

Activity in FY2012-2013 and research plan in FY2014

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The 19th AIM International Workshop

NIES, Tsukuba, Japan

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Agenda of the 19th AIM International Workshop

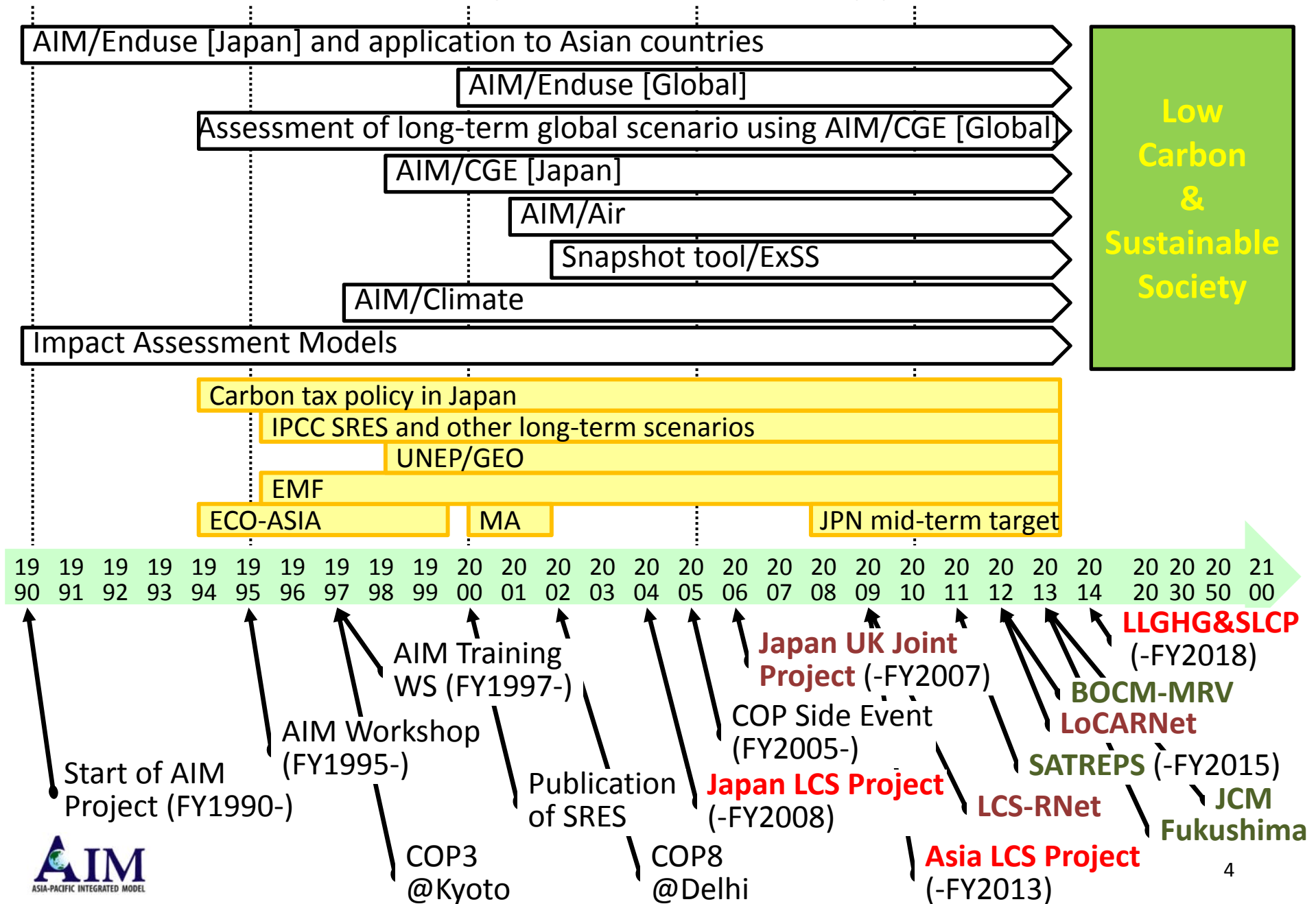
- Session 1: Opening session.
- Session 2 & 3: Asian LCS sessions.
- Session 4: JCM session.
- Session 5, 7 & 9: Modeling sessions.
- Session 6: Impact session.
- Session 8: Poster session.
- Session 10: Closing session

Asia-Pacific Integrated Model (AIM)

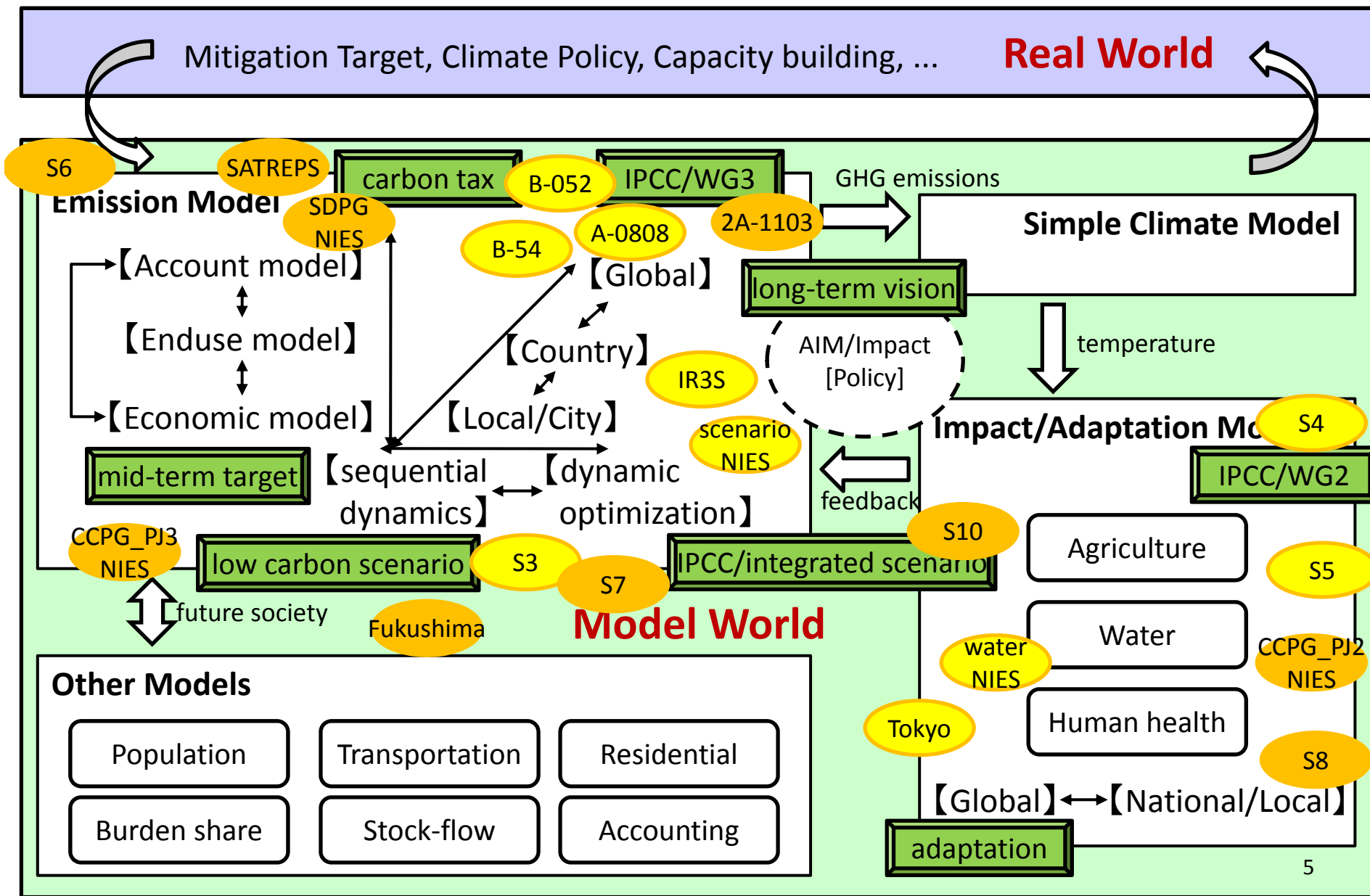
Asia-Pacific Integrated Model (AIM) is an integrated assessment model to assess mitigation options to reduce GHG emissions and impact/adaptation to avoid severe climate change damages. The model is extended to sustainable development with Asian researchers.
<http://www-iam.nies.go.jp/aim/>



