Development of Low Carbon Society Scenarios for Asian Regions



SYMPOSIUM ON LOW CARBON ASIA RESEARCH PROJECTS

July 5th, 2011, University Teknologi Malaysia

Yuzuru Matsuoka

NOW WE ARE LAUNCHING A NEW PROJECT TITLED:

"*Development of Low Carbon Society Scenarios for Asian Regions*"

- Project Period: Five years (2011 ~ 2015)
- Project Area: Iskandar Development Region (IM), Malaysia
- Project Purpose
  Establishment of a Methodology to create Low-Carbon Society (LCS) scenarios and applied to Iskandar Development Region (IM), as well as other regions in Malaysia, and the research findings are disseminated to Asian Countries.
- Under the project funding scheme called SATREPS, sponsored by JICA and JST

What is the “SATREPS” and what are the objectives of the project?

SATREPS: Science and Technology Research Partnership for Sustainable Development, a Japanese government program supported by JICA and JST, to promote international joint research targeting global issues.

JICA: the Japan International Cooperation Agency
JST: the Japan Science and Technology Agency

Iskandar Development Region
Area : 2,216 km^2
Population : 1,353,200

From:Yuzuru Matsuoka
Date:2011/07/05

MAJOR ACTIVITIES AND EXPECTED OUTPUTS OF THE PROJECT

1. Establish a Methodology to create LCS scenarios which is appropriate for Malaysia

2. Creation and Utilization of LCS scenarios for policy development in IM (Iskandar Malaysia).

3. Quantification of Co-benefits of LCS policies on air pollution and on recycling-based society in IM.

4. Conduct training activities on LCS scenarios for Malaysia and Asian countries, and establish a network for LCS in Asia.

MEMBERS (MALAYSIAN SIDE)

Prof. Dr. Marzuki bin Khalid (Project Director)
Prof. Dr. Ho Chin Siong (Project Manager)

Integration and Cross cutting group (Activity 1,2,3,4)
Dr Ho (UTM), Dr. Rosly(JPBD), Mr Boyd(IRDA), Mr.Azman(MGTC)

LCS group (Activity 1,2,4)
Dr Zaly & Gobi – Transport
Dr Rafee – Land use
Dr Ibrahim & Mr Rahim– Social disparity/ Rural
Dr
Dr Ismail and Chau, Dr Ho – LCS Modelling

SWM Group (Activity 2,3,4)
Dr. Zainura and Dr. Razman – LCA
Dr. Lee and Ms. Azila – Biomass recycling
Dr Fatin – Education/ Awareness
Dr Ho /Teh – Eco city
Dr Ahmad/Ariffin – Solid Waste Management

Energy Group (Activity 1,2,4)
Dr. Zainuddin & Sharifah – Energy system

Air Environment Group (Activity 2,3,4)
Dr. Rashid and Dr Rafee – Air Pollution
Dr Zainura/ Dr Rafee – Heat Island

MEMBERS (JAPANESE SIDE)

Kyoto University

- **Dr. Yuzuru Matsuoka, Environmental Systems Analysis, Activity 1,2, 4**
- **Dr. Gakuji Kurata, Air pollution, Activity 3,4**
- **Ms. Reina Kawase, Low Carbon Scenario Modeling, Activity 1,4**
- **Dr. Kei Gomi, (Model/Tool Development, Activity 1,2,4**

National Institute for Environmental Studies

- **Dr. Mikiko Kainuma, National Level Low Carbon Society Scenario, Activity 1,2,4**
- **Dr. Junichi Fujino, Low Carbon Society Network, Activity 1,2,4**
- **Dr. Shuichi Ashina, Developing Policy Roadmap by Backcasting, Activity 1,2,4**
- **Dr. Genku Kayo, Diffusing LCS Scenarios in Building Sector, Activity 1,2,4**
- **Ms. Maiko Suda, Policy Roadmap, Activity 2,4**

