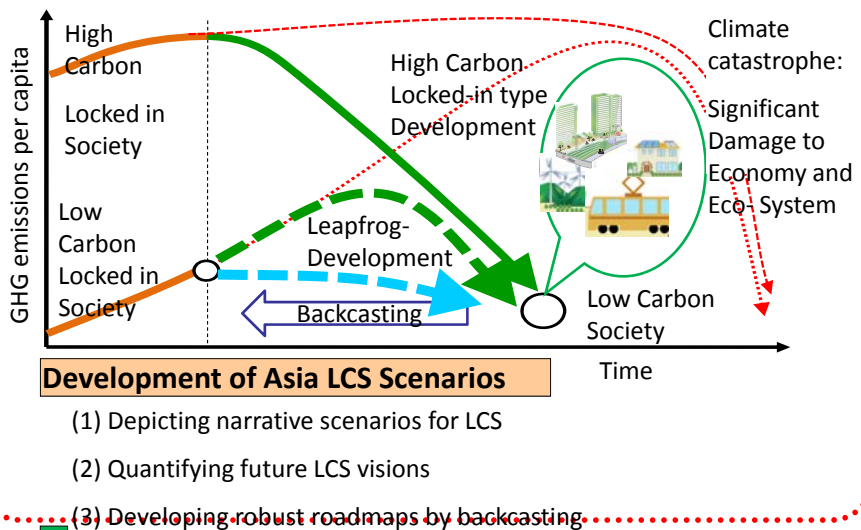
Scenario Approach to Low Carbon Society in Asia



Development of Asia LCS Scenarios

(1) Depicting narrative scenarios for LCS

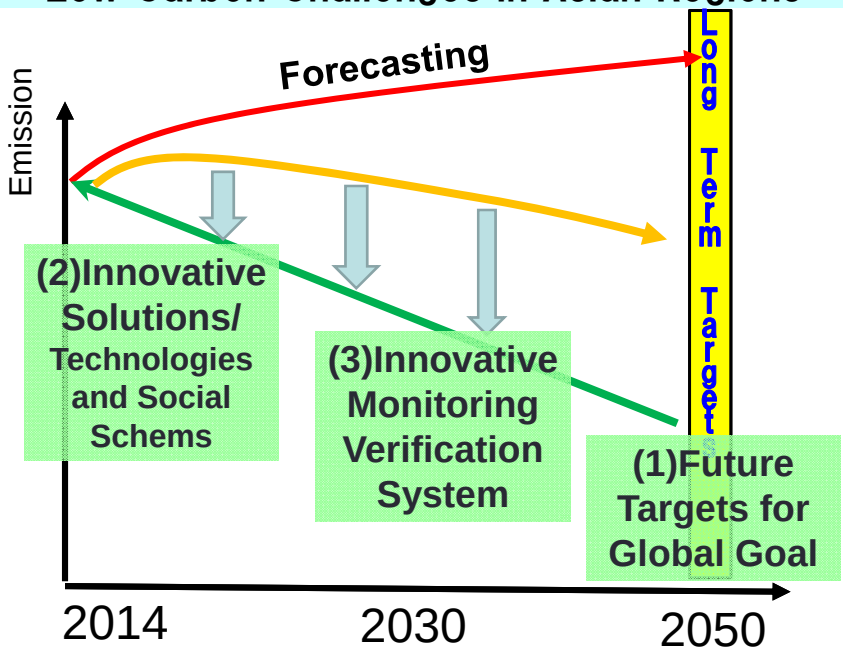
(2) Quantifying future LCS visions

(3) Developing robust roadmaps by backcasting

Policy Packages for Asia LCS

Funded by Ministry of Environment, Japan (GERF, S-6) and NIES

Low Carbon Challenges in Asian Regions



Development of Innovative MRV System for Eco Industrial Parks and Eco Cities FY2014-2018

Smart monitoring system for energy and material flow will provide the fundamental low carbon management information and provide innovative industrial network management solutions

【Policy Outcome】

・Smart Reporting/ monitoring/ verification system to realize Innovative production and consumption system through energy and material network management thorough industrial and energy symbiosis