Brief History of AIM and its application



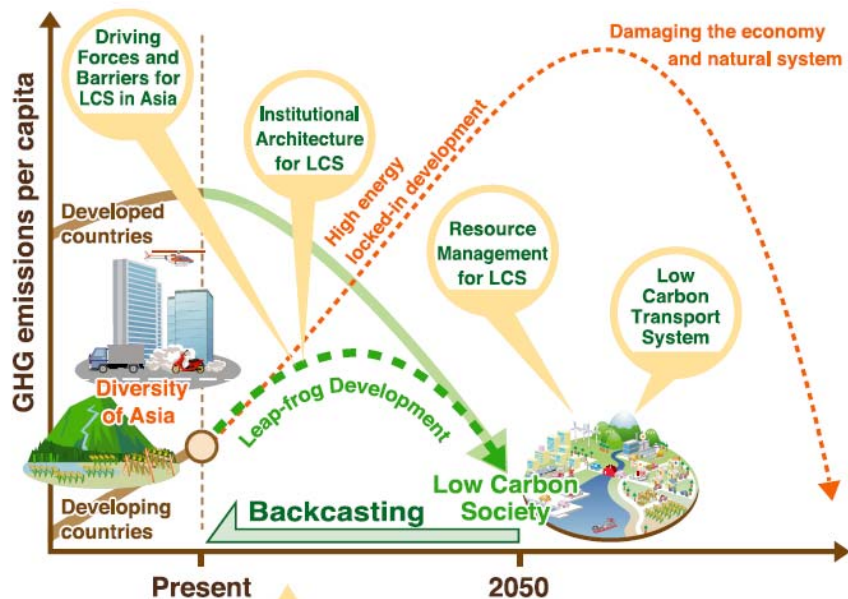
Contents of Present AIM



Activities in FY2012-2013

- Environment Research and Technology Development Fund, MOEJ
 - S-6: Asia LCS
 - S-8: Impact analysis
 - S-10: Global risk due to climate change
 - 2A-1103: Global scenario and Japan's mitigation study
 - 2RF-1302: Local data in China & Korea toward S-12
- SATREPS (JICA-JST)
- JCM: Joint Crediting Mechanism (MOEJ)
- Climate Change Research Program (NIES)
- Fukushima Project Office (NIES)

Low Carbon Asia Research Project



- How much will GHG emissions from Asia need to be reduced to halve global emissions by 2050 (2 degree target)?



Ten Actions for Realizing a Low Carbon Asia



Action 1 Urban Transport
Hierarchically Connected
Compact Cities



Action 2 Interregional Transport
Mainstreaming Rail and Water in
Interregional Transport



Action 3 Resources & Materials
Smart Ways to Use Materials that
Realize the Full Potential of Resources



Action 4 Buildings
Energy-Saving Spaces Utilizing
Sunlight and Wind



Action 5 Biomass
Local Production and
Local Consumption of Biomass



Action 6 Energy System
Low Carbon Energy System
Using Local Resources



Action 7 Agriculture & Livestock
Low Emission Agricultural
Technologies



Action 8 Forestry & Land Use
Sustainable Forestry Management



Action 9 Technology & Finance
Technology and Finance to
Facilitate Achievement of LCS

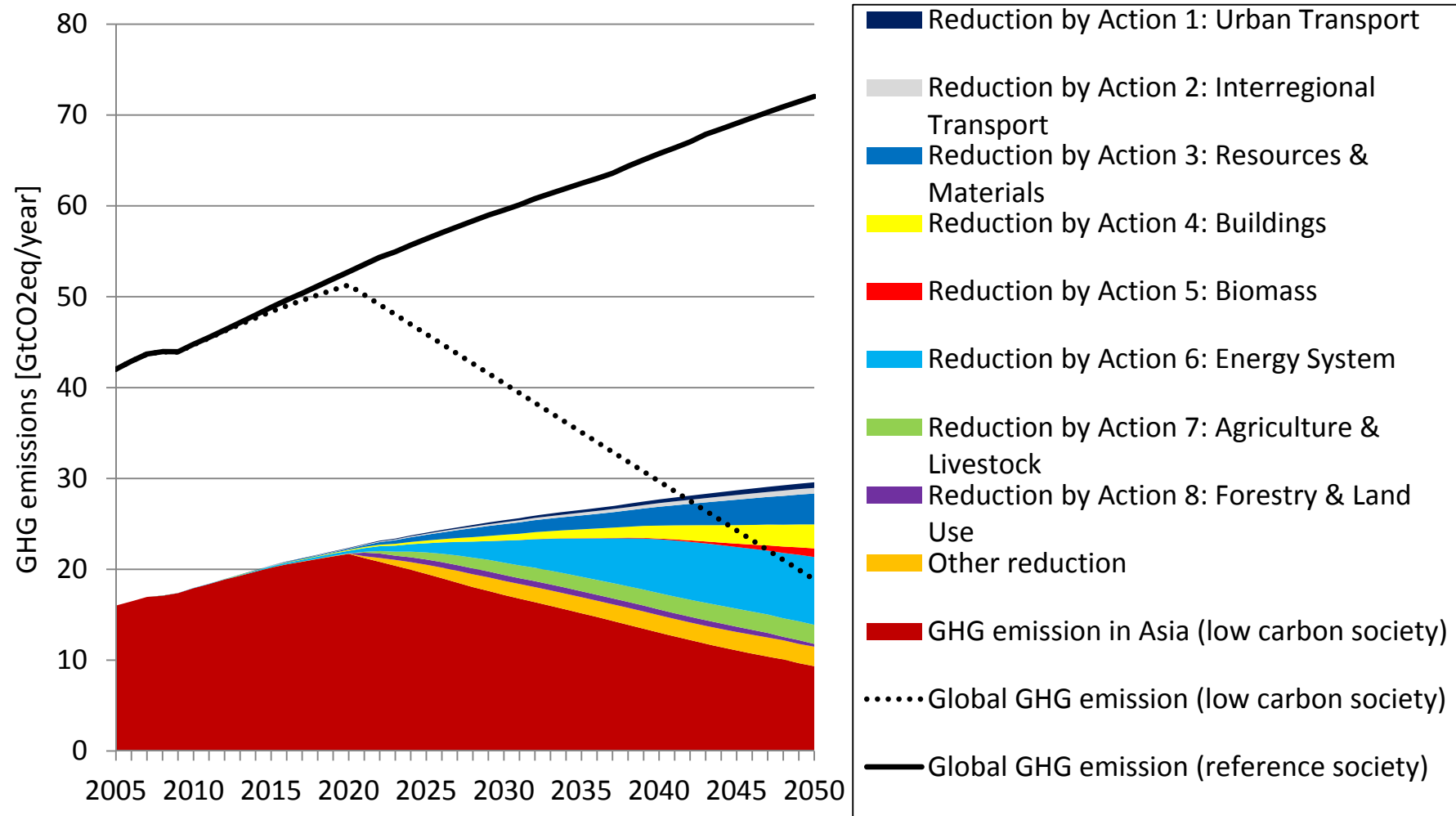


Action 10 Governance
Transparent and Fair Governance
that Supports Low Carbon Asia

Two future scenarios in S-6 project

	Advanced Society Scenario	Conventional Society Scenario
Overall Features	Society that is highly motivated and actively working to achieve a transition to next-generation social systems, programs, technologies etc.	Society that is cautious about making changes to social systems, programs, technologies and so on and that is concerned about the transition costs of social change.
Economy	Average annual growth rate: 3.27%/year (global) 4.16%/year (Asia)	Average annual growth rate: 2.24%/year (global) 2.98%/year (Asia)
Population	Total population in 2050: 6.9 billion (global) and 4.6 billion (Asia)	Total population in 2050: 6.9 billion (global) and 4.6 billion (Asia)
Education	Active efforts to improve education Average number of years of schooling: 4 - 12 years (2005) → 11 - 14 years (2050)	Standard improvements to educational policy Average number of years of schooling: 4 - 12 years (2005) → 8 - 13 years (2050)
Use of Time	Diverse mix of lifestyles, but a comparatively long period of time spent on work and career advancement	Diverse mix of lifestyles, but a comparatively long period of time spent on time with family and friends
Work	Unemployment rate of 0% achieved by 2075	Fixed at 2009 level
Government Efficiency	Improved from a comparatively early stage	Improved gradually at a slow pace
International Cooperation	Lower trade barriers and reduced foreign direct investment risk	Gradual progress in establishing cooperative relationships among countries in Asia
Technical Innovation	High rate of advancement	Gradual advancement
Transportation	Increased demand resulting from high economic growth rate	Gradual increase in demand
Land Use	Speedy and efficient land improvement	Gradual and cautious land improvement

