The Eleventh Tripartite Presidents Meeting
among NIES, NIER and CRAES

Opening Address & Keynote Speech

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President, National Institute for Environmental Studies

November 12, 2014

Good morning everyone, President Meng Wei and delegates of CRAES, President KIM Sam Cwan and delegates of NIER, welcome to Japan and welcome to Kawasaki City. I'm extremely pleased to host the 11th TPM here in Japan. Before starting my talk, I would like to offer my sincere thanks to the Working Group members of the three institutions who have worked diligently to bring this meeting to fruition.

Let me begin my address.
Firstly, environmental issues are a major priority and are particularly topical at present. However this doesn't necessarily mean that we are in the spotlight of public attention. This is the very reason that we need to consider this trend and how we can make ourselves more visible to the general public.

Secondly, our government and people demand quick solutions. There are so many issues, while there are also many ways in which these might be addressed. Both the government and the tax payers are eager to see these issues effectively addressed. We must autonomously consider how we can provide these solutions.

Thirdly, the government and our society are required to facilitate solutions. The environment in which we find ourselves is increasingly demanding. The expectations of society are now extremely high. In this context we must strengthen our research community, and further mutual understanding with society. In short we must give our attention to the people around us.

Here I will introduce briefly an overview of new research activities by NIES. First of all, I would like to talk on the Japan Environment and Children's Study. This is huge study area and we have introduced surveys to quantify environmental influences on, for example, infants from chemical materials.

The second activity is GOSAT, that is, the satellite program which measures concentrations of, for example, carbon dioxide (CO_2) in the atmosphere. Some people doubted that we would be able to measure CO_2 concentrations by satellite. Our strong satellite system for Northern Eurasia allowed us to observe, for example, an increase in CO_2 absorption produced by increased plant activity during the exceptionally hot summer experienced in Russia in 2010. GOSAT will serve an ongoing role in observing such events. GOSAT 2 is the successor to GOSAT and will be launched in 2018. We are going to continue these activities in order to monitor CO_2.

The third issue is $PM_{2.5}$, which is also a big topic these days in Japan. Society is very nervous of its impacts on our health. We have models to forecast $PM_{2.5}$ distributions for Japan, and we are now working hard and our colleagues are going to report on the present status of this work.

The fourth agenda item is Environmental Emergency Research, which relates to the Fukushima No.1 Nuclear Power Plant accident and the Great East Japan Earthquake. NIES will establish a new branch in Fukushima "NIES Fukushima Headquarters" (provisional name) in the Fukushima Prefectural Center for Environmental Creation. Preparations are already well underway and we have 20 people working at our Fukushima Project Office. They are conducting intensive on-the-ground research related to the disaster, and recent progress on this front will also be reported during this meeting.

The fifth item is the Joint Credit Mechanism (JCM)-related Measurement Reporting and Verification (MRV) project. Japan is currently in the process of strengthening JCM to help developing countries to reduce emissions. However, these kinds of reductions are usually very difficult to evaluate. For example, a new car may produce less emissions, such that, while emissions per car might be reduced, the total number of cars is increasing, which does not equate to a reduction in the total. To account for CO_2, we have established very strict and transparent mechanisms to measure its impacts. As such, we are working to establish the mechanism for MRV under the JCM. This also relates to eco-city design and recycling. Every kind of social reform is also included. Again, this is an area which is very difficult to evaluate.

The last matter to be covered is the increasing public attention on biodiversity and associated issues. The United Nations Conference on Environment and Development (UNCED) achieved agreement with regards to the Climate Change as well as the Biological Diversity in 1992. However, while CO_2 and climate change issues are relatively advanced, with UNFCCC/COP 20 being held soon this year, issues of biodiversity have been delayed on the international stage, and the last month of this year UNEP/CBD/COP 12 was held in Pyeongchang, Korea. Both topics must be considered together rather than discretely. The tendency to do so should be discouraged and remain a thing of the past.

Allow me to conclude my speech with a few words. In Japan, our government has changed the law such that the regulations under which we are administered have also changed. We are currently working on the details of our next 5 year plan. However there are two major perspectives influencing this which remain to be negotiated. The first is the general consensus on the importance of basic research. I also share the conviction that basic research on the environment should be one of our first priorities. The other perspective is the trend that we now need to respond speedily to society's expectations, whereby it demands quick solutions before observing any process. Large scale projects such as GOSAT, JCM and so on must also be maintained.