Okayama University

- **Dr. Takeshi Fujiwara, Solid Waste Management, Activity 3,4**

JICA

- **Ms. Kazumi Sato, Long-term expert**

ACTIVITY 1: LCS Scenario Developing Methodology

- **Describe desirable socio-economic visions of Malaysia in the future target year (2030).**
- **Collect socio-economic data, environmental loads, energy and technology, then develop an integrated model of socio-economic, disparity and GHG emission assessment to create LCS visions.**
- **Develop a back-casting model to prepare policy roadmaps.**
- **Develop a technical manual to create LCS scenarios.**
- **Improve reality and applicability of the above tools to create LCS scenarios and revise the technical manual.**
- **Outline the LCS scenario for Malaysia by adopting the developed methodology (tools and the technical manual).**

ACTIVITY 2: Implementation to Iskandar Development Region

- **Carry out training workshop on LCS scenario creation for IRDA and JPBD staff in Japan and Malaysia.**
- **Create the LCS vision for IM by adopting the integrated model of socio-economic, disparity and GHG emission assessment.**
- **Prepare the policy roadmap for IM by adopting the back-casting model.**
- **Set up an arrangement for discussion among concerned groups, private sector and civil society to undertake the policies based on the LCS scenarios.**
- **Formulate the IM LCS action plan to be implemented by IRDA.**
- **Revise IM blueprints of relevant areas on the basis of the IM LCS action plan formulated in the above activity.**

ACTIVITY 3: Integration with regional environmental issues

AIR EMVIRONMENT

- **Conduct the observation of air quality to clarify the current condition and estimate air pollutant emissions in IM.**
- **Develop methodology to quantify impact on health by air pollutant and estimate the mitigation effect of impact on health of air pollution by LCS measures in IM.**

SOLID WASTE MANAGEMENT

- **Conduct survey of current solid waste generation in residential and industrial sectors.**
- **Estimate future waste generation and GHG emissions from waste management in IM.**
- **Propose solid waste management strategy which is appropriate in a low-carbon city in IM.**
- **Develop a manual to quantify co-benefit of LCS measures.**

ACTIVITY 4: Dissemination to Asian region

- **Prepare UTM as a coordinating body, for capacity building of some researchers involved in the project as trainers on LCS scenarios through the activities from 1 to 3**

- **Carry out trainings continuously on LCS scenarios for researchers and government officers of Malaysia and Asian countries in LCS Research Centre as well as in Japan.**

- **Transmit and share information of research and trainings on LCS scenarios among researchers and government officers in Asian countries.**

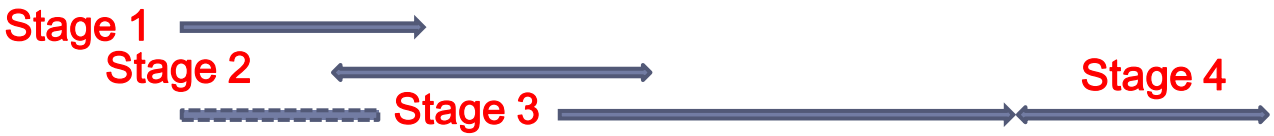
PROJECT SCHEDULE OF ISKANDAR STUDY

- Need substantial input to blueprints etc.
- Compiling the first draft of LCS roadmap

Interim project Evaluation

Final project Evaluation

	2011	2012	2013	2014	2015
ACTIVITY 1: METHODOLOGY	Apply the whole methodology and tools		Revising and Improvement		
ACTIVITY 2: IMPLEMENTATION	Design the scenarios and roadmaps	Details for Implementation	Implementation	Revising and Improvement	Wrap up the project
ACTIVITY3: AIR & SWM	Detailed basic survey	System integration	Manual development		
ACTIVITY 4: DISSEMINATION	International Expert Workshop once per year International Training Workshop once per year				



STAGE 1: OVERALL DESIGN OF IM LCS

1. **Quantifications of IM vision in 2010 and 2030 (BaU) with latest information using various Quantification models and complimentary field surveys**
   - Demography: population and household dynamics
   - Land-use and its transition matrix
   - Economic and Industry structure
   - Traffic volume and characteristics
   - Energy supply and consumption structure
   - Solid waste and air pollutants' generation

Integration as the form of inter-linked Social, Economic, Land-use, Energy and Environmental Accounting Tables

2. **Listing up of potential measures and their rough but comprehensive assessment**
   - Energy supply, land-use, traffic, building, residential and commerce sectors
   - Engineering, Economic and Institutional aspects