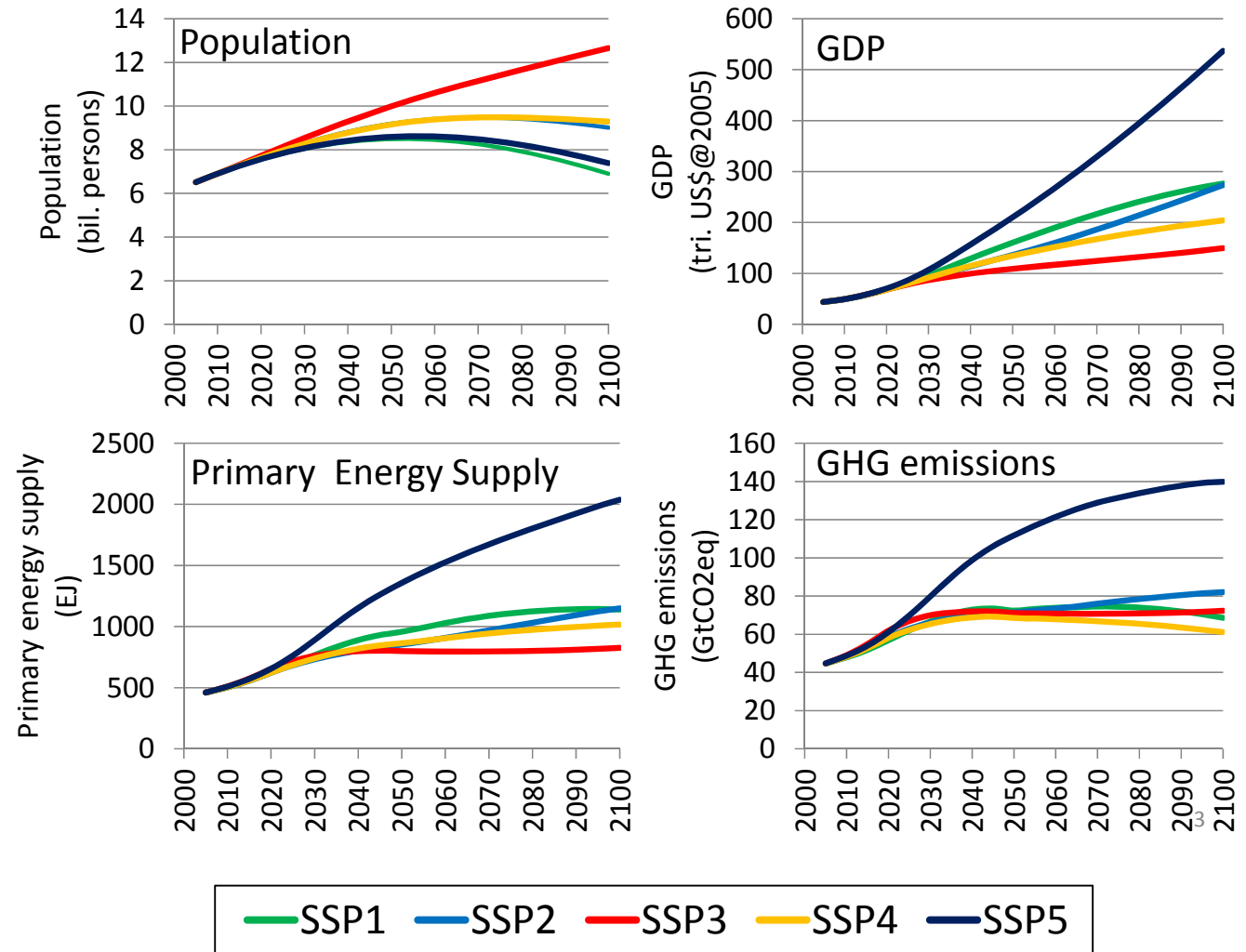
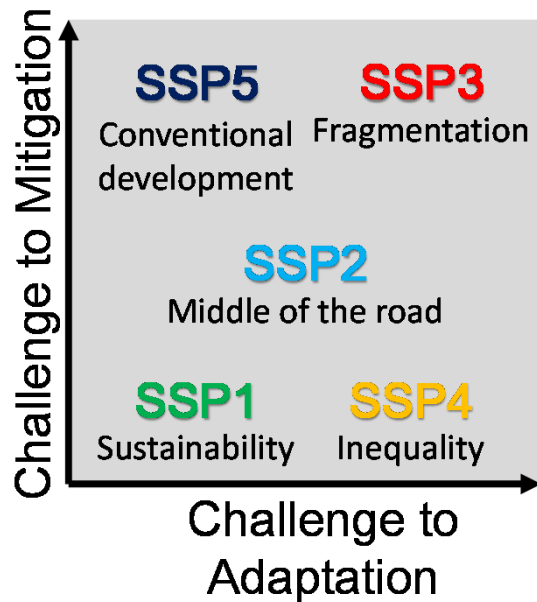
GHG emission reductions by “Ten actions” in Asia



Developed National & Local Scenarios



SSPs (Shared Socioeconomic Pathways)



IAMC: Integrated Assessment Modeling Consortium

- The 6th Annual meeting was held at NIES, October 28-30, 2013.
 - Modeling Impacts and Adaptation in Integrated Assessment
 - Using Integrated Assessment Models to Inform Near-Term International Policy Discussions
 - Modeling Energy Demand in Integrated Assessment
 - Understanding Mitigation, Adaptation, and Impacts through a Multi-Objective Lens

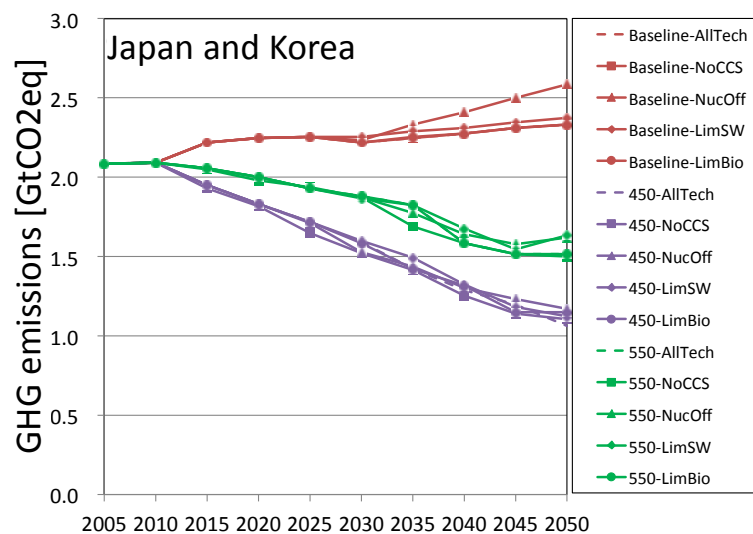
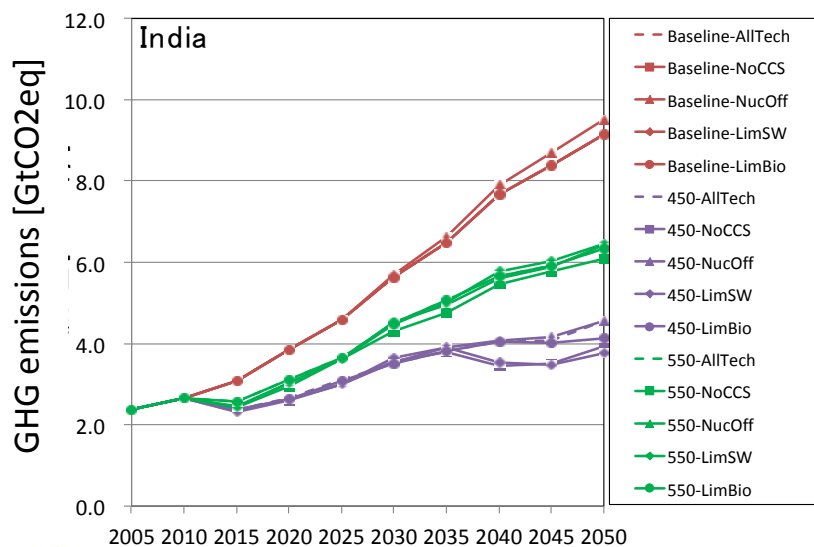
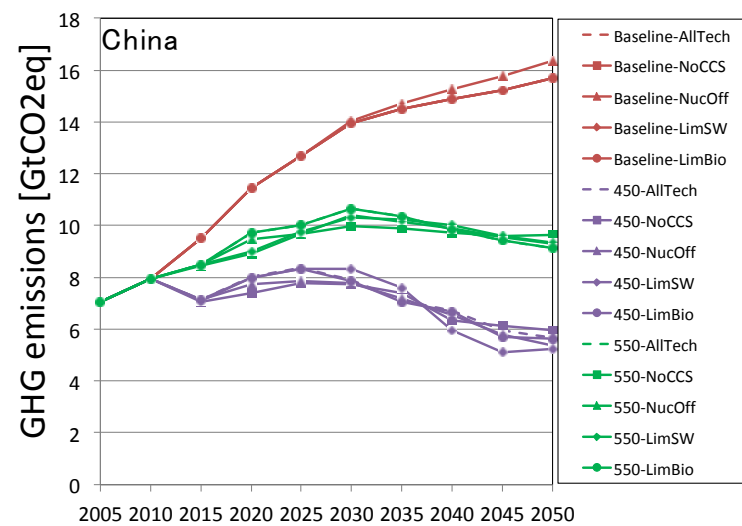
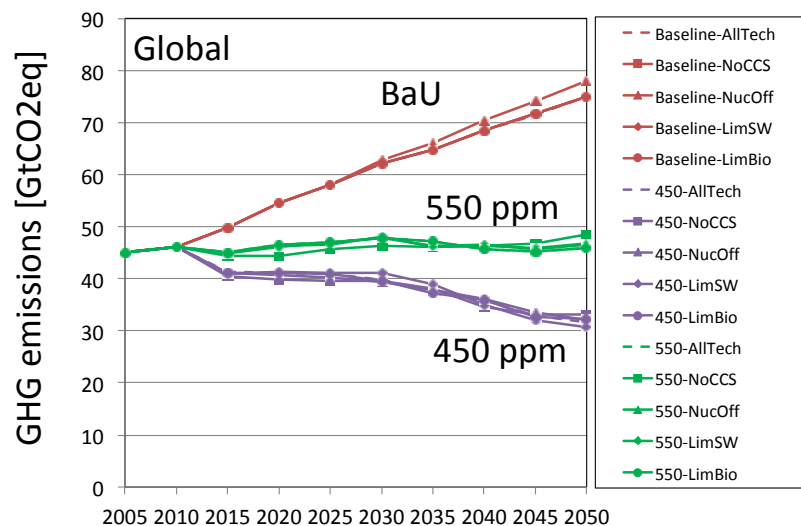