For new undertakings in particular, our government requires us to minimize costs while maximizing research outcomes. As participants of TPM, our mutual task is similarly to maximize results in cooperation between other institutions and to further collaboration with overseas institution.

I would like to again express our sincere thanks to the TPM11-Working Group members of NIES, NIER and CRAES for coordinating and to Kawasaki City for supporting this important meeting.

Yesterday we visited some environment-harmonized industries in Kawasaki City and tomorrow we will have our International Workshop in the city. Kawasaki City is one of the most advanced eco-cities, and elicits strong levels of cooperation with industry and the general public. I think this is very important. There is a general tendency when we talk about the environment to classify industry as the enemy. However, this is a different perspective, which accepts that our society must have industrial activity, so that we have to work in tandem with both persons from industry and the general public.

Finally, I would like to express my hope that this TPM11 will prove successful and contribute to facilitating further collaboration among all of us.

Thank you for your attention.

The 11th Tripartite Presidents Meeting
(Nov. 11-15, 2014, Kawasaki, Japan)

Keynote Speech in TPM11

Akimasa Sumi

President
NIES, Japan

History of NIES

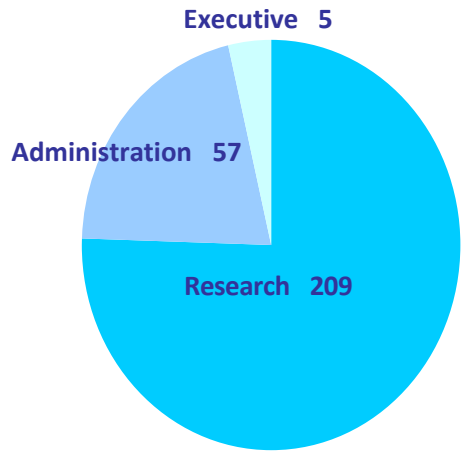
1975 1990 2000 2010 2014 2020

- 1974 National Institute for Environmental Studies established
- 1990 Restructuring of NIES
- 2001 NIES restructured as an incorporated administrative agency
- 2001-2005 The first five-year plan
- 2006-2010 The second five-year plan
- 2011-2015 The third five-year plan
- March 2011 the Great East Japan Earthquake
- March 2013 Amendment of the third five-year plan to reflect Research on Disaster Environment

- 1992 Rio Summit
- 1997Global Climate Change-COP3（Kyoto)
- 2010 Biodiversity-COP10(Nagoya)
- 2012 Rio+20