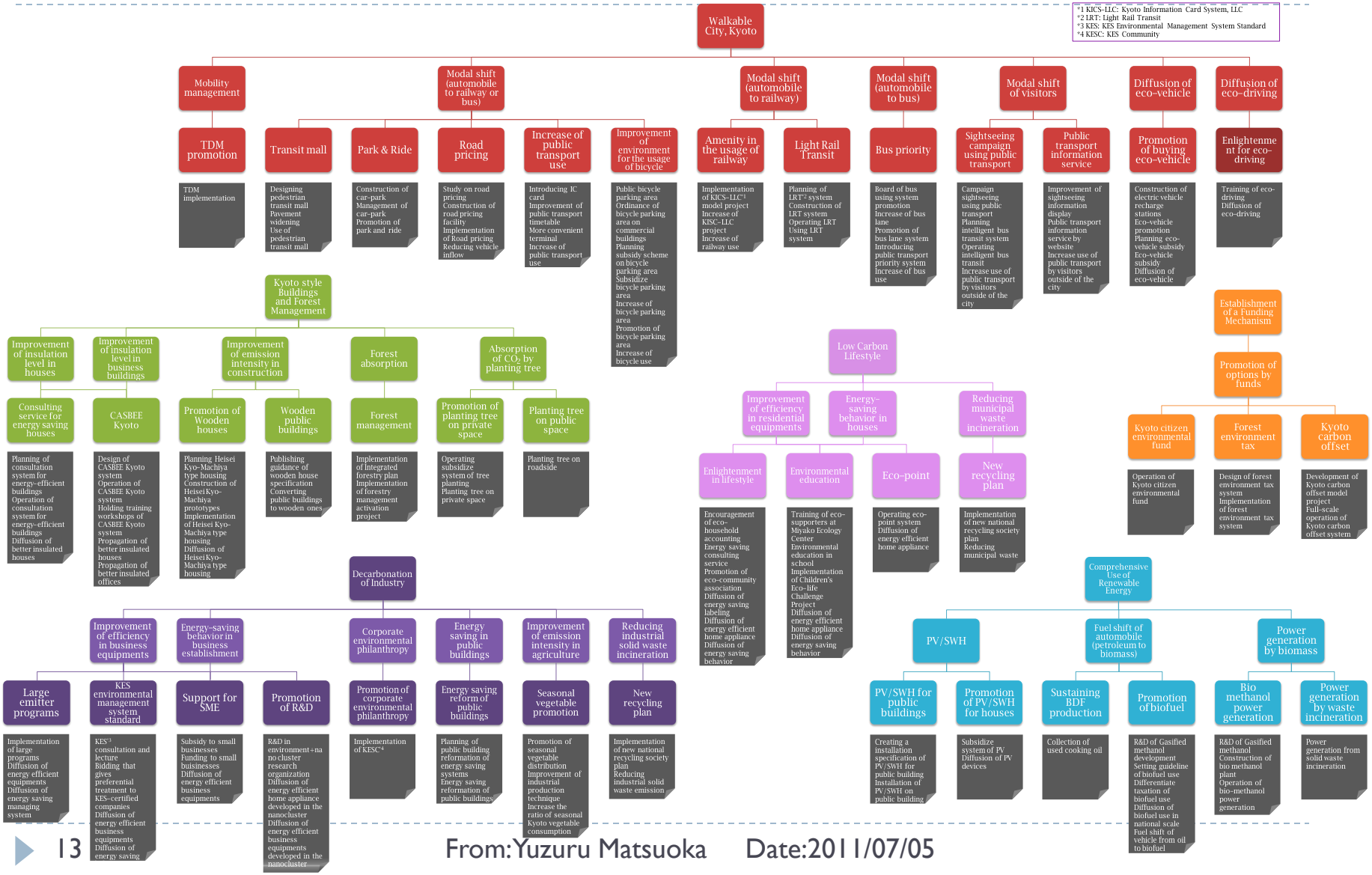
IM LCS measure database

3. **Hierarchical organization of potential measures to LCS roadmap**

Work Breakdown Structures for LCS

By the Spring of 2011

An EXAMPLE OF Work Breakdown Structures for LCS Actions



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STAGE 2: DESIGN OF LCS ROADMAP