- Collaboration partner system innovative Japanese eco-towns, future cities and eco-model cities
- Demonstration eco-industrial districts and cities for innovative centers of green production and consumption

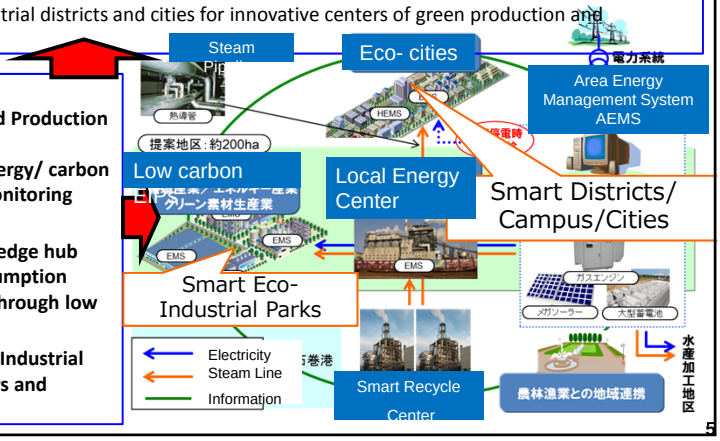
【Research Targets】

○Green Consumption and Production Synergy Network monitoring system for energy/ carbon flow and material flow monitoring network system

○Low carbon data knowledge hub

○Green production consumption design with value chains through low carbon and circularization

○Low carbon Eco-Energy Industrial Park monitoring, indicators and verification model



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AGENDA

(1) Integrative modelling research for low carbon society

(2) Urban and regional eco-city design model and simulation research

(3) Innovative monitoring and regional evaluation system research

6

(1) Integrative modelling research for low carbon society

Assessment of mitigation technologies and financial policies for low carbon development are jointly developed particularly focusing in the fields of agriculture, forestry, energy and land use sectors in Indonesia

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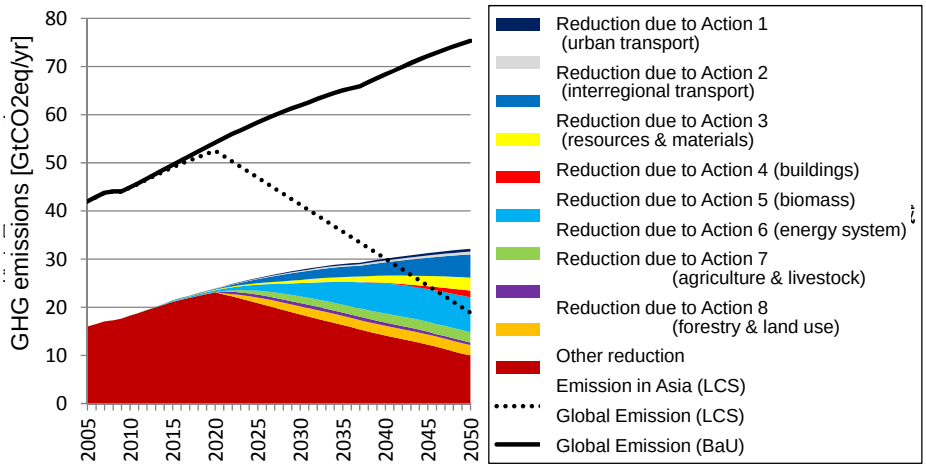
GHG Emissions in Low Carbon Asia



By Dr. S. Fujimori (NIES)

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AGENDA

(1) Integrative modelling research for low carbon society

(2) Urban and regional eco-city design model and simulation research

(3) Innovative monitoring and regional evaluation system research

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(2)Urban and regional eco-city design model and simulation research

Development of regional scale integrated assessment model for designing low car-bon society in Indonesia, which covers energy sectors as well as non-energy sectors such as forest management and material recycling system will be collaborated.