Personnel

PERMANENT : 271

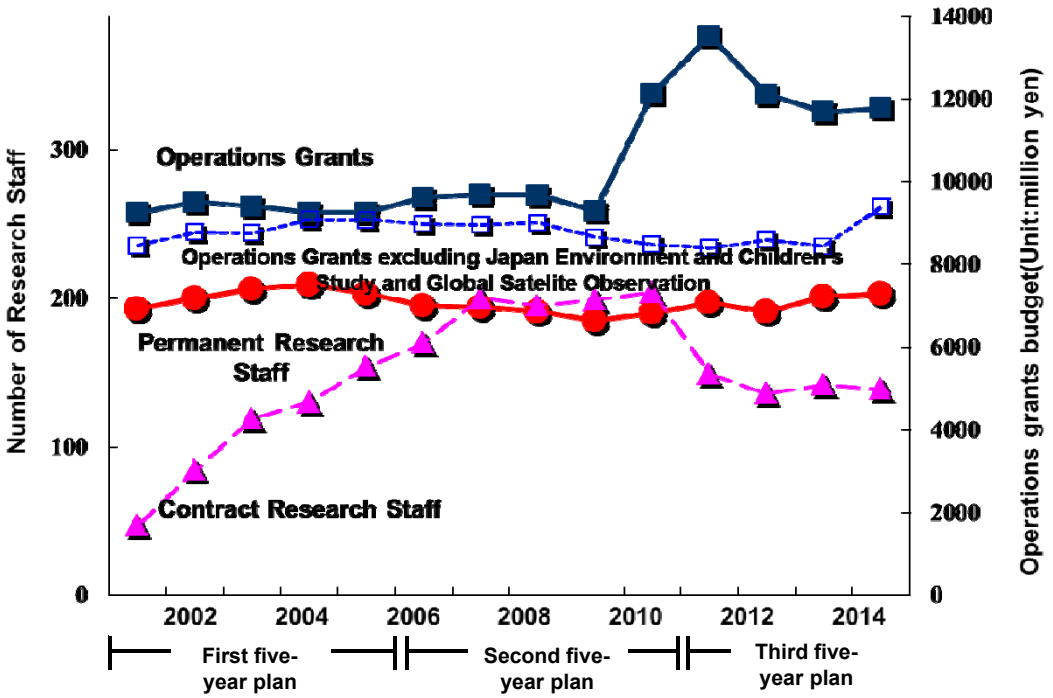


CONTRACT : 619

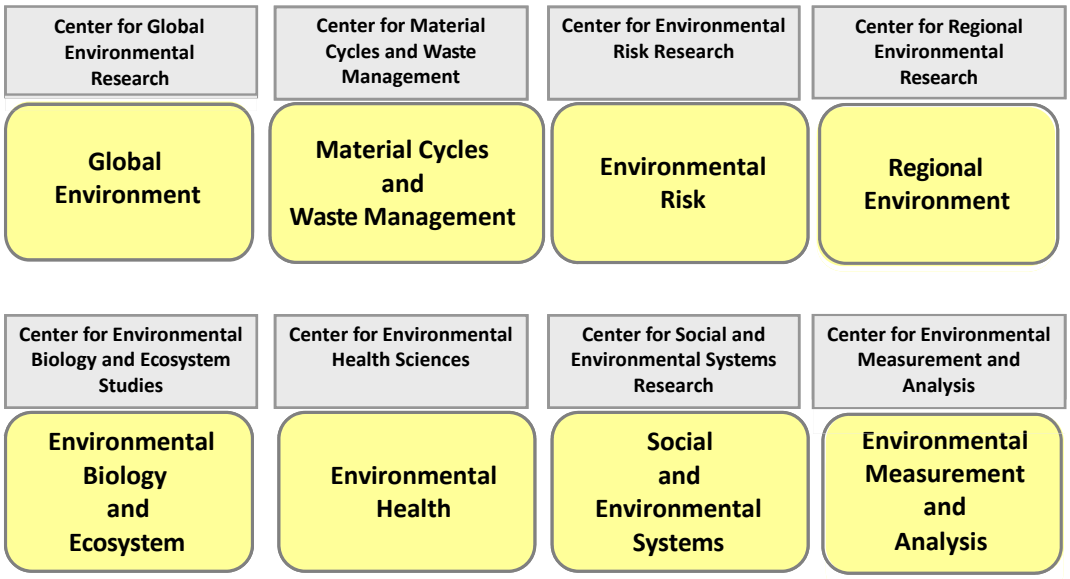
Contract Researchers (150)
Assistant Staff (469)

as of October 1, 2014

Number of Researchers and Allocation of Operations Grants



Research Centers and Fields



General Trends around Environmental Research

1. Environmental Issues has become a main-stream. Environment-related aspects should be included in every policies. Do we control this trend?

2. Society and government requests quick and effective solutions.

3. Our research is expected to contribute to solution of urgent problems.

4. However, problems are so complex and difficult to solve.

5. Relationship between research community and society

Situation around Us(NIES)

1. New legislation of our organization

2. Maximization of Research results not only in our Institute but also in Japan.

3. The 3-rd Research Plan is now being prepared.

4. Concrete contribution to administration

New Research Activities

1. Japan Environment and Children's Study (JECS)

- Overview and current status (# of samples >100,000)

2. GOSAT (Greenhouse gases Observing SATellite)/GOSAT2

- GOSAT was launched on January 23, 2009, and has been in operation for more than four years.
- GOSAT2 Project was initiated in 2012, for launch in 2018.