4. Tentative design of IM LCS Roadmap

- **Estimation of Institutional, financial and human capacity obstacles of LCS measures' implementation, and also listing up the resolution**
- **Interactive and intensive discussion with IRDA**
- **Feedback from stakeholders and experts**

Proposal of Actions and their roadmap towards Low Carbon Iskandar Accounting Tables

5. Documentation and Dressing up the STAGE 1 results towards real world application

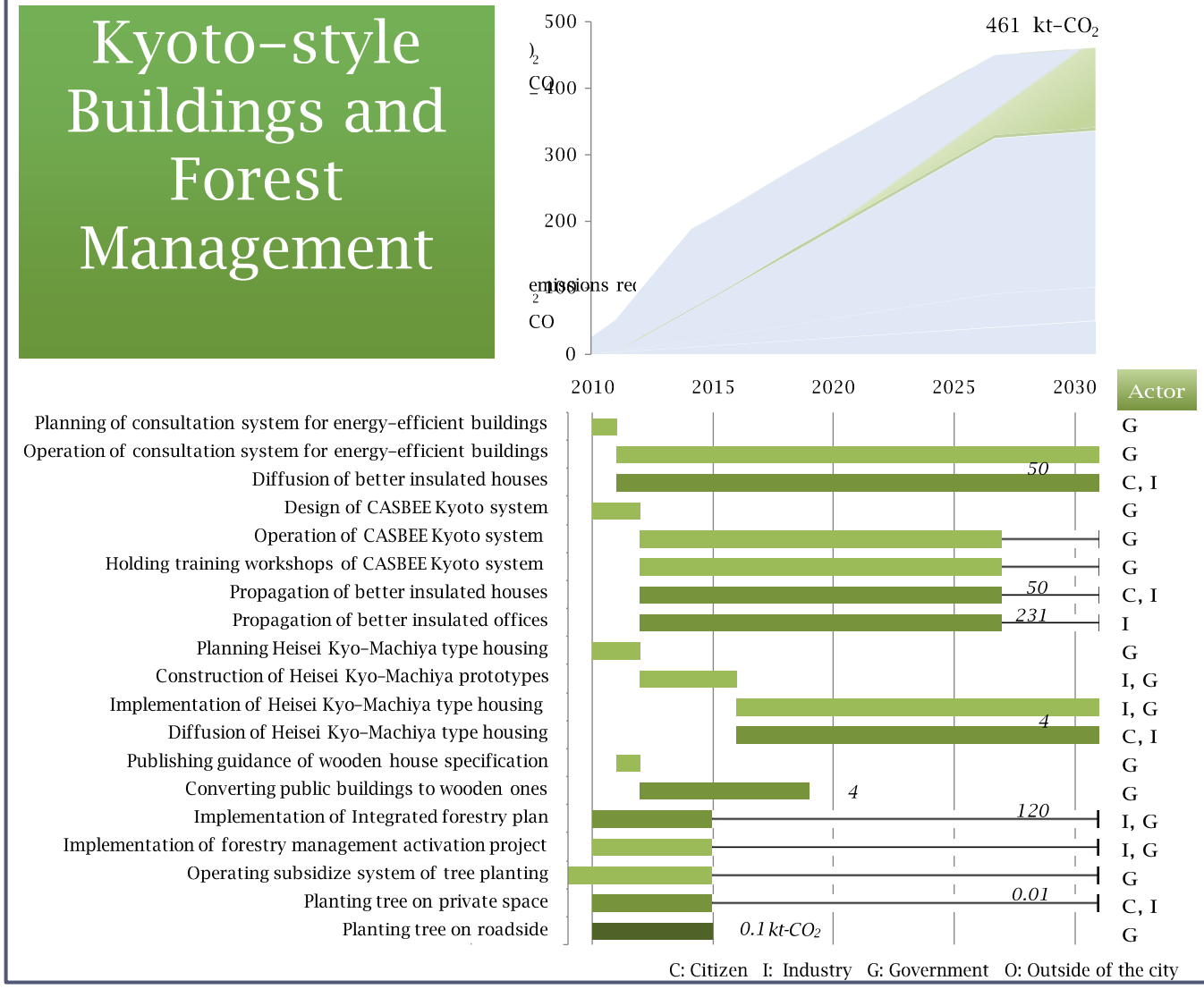
- **As supporting materials for Blueprint s and relevant official guidance Energy supply, land-use, traffic, building, residential and commerce sectors**
- **As training and education materials**