Other international works

- EMF30
- ADVANCE
- LIMITS
- Ag-MIP
- COBHAM

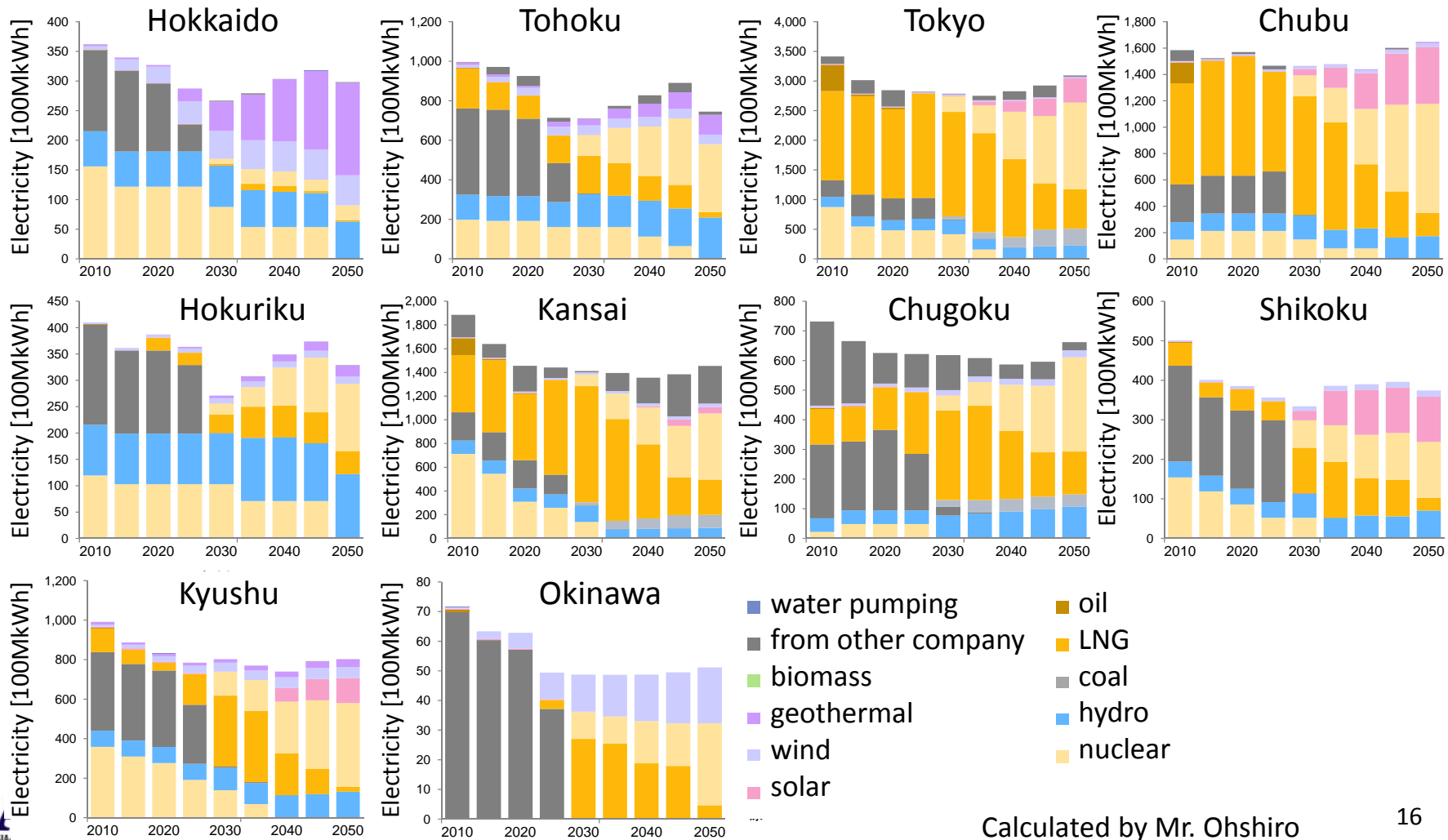
- LCS-RNet
- LoCARNet

450/550 ppm pathways and technology options using Energy system backcasting model



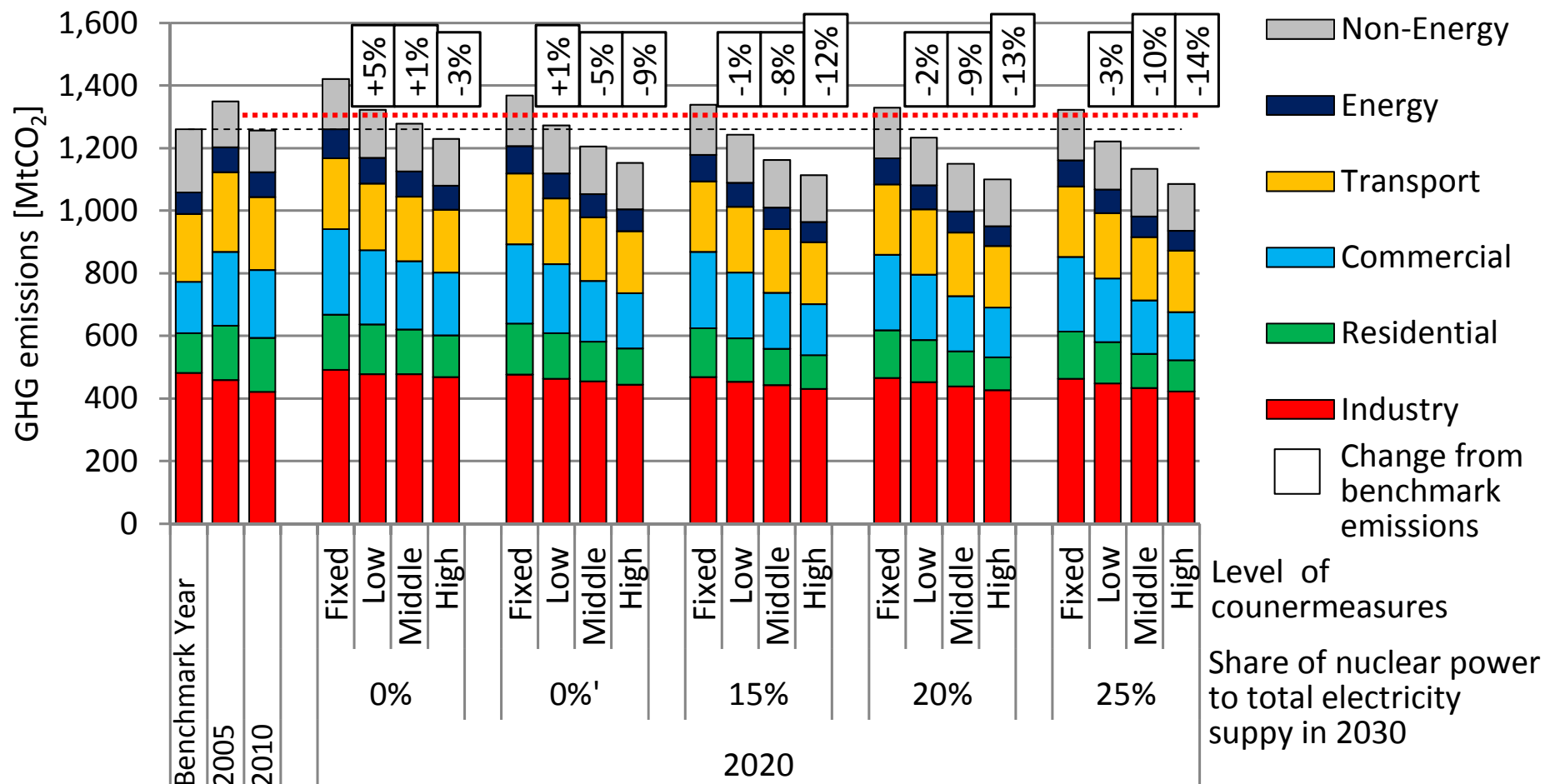
Regional electricity generation under 20,000yen/tCO2 using Multi-region Enduse model (Japan)

- Renewable energy supply will differ correspond to regional renewable energy potential.