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Eco-town Projects from 1997-
Eco Model Cities from 2008-

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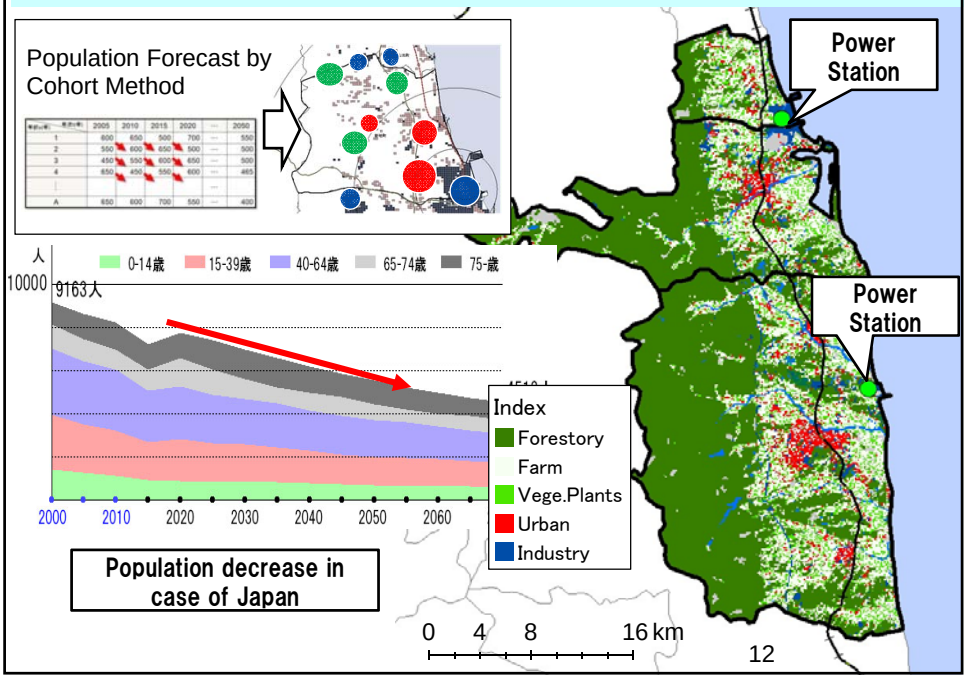
BaU Land Use Scenario in Fukushima Coastal Region



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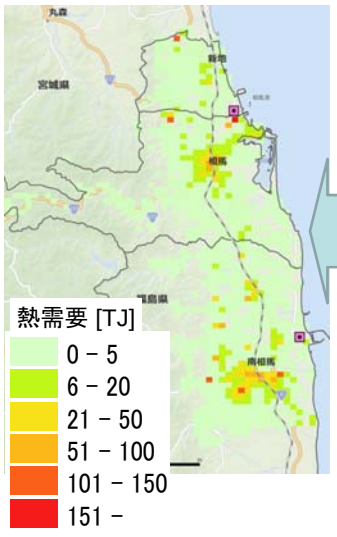
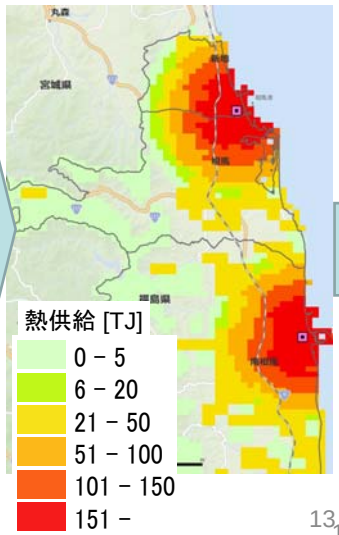
Energy location analysis for demand and supply

Distribution of heat energy demand

Distribution of heat energy supply

Land use scenarios





Business as Usual

EIP technology Scenrio

Compact land use scenario

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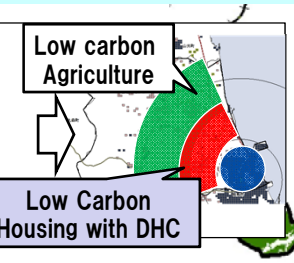
Compact land use scenario for Urban Symbiosis

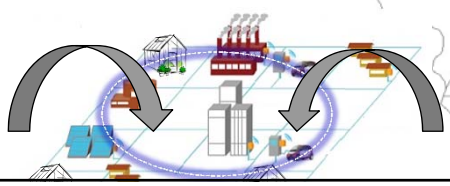
Symbiotic land use among Industries d Urban Sectors and Agriculture