Publication of the "Low Carbon IM approach" and their dissemination

By the Spring of 2013

AN EXAMPLE OF ACTION ROADMAP FOR LCS

Kyoto-style Buildings and Forest Management



STAGE 3: DETAILED AND AUGMENT RESEARCH TO MORE REALISTIC AND EFFICIENT LCS SCENARIOS

- Put more emphasis on sector specific researches for supplementing and improving the proposal of the LCS vision and roadmaps in Stage 1
- Adjustment with International and national trends of LCS policies

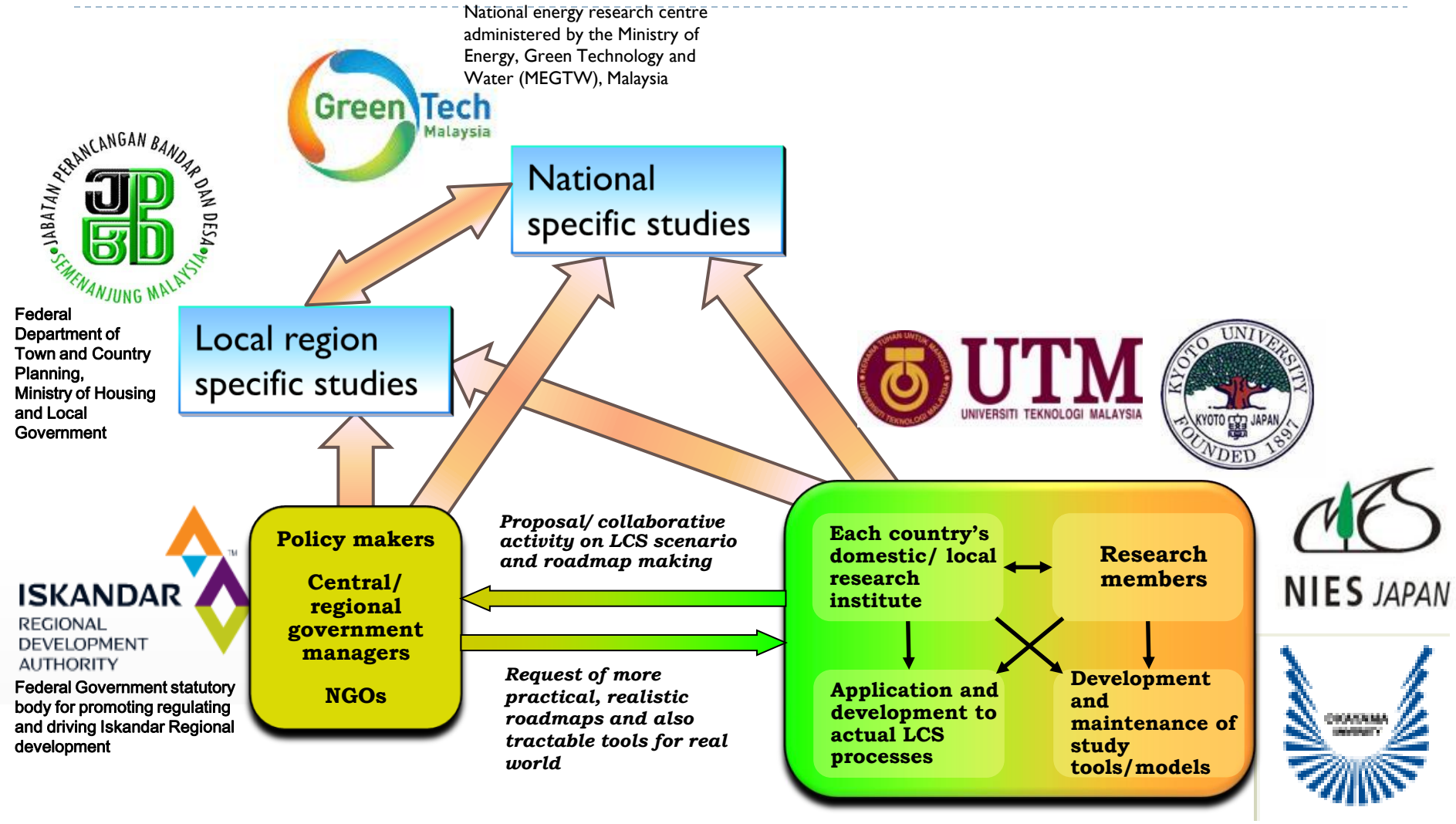
Until Autumn of 2014

STAGE 4: WRAPING UP

- Final revision of the IM LCS vision, roadmap.
- Publishing and disseminating the technical details as reference material of Asian region's LC activity

By the Autumn of 2015

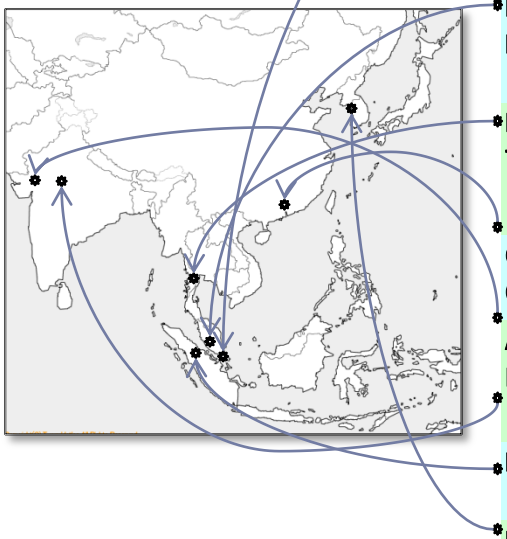
Organizational Arrangement of the project



NATIONAL STUDIES NOW GOING ON

	Progress up to now	Collaborating Research Institutes
China	Up to now, disclosed national LCS scenarios, occasionaly. Now preparing provincial energy, industrial, and economic database in order to integrate national level and provincial level scenarios.	China Energy Research Institute
India	Proposed national scenarios with global LCS scenarios by combining AIM/enduse and other models.	IIM Ahmedabad
Thailand	Preliminary analysis of Thailand energy related LCS with ExSS was finished	Thammasat University
Indonesia	Preliminary analysis of Indonesia energy related LCS with ExSS was finished	Institut Teknologi Bandung
Vietnam	Preliminary analysis of Vietnam energy related LCS with ExSS was finished	