3. PM2.5

4. Environmental Emergency Research

- NIES Fukushima Office (2016.4~)

5 . JCM-trelated MRV project

6. Biodiversity becomes important, especially IPBES+IPCC

Overview and Status of the Japan Environment and Children's Study (JECS)

- **Objective**

  To investigate effects of children's exposure to a wide range of environmental factors during prenatal period and childhood on their health and development

- **Methods and sample size**

  National Institute for Environmental Studies, as the National Centre, leads JECS in cooperation with 15 Regional Centres. The study is conducted on 100,000 mother-child pairs, collecting biological samples such as blood and urine as well as information on disease onset, health and development.

- **Study period**

  Participant recruitment started in January 2011 and was completed in March 2014. Children will be followed-up until they reach 13 years of age.

- **Current status as of 31 October 2014**

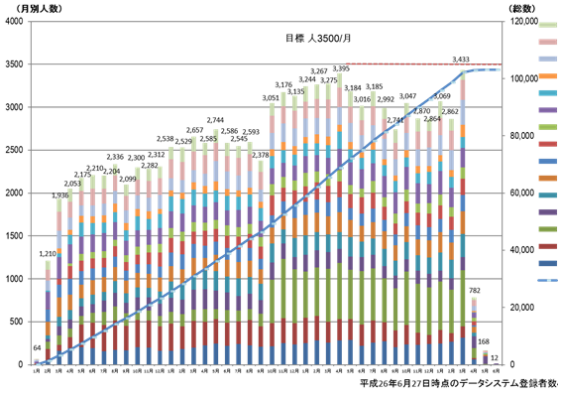
  Mothers registered: 103,106

  Consent rate: 78.5%Babies born : 96,049

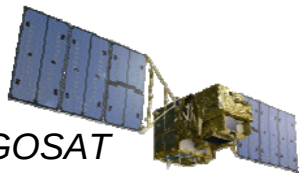
- **Follow-up programme**

  Questionnaires are administered every 6 months following birth.

  Questionnaires for children up to 3 years of age have had a 90% response rate.



GOSAT (Greenhouse gases Observing SATellite) & GOSAT-2

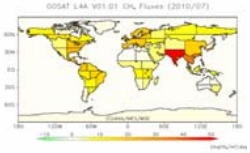


GOSAT

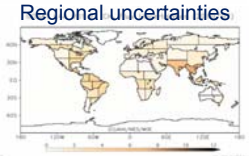
- GOSAT was launched on January 23, 2009, and has been in operation for more than five-and-a-half years
- GOSAT data have been available since June 2009. Almost all of the GOSAT standard data products are open to the public
- CO_2 and CH_4 column concentrations have been obtained throughout the world

- New release of the GOSAT data products in 2013 -2014:
  - GOSAT Level 4A regional monthly CH_4 fluxes, with their uncertainties, and Level 4B model-simulated three-dimensional distributions of CH_4 concentrations (Ver.01.01, June 2009–May 2011)
  - Updated Level 4 CO_2 fluxes and simulated three-dimensional distributions (Ver.02.02, June 2009–October 2011)

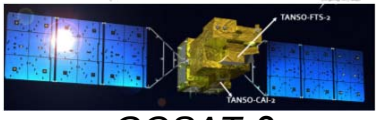
L4A CH_4 monthly flux Ver.01.01 (July 2010)



Regional uncertainties



- **GOSAT-2 will be Launched in January, 2018.**
  - CO_2, CH_4, **CO**, and aerosols will be observed
  - Much greater data range/quantity to be obtained compared with GOSAT
  - GOSAT-2 Science Team has been just organized



GOSAT-2

More Info:

- GOSAT Project Website: http://www.gosat.nies.go.jp/index_e.html
- GOSAT Data distribution Website: https://data.gosat.nies.go.jp/

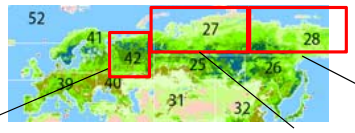
Inter-annual variability in terrestrial uptake over Northern Eurasia : Summer 2009, 2010, 2011 estimated using GOSAT CO2 data