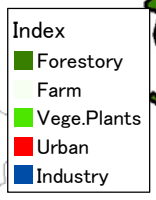


Compact Land Use Adaptive for Dispersed Regional Energy System

⇓

Energy Garden City





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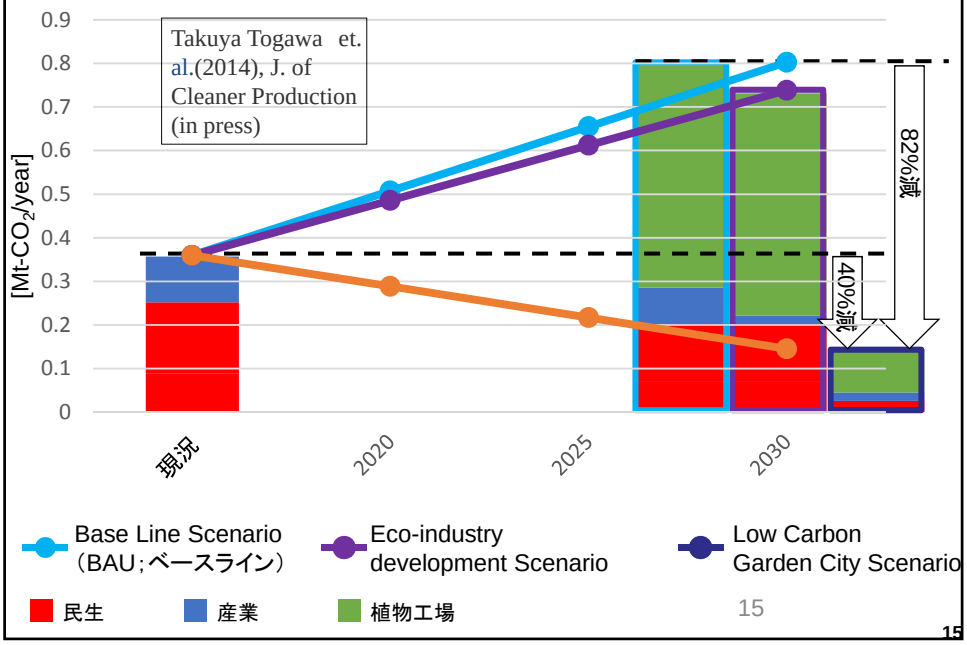
Low carbon effects for land use control



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(3) Innovative monitoring and regional evaluation system research

Innovative social monitoring system which includes smart monitoring system for eco-city districts and eco-industrial parks will be developed under the comprehensive collaboration between Indonesia and Japan. The following academic and policy outcome are expected such as strategic technology assessment and coordination for sustainable low fossil carbon society strategy planning, innovative monitoring system.