Calculated by Mr. Ohshiro

Meaning of new GHG mitigation target



Share of nuclear power is set to be gradually shifted to the numbers in this figure between 2010 and 2030. "0%" is assumed to be 0% in 2020 and after

..... New GHG mitigation target (-3.8% to 2005 level = +3.1% to 1990 level)

Sectoral GHG emissions in Japan in 2030
(high-economic-growth scenario; as of June 2013)

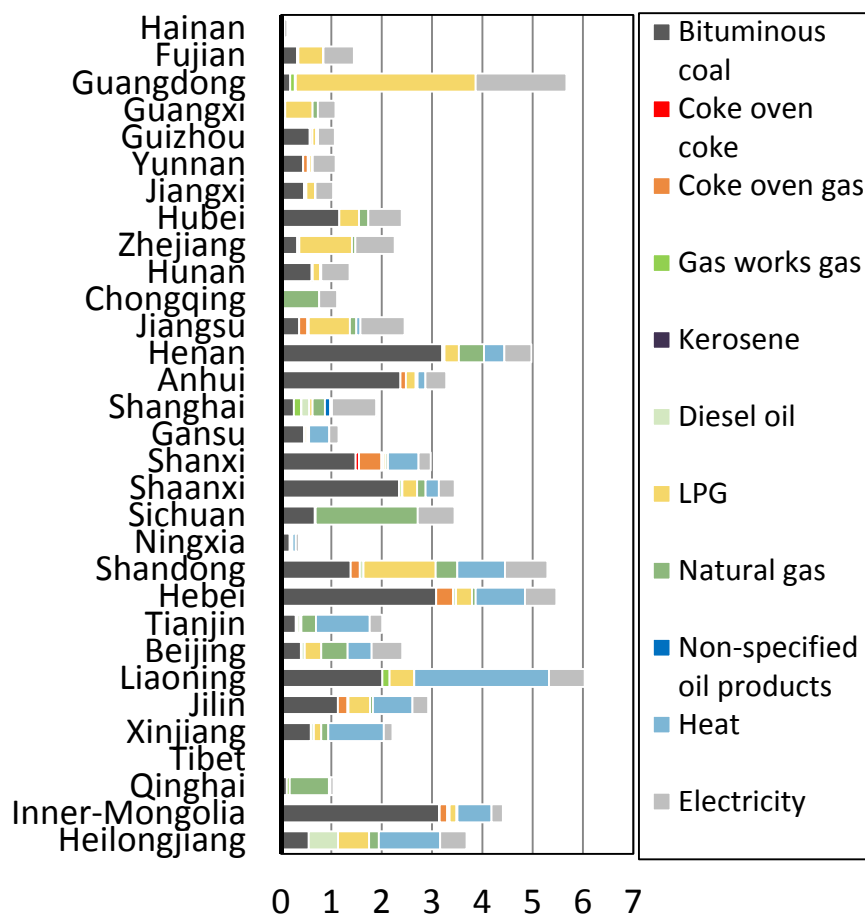
Element Models

- Material Stock and Flow Model (by Ms. Kawase)
- Household Consumption and Lifestyle Model (by Dr. Kanamori)
- Population and Household Model (by Dr. Kanamori)
- Renewable Energy Potential Model (by Dr. Silva)
- Electricity Supply Structure Model (by D. Ashina)
- MAC Tool (by Dr. Hanaoka)
- Visualization Tool on GHG Reduction (by Dr. Ashina)
- ...

Feasibility study toward new research

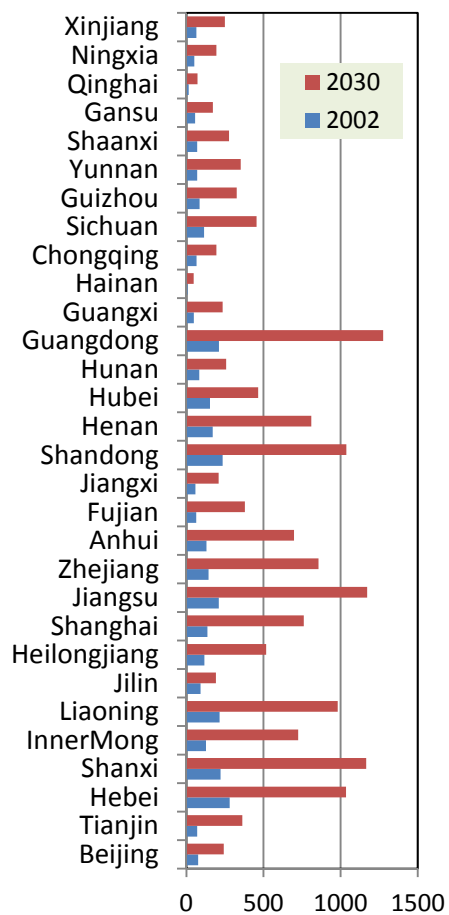
In order to assess emission reduction of SLCP, local scale air pollution will be assessed using Enduse model. Data collection for China and Korea has been done.

Energy demand in urban household in China (Mtoe)



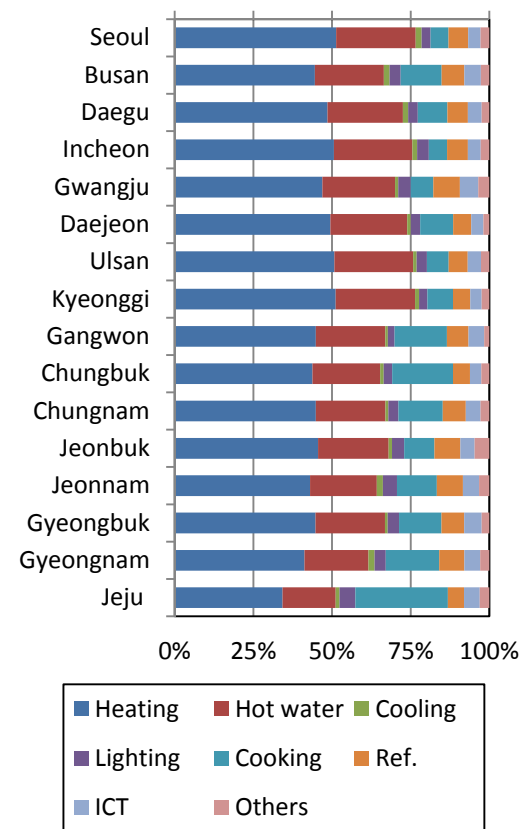
by Dr. Xing

CO2 in China (MtCO2)



by Dr. Dai

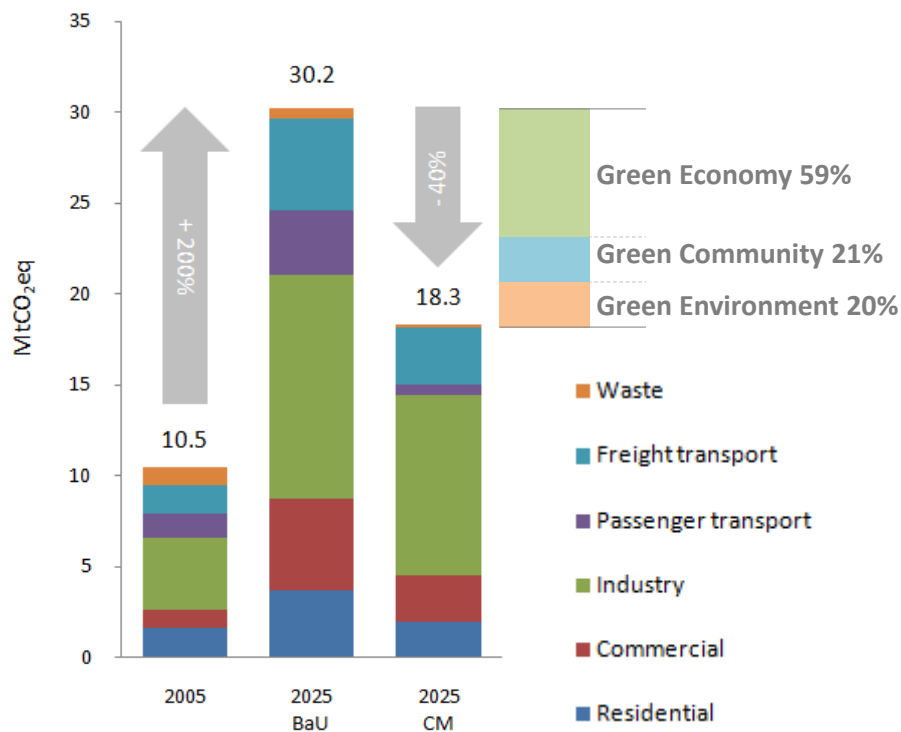
Energy demand share in household sector in Korea