Bangladesh	Preparation of related information	
Peninsula Malaysia	Preliminary analysis of Peninsula Malaysia energy related LCS with ExSS was finished	Universiti Teknologi Malaysia

LOCAL REGIONAL STUDIES NOW GOING ON



Local region studies

	Progress up to now	Collaborating Research Institutes
Iskandar, Malaysia	Feasibility study finished and consolidating full-scale research task force composed of implementation agencies and research institutions	Universiti Teknologi Malaysia Iskandar Regional Development Authority Federal Department of Town and Country Planning Malaysia Malaysian Green Technology Corporation
Putrajaya, Malaysis	Feasibility study and identification of policy option was finished	Universiti Teknologi Malaysia Putrajaya Corporation
Ratchaburi, Thailand	Preliminary analysis of energy related part almost finished with ExSS, now adding AFOLU part	King Mongkut's University of Technology
Guangzhou, China	Preliminary analysis of energy related part almost finished with ExSS	Guangzhou Institute of Energy Conversion
Ahmedabad, India	Preliminary analysis of energy related part finished with ExSS	IIM Ahmedabad
Bhopal, India	Preliminary analysis of energy related part almost finished with ExSS	Maulana Azad National Institute of Technology, Bhopal School of Planning and Architecture, Bhopal
Liau, Indonesia	Developing FOLU modeling	Bogor Agricultural University
Kyonggi Province, Korea	Preliminary analysis of energy related part are conducting with ExSS	Seoul National University

COLLABORATING SCHEME OF OUR ASIAN LCS STUDY