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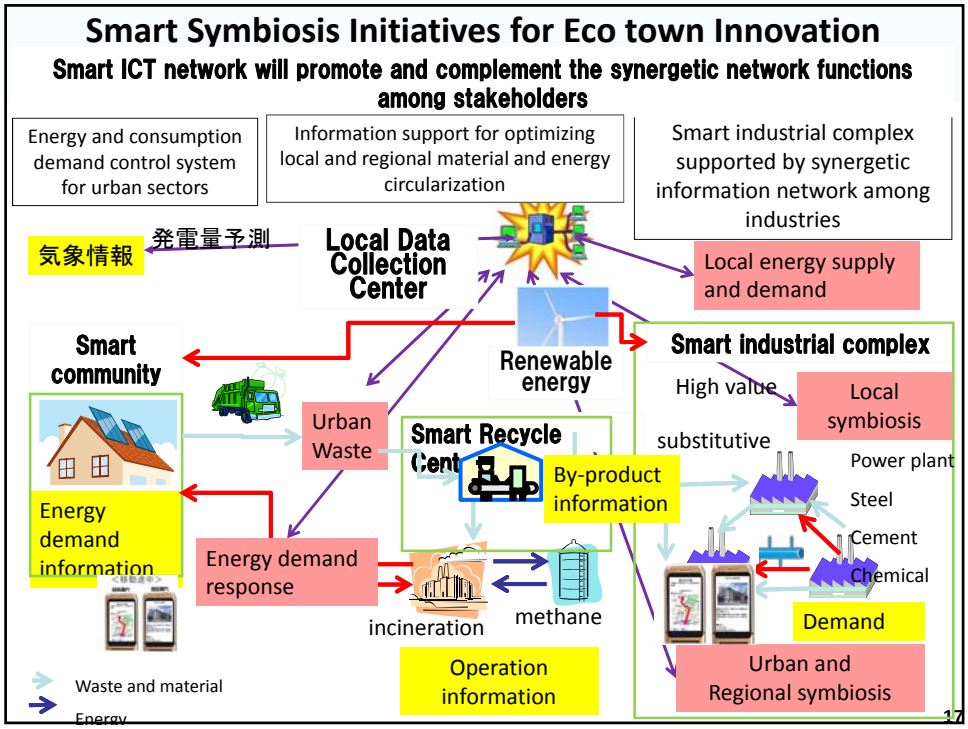
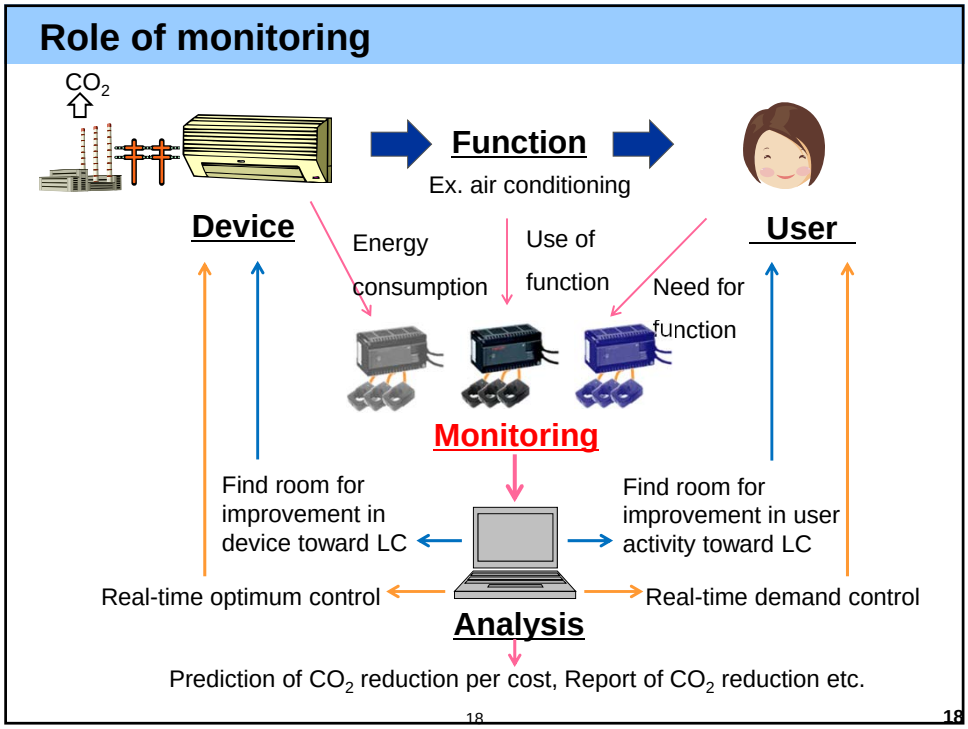

Smart Symbiosis Initiatives for Eco town Innovation
Smart ICT network will promote and complement the synergetic network functions among stakeholders
Energy and consumption demand control system for urban sectors
Information support for optimizing local and regional material and energy circularization
Smart industrial complex supported by synergetic information network among industries
気象情報
発電量予測
Local Data Collection Center
Local energy supply and demand
Smart community
Renewable energy
Smart industrial complex
High value
Local symbiosis
Urban Waste
Smart Recycle Cent
By-product information
substitutive
Power plant
Steel
Cement
Chemical
Energy demand information
Energy demand response
incineration
methane
Demand
Operation information
Urban and Regional symbiosis
Waste and material
Energy
17