by Dr. Park

SATREPS for Malaysia Iskandar

- Low Carbon Society Blueprint for Iskandar Malaysia 2025 and its Roadmap
 - Side event at COP19, on November 15, 2013



by SATREPS



by Dr. Ashina

JCM: Joint Credit Mechanism

- Joint Credit Mechanism
 - Promoting climate change mitigation actions through bilateral agreements mainly between developing and developed countries.
 - AIM supports NAMAs in Thailand and assessment of RAN-GRK, GHG mitigation target in Indonesia, through capacity building on model application in JCM project.



Policy dialogue on mitigation target in Indonesia (2013.10.9)

Training Workshop

- June 10-14, 2013: Asia LCS
 - Training of Enduse model
- November 5-15, 2013: JCM
 - Training of Enduse model and lecture on other models



Training workshop on model at NIES (2013.6.10)



Discussion at Training workshop at NIES
(2013.11.15)



Global & Asian Network & interface between research and policy on LCS

- LCS-RNet, the 5th Annual Meeting at Yokohama, July 22-23, 2013
- LoCARNet, the 2nd Annual Meeting at Yokohama, July 24-25, 2013
- ISAP at Yokohama, July 23-24, 2013
- In Asian countries, the several actions have already been implemented toward the LCS at their own initiatives. The role of Japan to support them is important in order to achieve “Leap-flog development” in Asia.



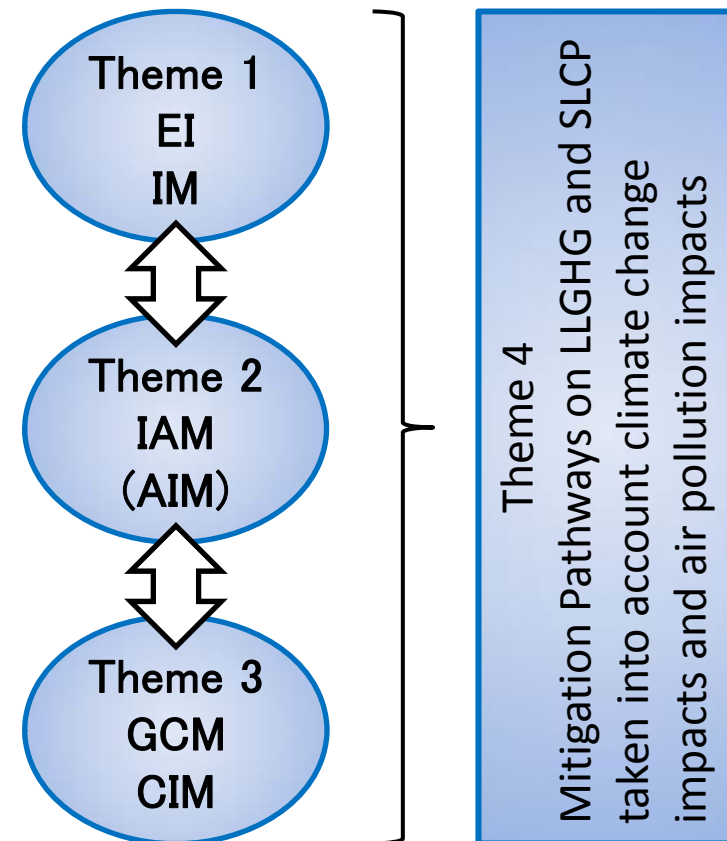
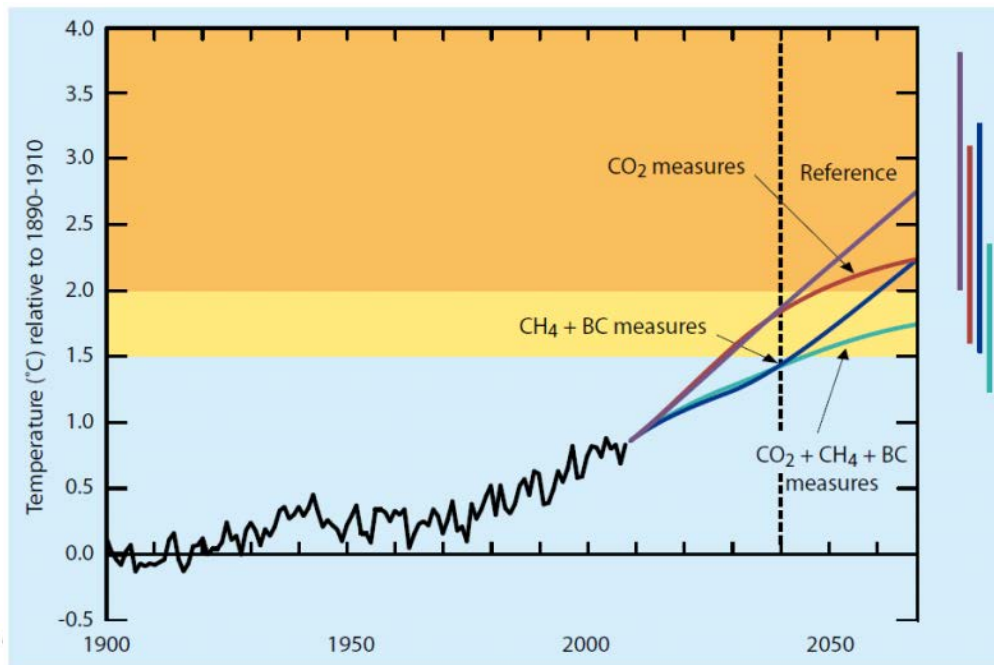
Researchers introducing their countries' activities at ISAP/LoCARNet (2013.7.24)

Research Plan in FY2014 (1)

S-12, ERTDF

- Purpose: Mitigation pathways on both LLGHG (long lived GHG) such as CO₂ and SLCP (Short lived climate pollutants) such as aerosol will be assessed using Emission Inventory (EI), Inverse Model (IM), Integrated Assessment Model (IAM), Chemical Transfer Model (CTM), Climate Model (GCM) and Climate Impact Model (CIM).

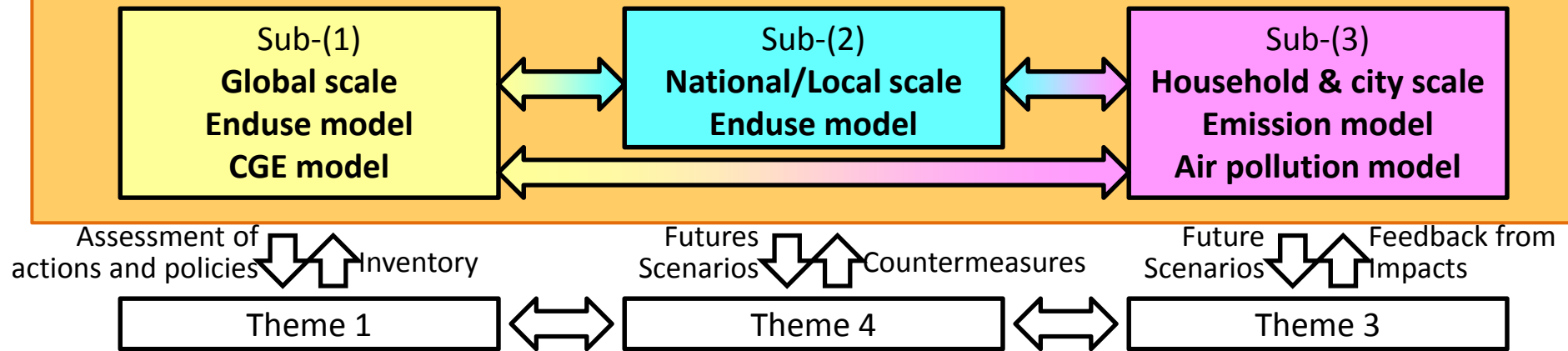
Integrated Assessment of Black Carbon and Tropospheric Ozone (UNEP 2011)
Emission Gap Report (UNEP 2010)
CCAC (Climate and Clean Air Coalition)



