Innovation and Sustainable Development in Japan's S&T Policy

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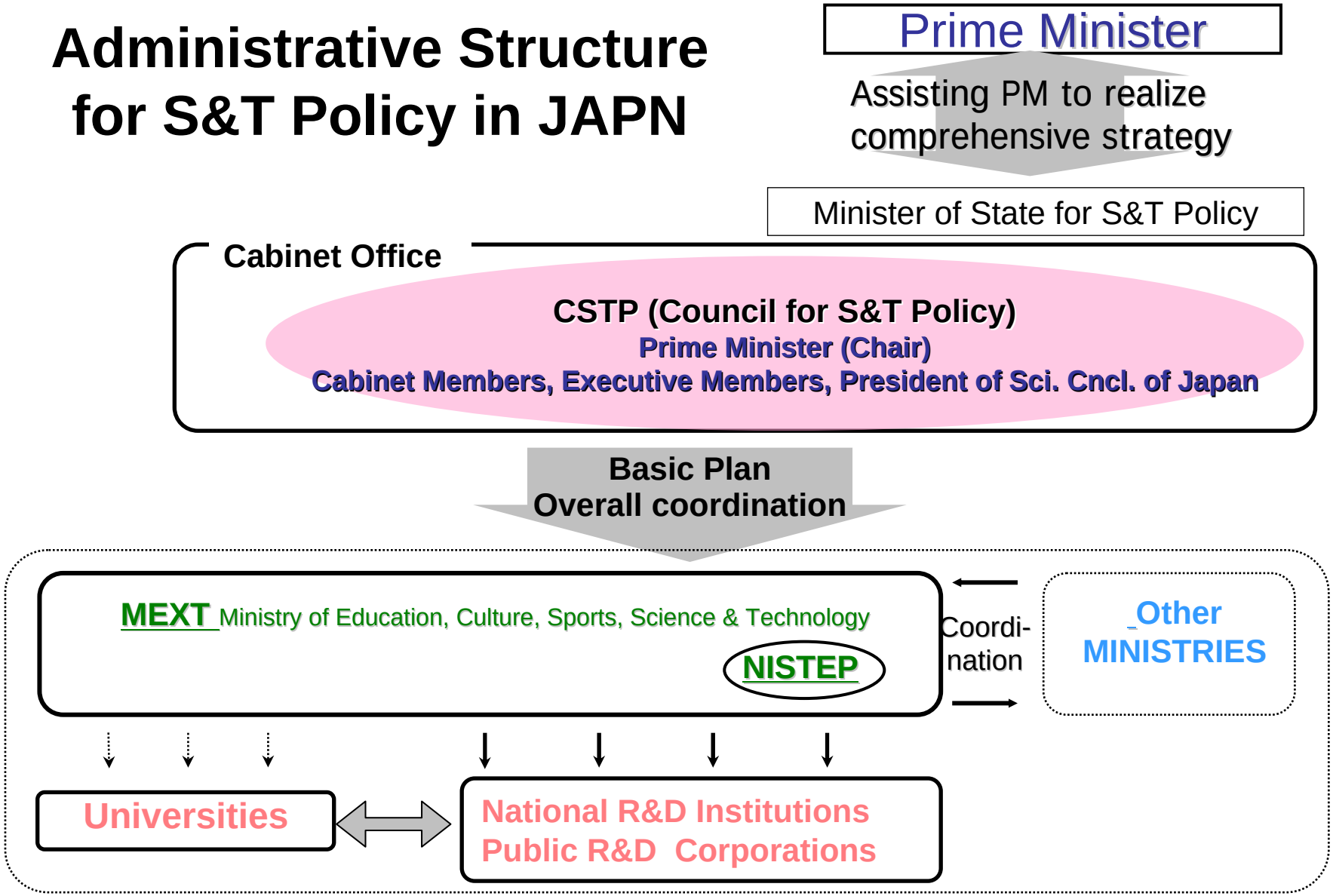
Outline