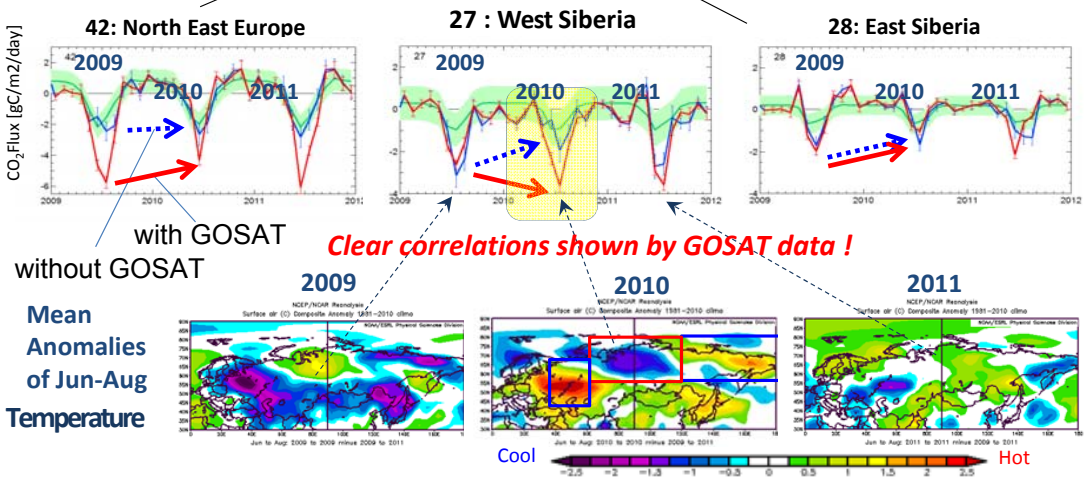
- Few ground-based surface CO2 observations
- Many GOSAT CO2 observations

Prior fluxes

Posterior fluxes estimated from **Surface CO2 only**

Posterior fluxes estimated from [Surface CO2 + **GOSAT**]

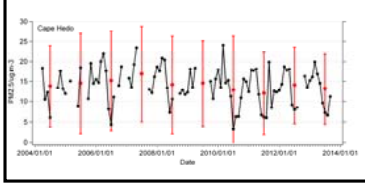


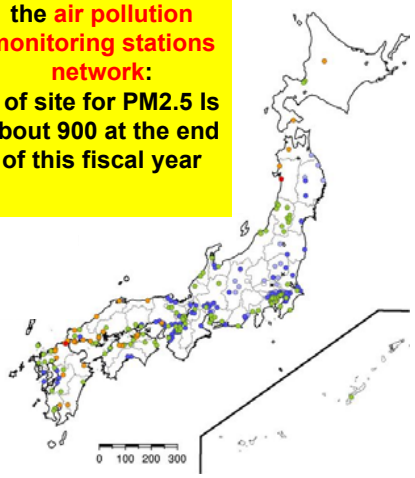


Long term monitoring for aerosols (PM2.5 etc.) in NIES

NIES monitoring site for PM:
Cape Hedo, Okinawa Since 2004
Fukue, Nagasaki, since 2008
Located in the west part of Japan, And the Center of East Asia

Use also data from the air pollution monitoring stations network:
# of site for PM2.5 Is about 900 at the end of this fiscal year

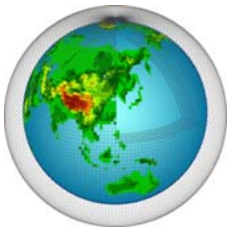




Development of multi-scale modeling system

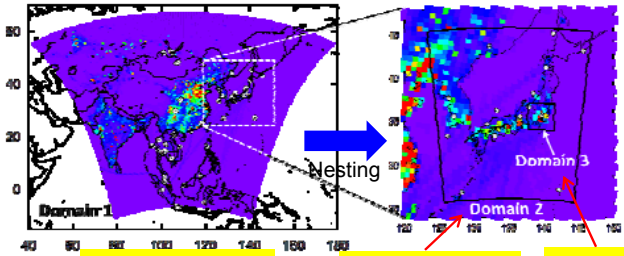
Combinations of multi-scale modeling frameworks