Theme 2 Improvement of Integrated Assessment Model and Quantification of Future Scenarios

Goals of Theme 2

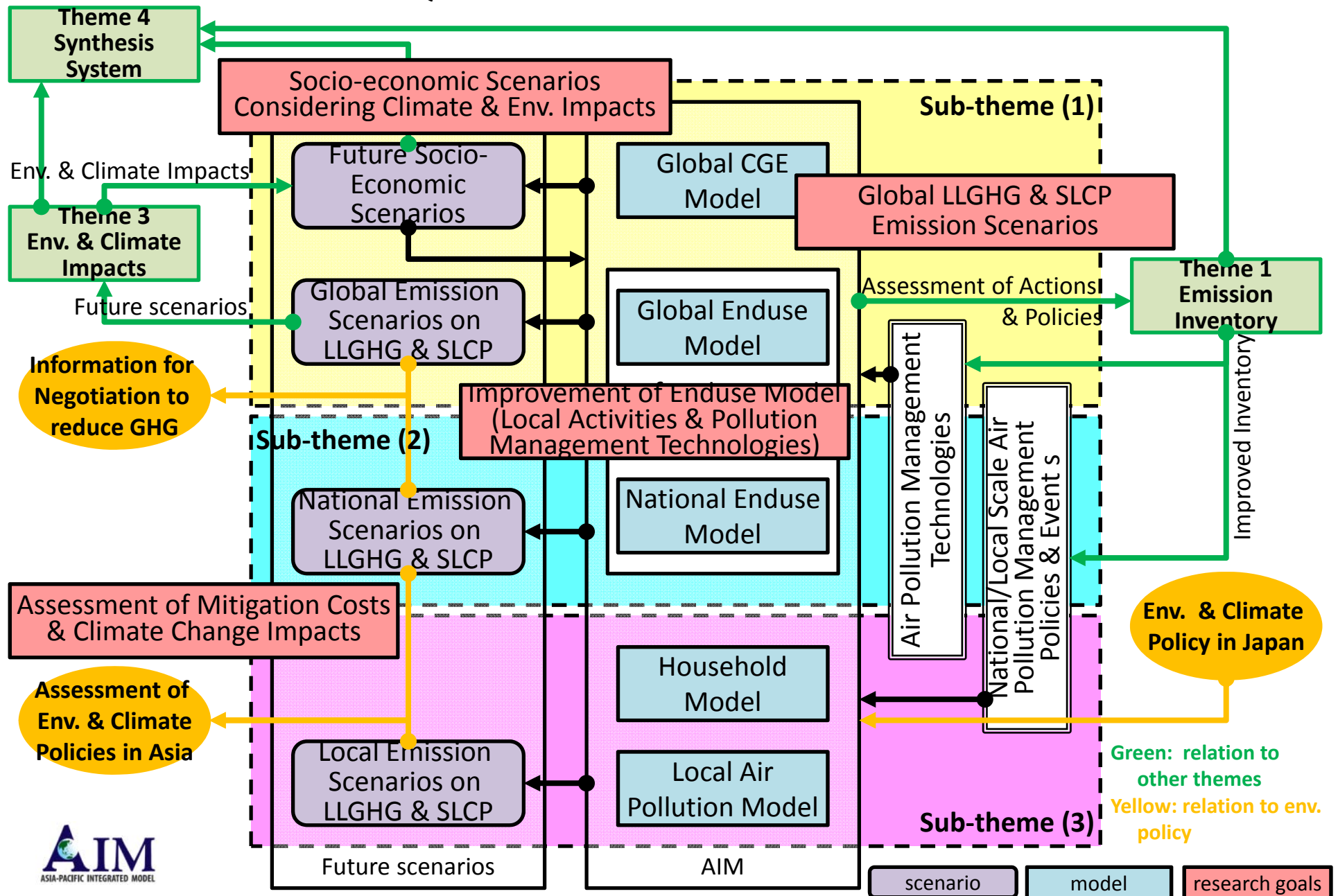
- Enduse model will be improved in order to assess air pollution management technologies in global scale and major Asian countries. National Enduse model will be disaggregated into local scale. By using the improved models, emissions scenarios on LLGHG and SLCP will be quantified taking into account GHG mitigation options and air pollution management.
- Emission scenarios and air pollution impacts in household and city scale will be assessed.
- Future socio-economic scenarios reflecting climate and environmental change based on results in Theme 3 will be assessed.



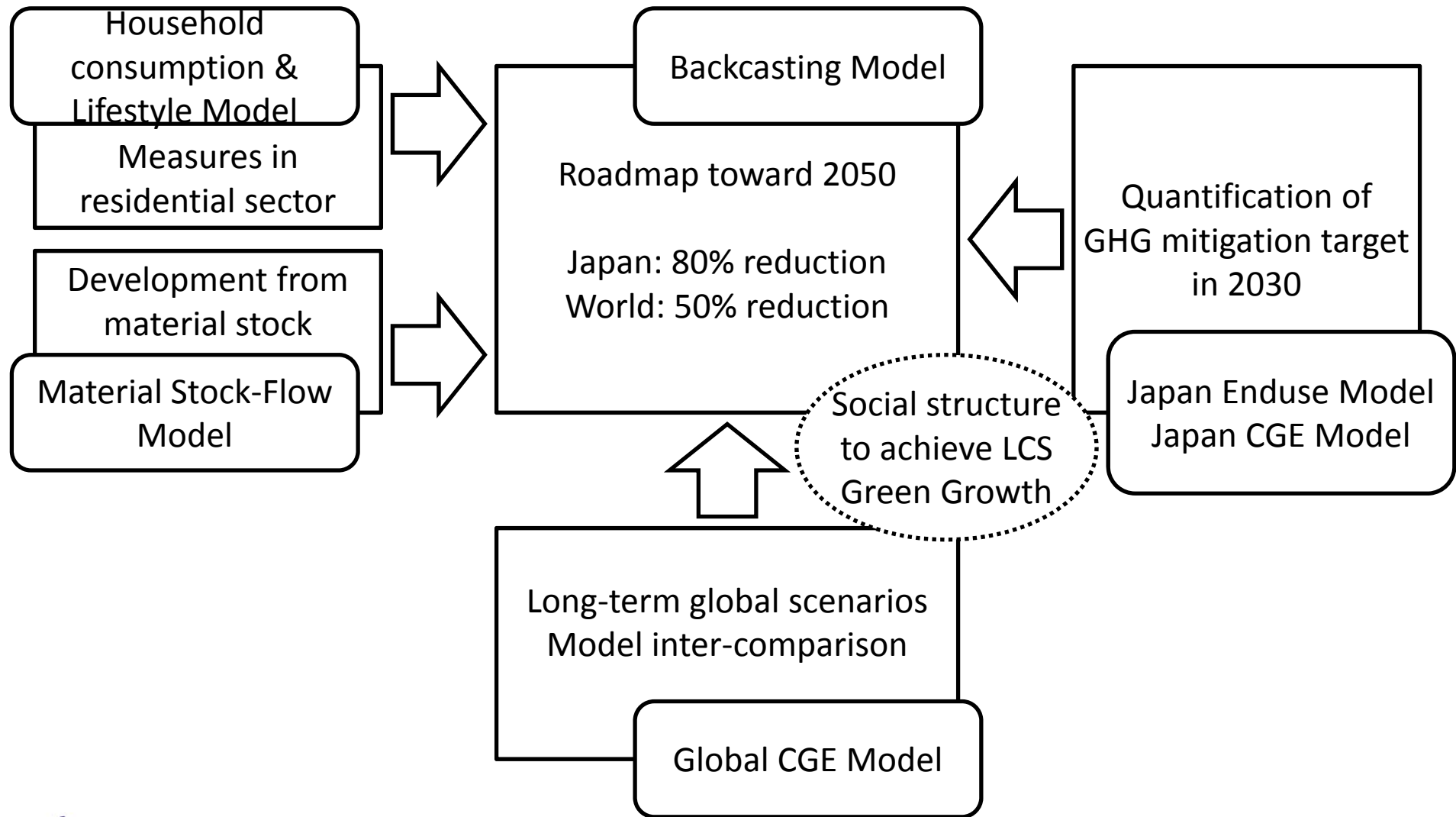
Expected Results

- Quantification of socio-economic scenarios and LLGHG & SLCP emission scenarios taking into account climate and environmental change in global/national/local scale.
- Assessment of GHG mitigation and air pollution reduction policies in Asian countries.