Role of monitoring
CO_2
Function
Ex. air conditioning
Device
User
Energy consumption
Use of function
Need for function
Monitoring
Find room for improvement in device toward LC
Find room for improvement in user activity toward LC
Real-time optimum control
Real-time demand control
Analysis
Prediction of CO_2 reduction per cost, Report of CO_2 reduction etc.
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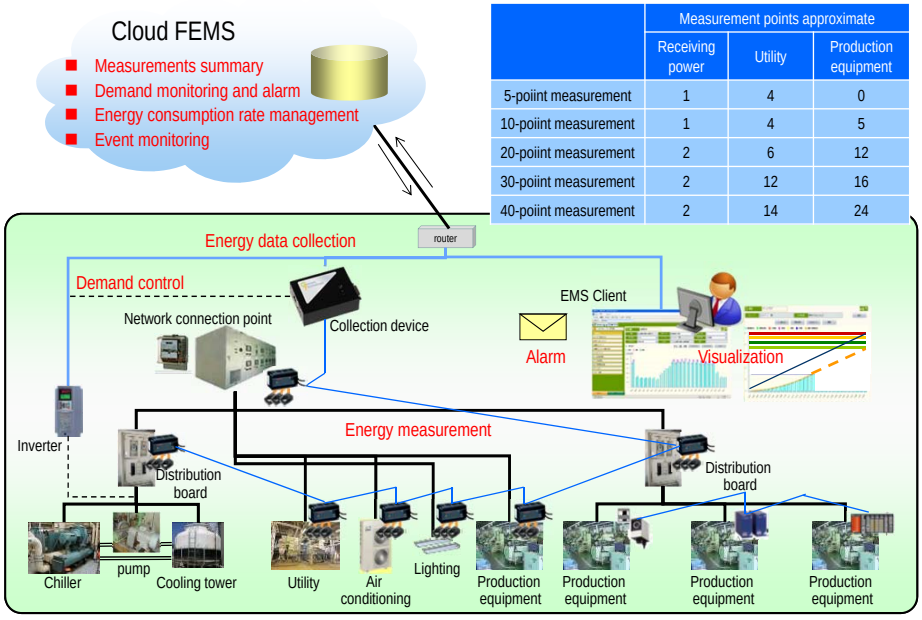
Monitoring in a factory



	Measurement points approximate		
	Receiving power	Utility	Production equipment
5-poiint measurement	1	4	0
10-poiint measurement	1	4	5
20-poiint measurement	2	6	12
30-poiint measurement	2	12	16
40-poiint measurement	2	14	24

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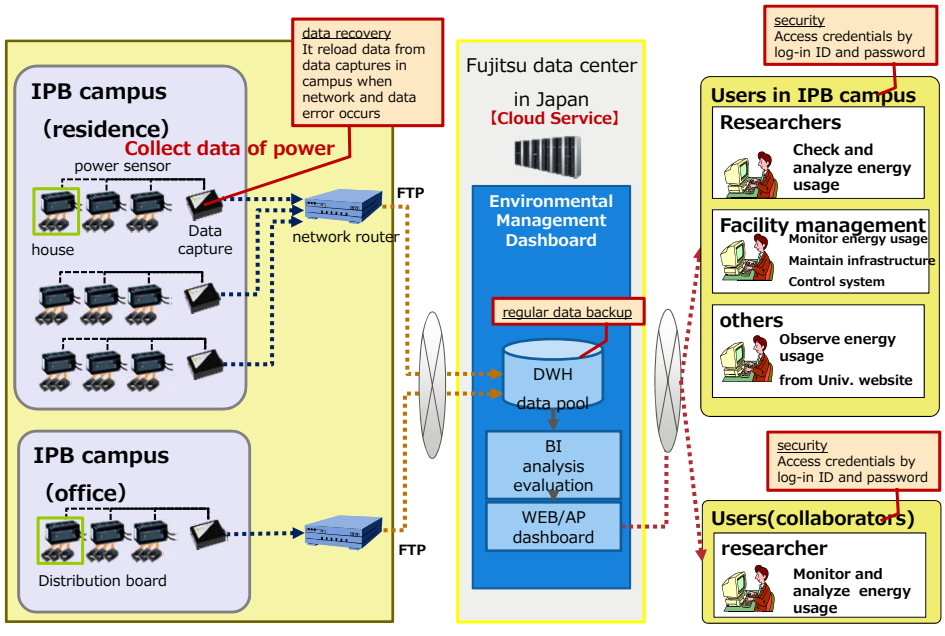
Overview of Monitoring System