Global CTMs



Δx ～ 300 km（T42）

Regional CTMs



Δx ～ 50-100km

Δx ～ 10-25km

Δx ～ 5km

MIROC-ESM-CHEM

Linkage with climate change researches

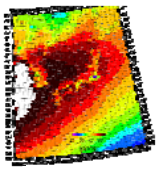
NICAM-CHEM

Potential for regional simulation by stretching grid

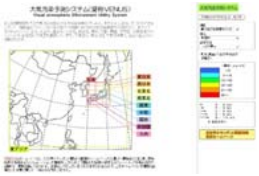
Boundary condition

WRF(RAMS)/CMAQ

Long term hind-/forecast simulations of air quality in Japan

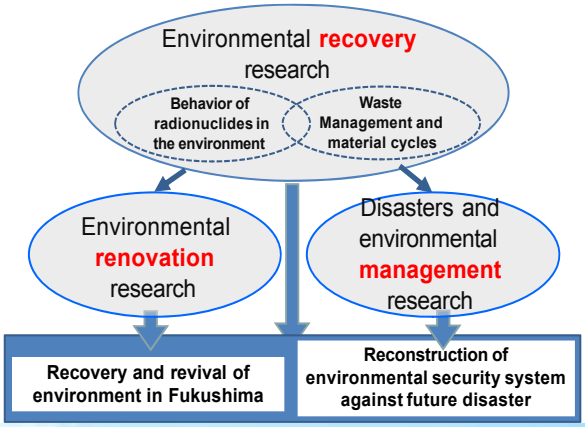


Air pollution forecasting system (VENUS)

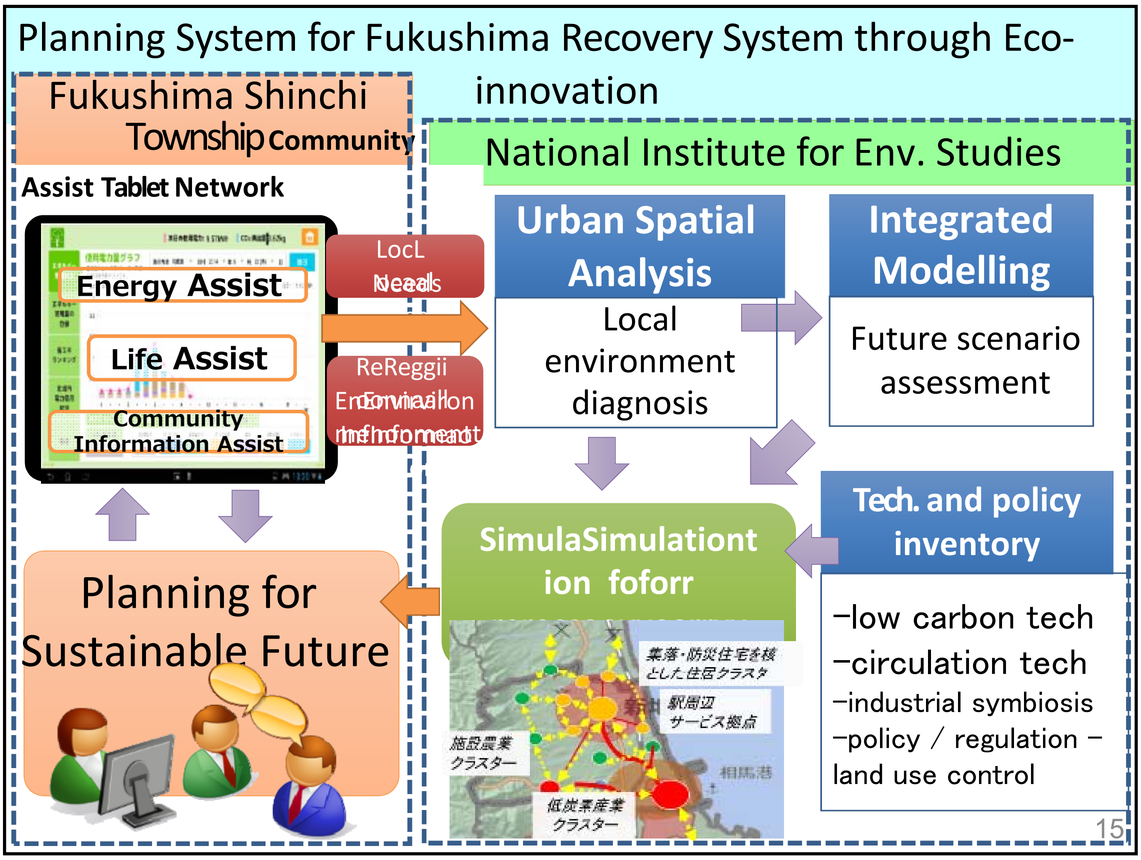


Under development (2014-2016)