Theme 2: Improvement of Integrated Assessment Model and Quantification of Future Scenarios



Research Plan in FY2014 (2)

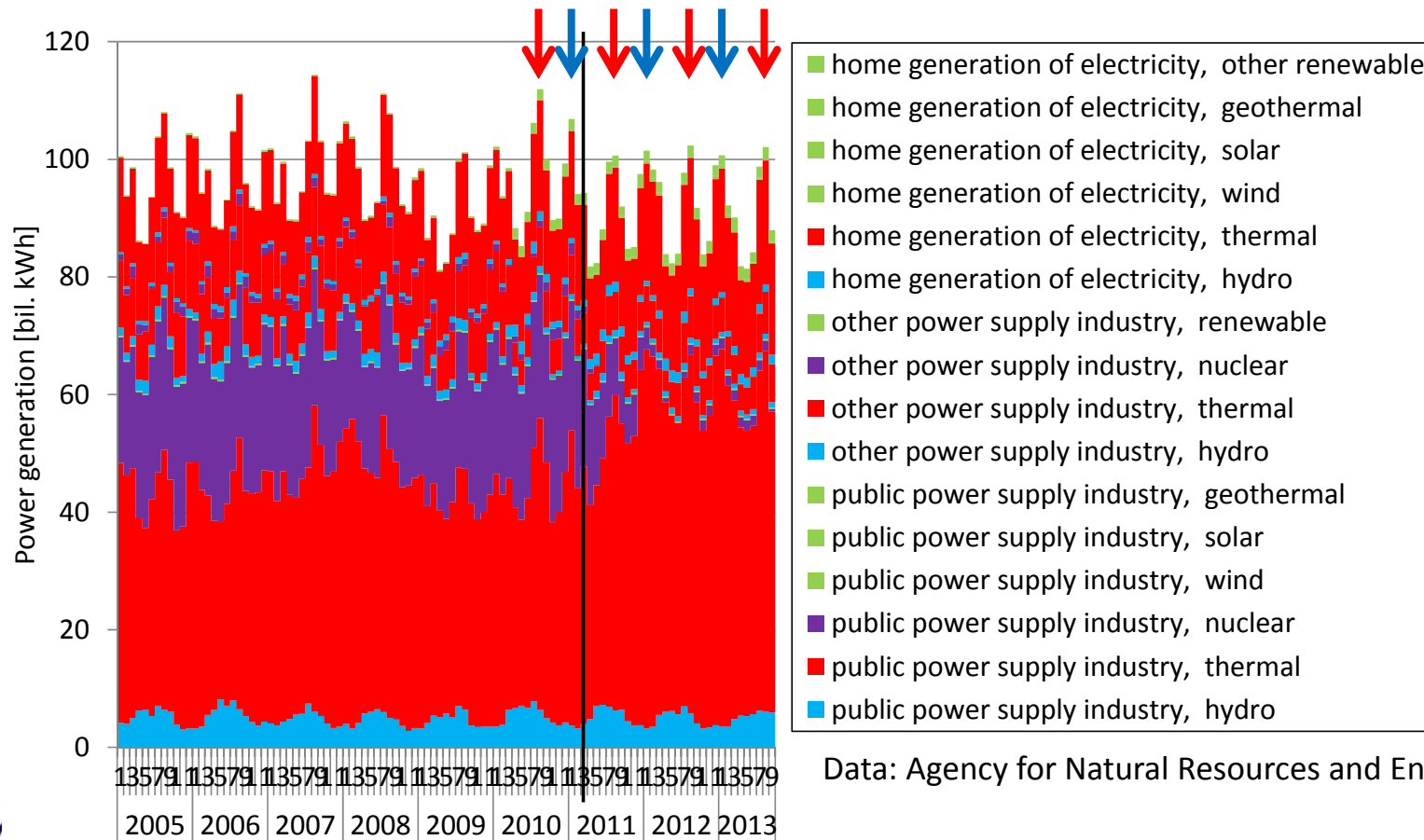


Research Plan in FY2014 (2-1)

- Global scenario and National scenario (under exam)
 - Long-term Global Scenario
 - Quantification of SSPs
 - Contribution to international works
 - IAMC
 - EMF
 - ADVANCE
 - LIMITS
 - Ag-MIP
 - ...
 - Low Carbon Asia

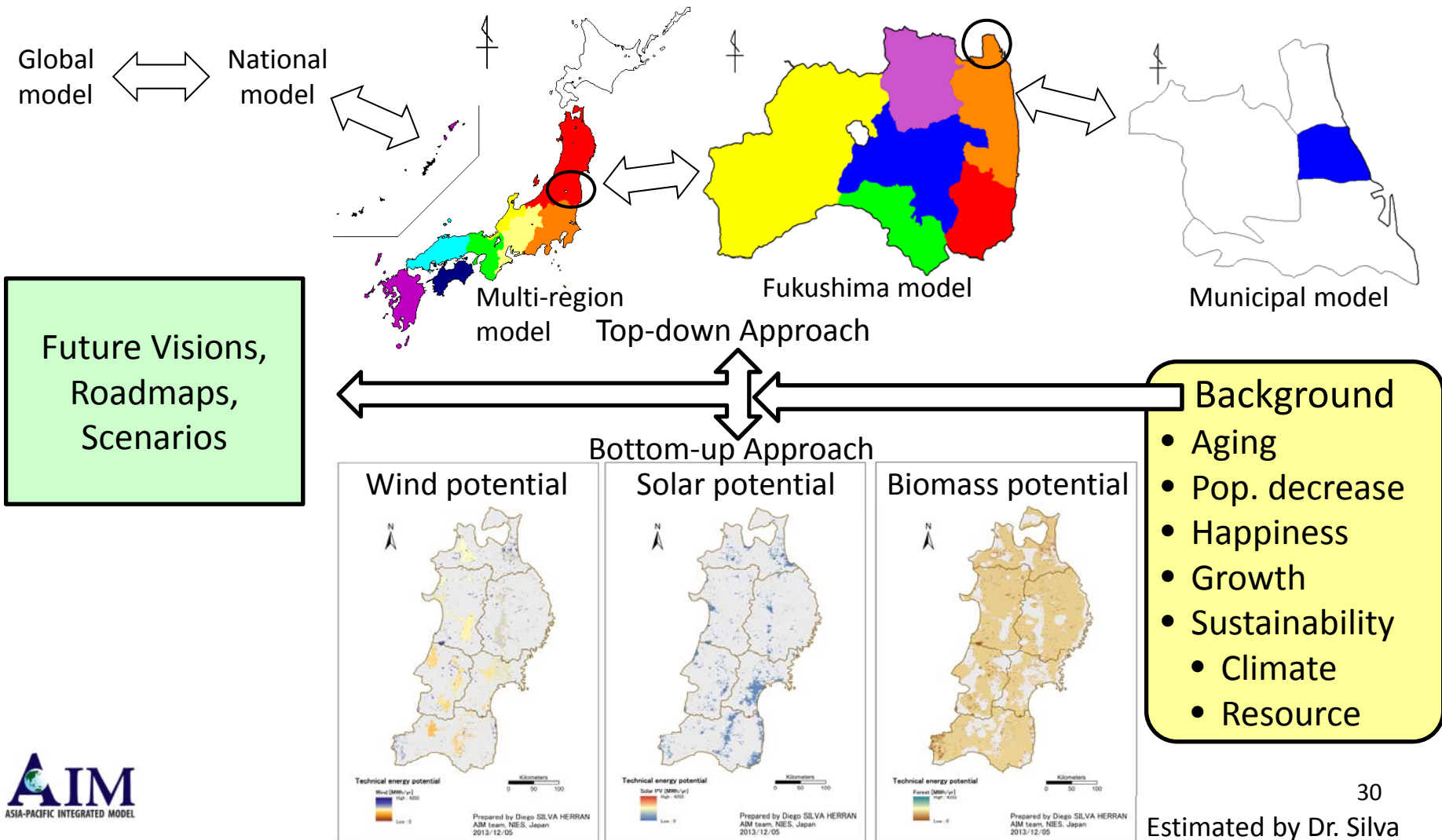
Research Plan in FY2014 (2-2)

- Global scenario and National scenario (under exam)
 - National Scenario
 - macro-flame might be changed after the earthquake in 2011.
 - Previous simulations were based on the existing service demand before the earthquake, but power generation included impacts of nuclear power accident.



Research Plan in FY2014 (3)

- Application of AIM to reestablishment in Fukushima Pref. and Tohoku Area.
 - NIES will construct new branch in Fukushima Pref.
 - Linked with National model, and more realistic



Research Plan in FY2014 (4)

- Impact & adaptation research
 - S-8 will finish in 2014. Toward 2015, new FS will start from April 2014.
 - S-10 will continue.
 - Adaptation will be introduced in the AIM and assessed.
- Integration of IAM & ESM will be discussed at key note speech by Dr. Jae Edmonds

Conclusion

- During this workshop, we want to discuss about AIM model progress and application toward sustainable low carbon society development.
- Welcome your comments, suggestions, proposals and questions!