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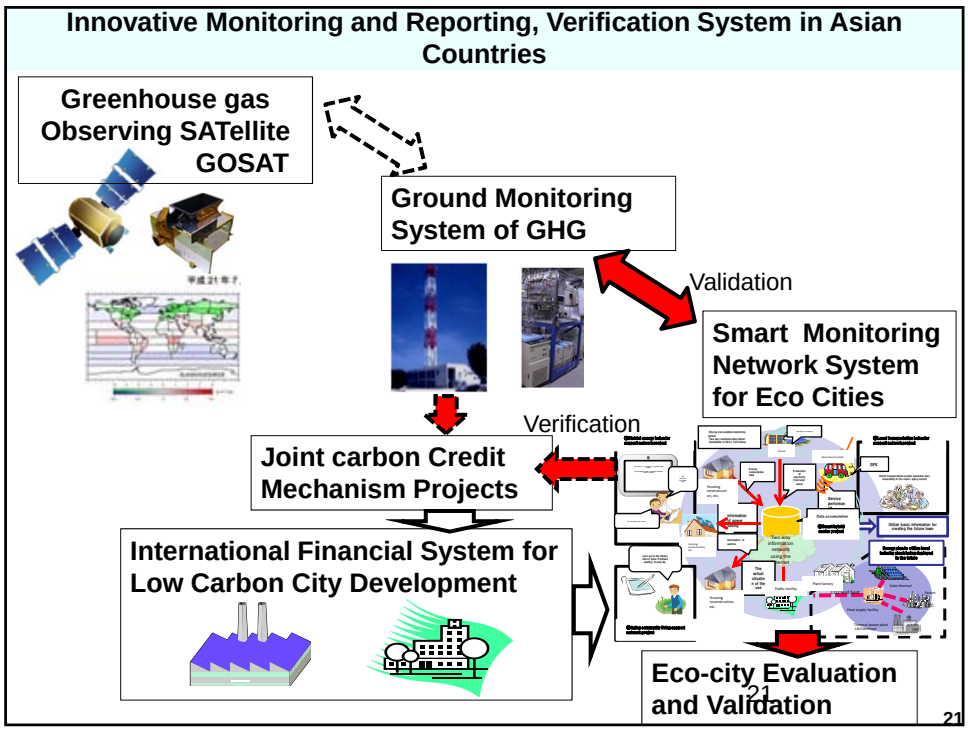
Innovative Monitoring and Reporting, Verification System in Asian Countries
Greenhouse gas Observing SATellite GOSAT
Ground Monitoring System of GHG
Validation
Smart Monitoring Network System for Eco Cities
Verification
Joint carbon Credit Mechanism Projects
International Financial System for Low Carbon City Development
Eco-city Evaluation and Validation
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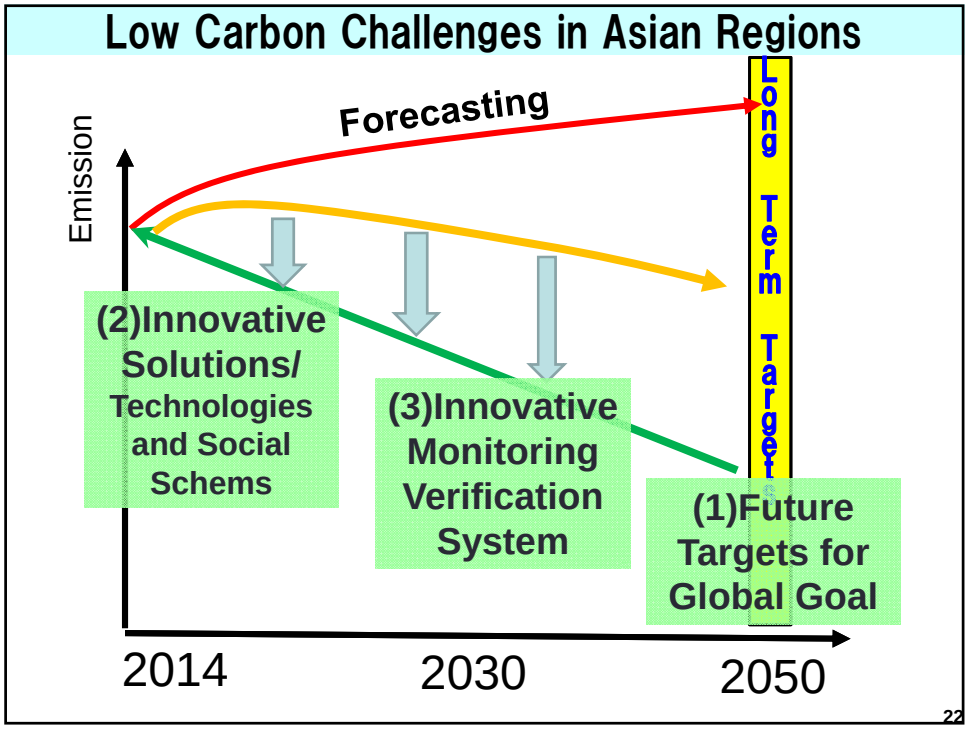
Low Carbon Challenges in Asian Regions
Emission
Forecasting
Long Term Target
(2)Innovative Solutions/ Technologies and Social Schems
(3)Innovative Monitoring Verification System
(1)Future Targets for Global Goal
2014
2030
2050
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Related Publication