Environmental Emergency Research



- Preparations ongoing towards the establishment of a NIES Fukushima Branch (provisional name) to be located in the research block of the Fukushima Prefectural Center for Environmental Creation, currently being advanced by Fukushima Prefecture.
- Aims to expand research as facilitated by a local research hub in tandem with Fukushima Prefecture and the Japan Atomic Energy Agency.


Planning System for Fukushima Recovery System through Eco-innovation
Fukushima Shinchi Township Community
Assist Tablet Network
Energy Assist
Life Assist
Community Information Assist
Planning for Sustainable Future
National Institute for Env. Studies
Urban Spatial Analysis
Local environment diagnosis
Integrated Modelling
Future scenario assessment
Tech. and policy inventory
−low carbon tech
−circulation tech
−industrial symbiosis
−policy / regulation −
land use control
集落・防災住宅を核とした住居クラスタ
駅周辺サービス拠点
施設農業クラスター
低炭素産業クラスター
相馬港
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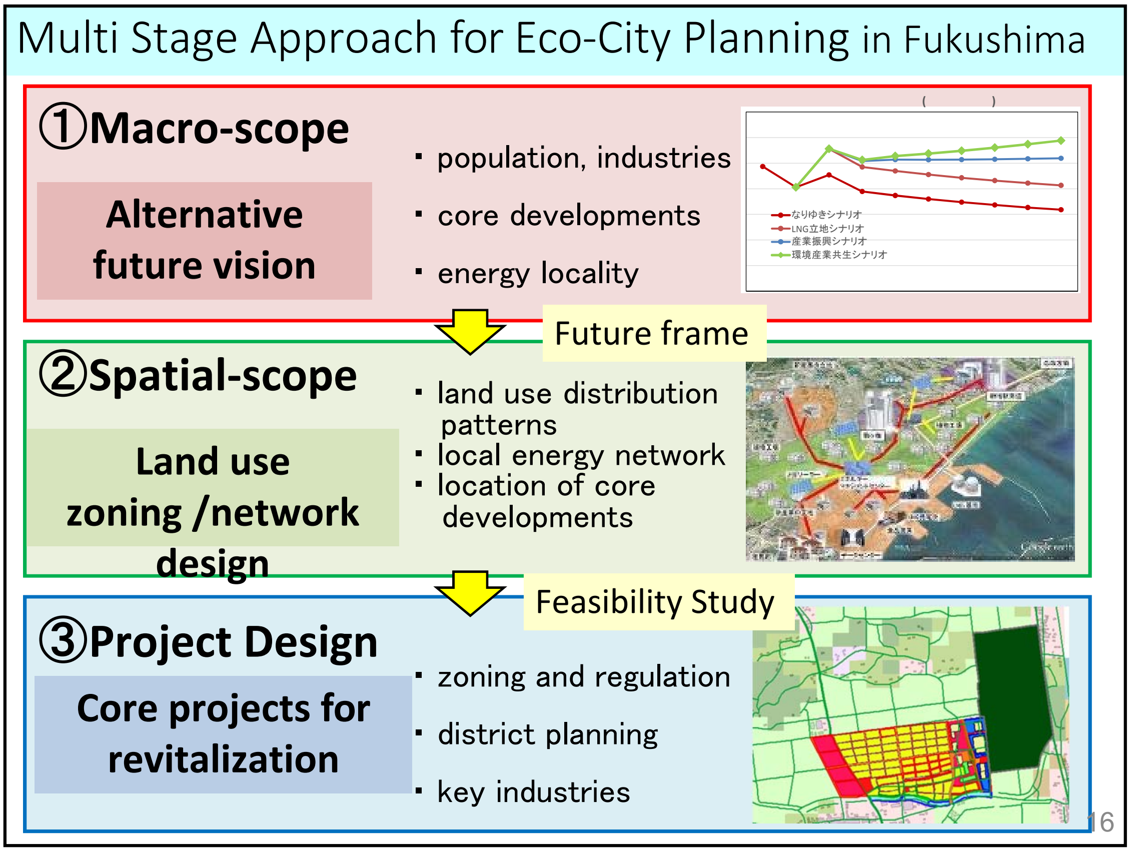
Multi Stage Approach for Eco-City Planning in Fukushima
①Macro-scope
Alternative future vision
・population, industries
・core developments
・energy locality
なりゆきシナリオ
LNG立地シナリオ
産業振興シナリオ
環境産業共生シナリオ
Future frame
②Spatial-scope
Land use zoning /network design
・land use distribution patterns
・local energy network
・location of core developments
Feasibility Study
③Project Design
Core projects for revitalization
・zoning and regulation
・district planning
・key industries
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Estimation of Alternative Future Recovery Scenarios