Xudong Chen, Tsuyoshi Fujita, Satoshi Ohnishi, Minoru Fujii, Yong Geng：The Impact of Scale, Recycling Boundary, and Type of Waste on Symbiosis and Recycling: An Empirical Study of Japanese Eco-Towns, Journal of Industrial Ecology, Vol.16 (1), pp.129-141, February, 2012

Minoru Fujii, Tsuyoshi Fujita, Xudong Chen, Satoshi Ohnishi, Naohisa Yamaguchi：Smart Recycling of Organic Solid Wastes in an Environmentally Sustainable Society, Resources, Conservation and Recycling, Vol.63, pp.1-8, June, 2012

Xudong Chen, Tsuyoshi Fujita, Yong Geng, Kebin Liu, Minoru Fujii, Junyi Wang, Bing Xue：Effects of Environmental Education on Waste Separation Performance: Experimental Study in Shenyang University, China, Journal of Cleaner Productions, submitted March 28th, 2012

Yujiro Hirano, Tsuyoshi Fujita：Evaluation of the impact of the urban heat island on residential and commercial energy consumption in Tokyo, Journal of Energy, Vol.37 (1), pp.371-383,01,2012

Satoshi Ohnishi, Tsuyoshi Fujita, Xudong Chen, Minoru Fujii：Econometric Analysis of the Performance of Recycling Projects in Japanese Eco-Towns, Journal of Cleaner Production, Vol.33 (1), pp.217-225, September, 2012

Xudong Chen, Fengming Xi, Yong Geng, Tsuyoshi Fujita : The Potential Environmental Gains from Recycling Waste Plastics: Simulation of Transferring Recycling and Recovery Technologies to Shenyang, China, Journal of Waste Management, Vol.31 (1) pp.168-179, January 2011

Yong Geng, Tsuyoshi Fujita ,Xudong Chen; Evaluation of Innovative Municipal Solid Waste Management through Urban Symbiosis: A Case Study of Kawasaki, Journal of Cleaner Production, Vol.18, pp.993-1000, 07,2010

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Rene Van Berkel, Tsuyoshi Fujita, Shizuka Hashimoto, Minoru Fujii：Quantitative Assessment of Urban and Industrial Symbiosis in Kawasaki, Japan, Environmental Science & Technology , Vol.43, No.5, 2009 ,pp.1271-1281,0129.2009

Rene van Berkel, Tsuyoshi Fujita, Shizuka Hashimoto, Yong Geng：Industrial and Urban Symbiosis in Japan : Analysis of the Eco-Town Program 1997-2006：Journal of Environmental Management, vol.90,pp.1544-1556,2009

Thank you for attention

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