Alternative Spatial Scenario

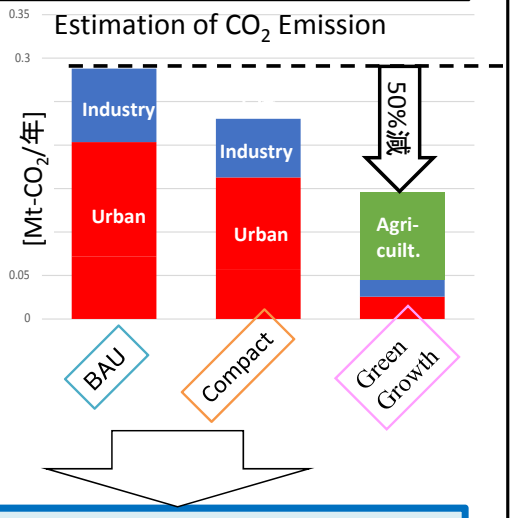
Quantification of Impacts and Costs

BAU

+Compact City

+Green Growth

Effects of Local Energy Management



Green growth could double Carbon Efficiency

Development of Innovative MRV Methodology System

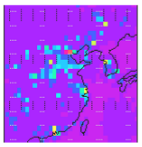
- Development of higher level Monitoring, Reporting, and Verification System to complement Satellite data.
- To provide the social systems toward low carbon society on urban or regional scale and incorporate with GOSAT satellite information system and on-site monitoring system

①On site Monitoring to complement GOSAT Satellite

●On site ground-based monitoring will provide higher resolution MRV verification in relation with satellite sensing information to verify the emission reduction effects of Joint Crediting Mechanism (JCM).

●Monitoring system for CO2, CO, and SLCP will be developed by selecting demonstration projects in urban and industrial areas.

Complement On site monitoring in Southeast Asia



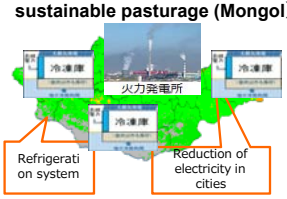
Ground On Site Monitoring

②Monitoring and verification of low carbon systems

- To develop urban and regional low carbon systems based on local characteristics to facilitate the utilization of Japanese low carbon technologies by Asian cities.
- In FY 2014, an urban and industrial system - in Indonesia - and an agricultural system - in Mongolia - will be verified.

Regional Energy Network System through Industrial Symbiosis （Indonesia）

Dispersed renewable energy and sustainable pasturage (Mongol)



International Cooperation toward Low Carbon Society

Japan-UK Joint Project on LCS
2006, 2007, 2008

LCS-RNet: endorsed by G8EMM

UK

EU

LCS study in Japan

USA

China

Japan

India

・ Participation in international model comparison on mitigation potential

Promote researches on Asia LCS

AIM Training Workshop at NIES, 2013

The 18th AIM International Workshop, 2012

LCS model building capacity workshop, Organized by TGO, SIIT-TU, JGSEE, NIES, at Bangkok, 2010

Development of Low Carbon Society Scenarios for Asian Regions

LoCARNet

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Message or Summary

1. We are now preparing the next research plan.
2. Basic research about Environment is maintained.
3. Large-scale projects are emphasized, z.B. GOSAT,JCM,JECS etc,
4. Maximization of Research Results
   Coordination of domestic and international research communities

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