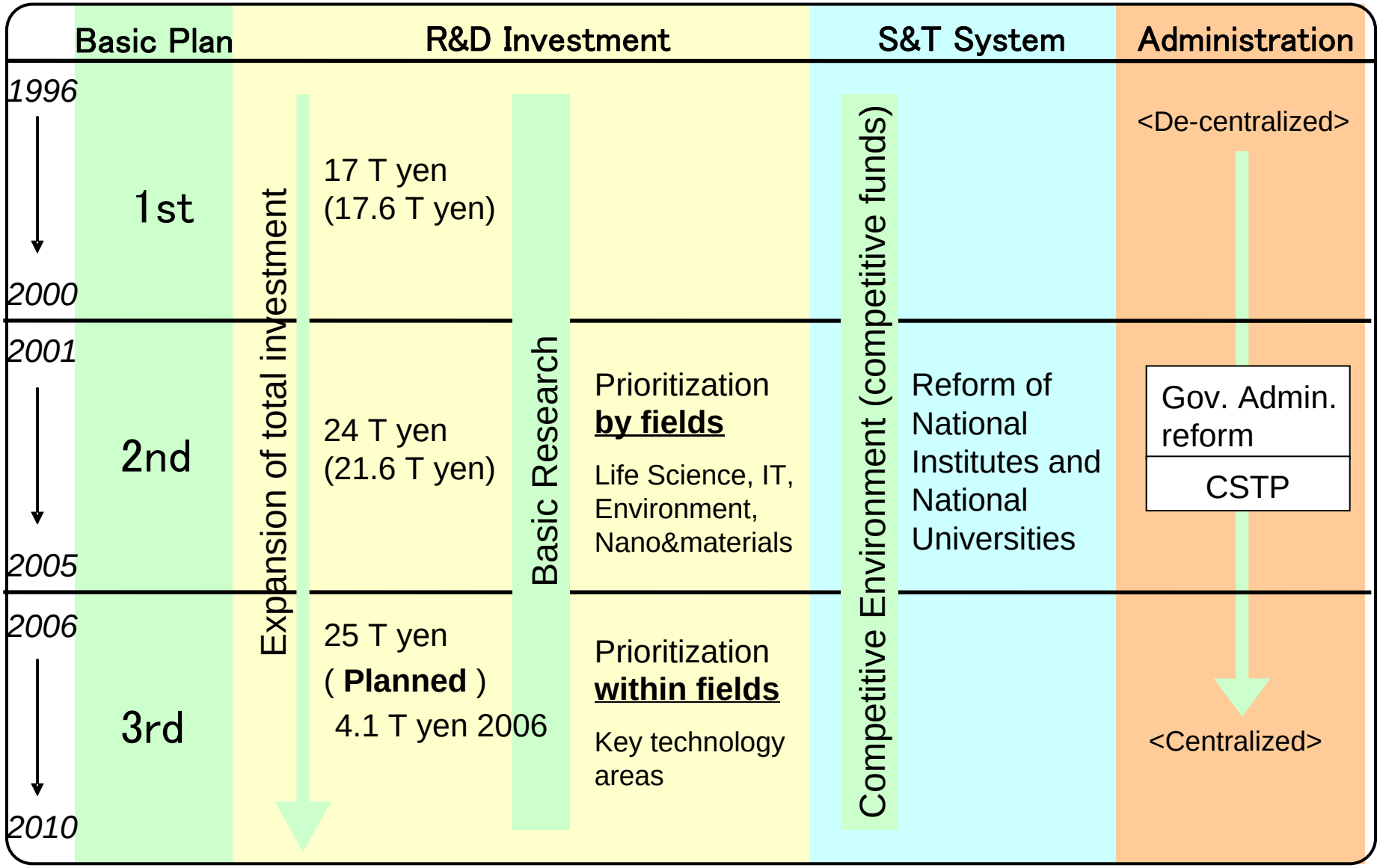
1. Japanese S&T policy System Overview
2. Sustainable Development in 3rd S&T Basic Plan
3. Innovation 25, Foresight and Policy
4. Recent Research Activities in NISTEP
5. Summary

1. Japanese S&T Policy System Overview

Administrative Structure for S&T Policy in JAPN



Development of S&T Basic Plan



2. Sustainable Development in 3rd S&T Basic Plan in Japan

Principle of the 3rd S&T Basic Plan

6 Policy Goals

- **Create Human Wisdom**
  - **1. Quantum Jump in Knowledge Discovery & Creation**
  - **2. Breakthroughs in Advanced S&T**

- **Maximize National Potential**
  - **3. Sustainable Development**
    -Economic growth & environmental protection
  - **4. Innovator Japan -Strength in economy & industry-**

- **Protect Nation's Health & Security**
  - **5. Nation's Good Health over Lifetime**
  - **6. The World's Safest Nation**

Governmental Expenditures

S&T investment expected to reach 25 trillion yen over 5 years

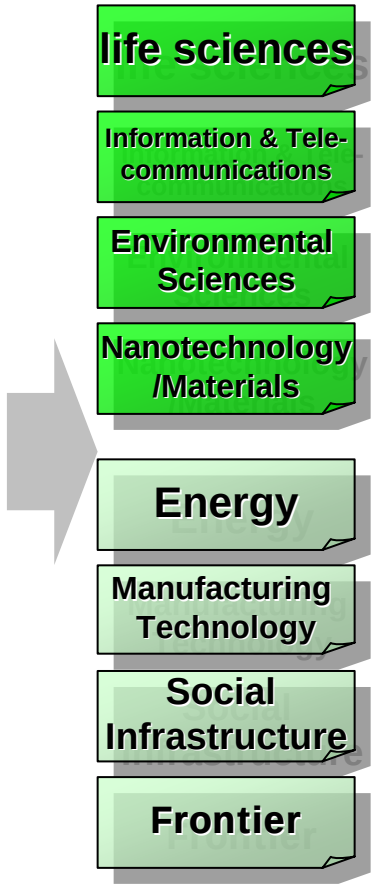
(1 % of GDP by 2010, expected annual growth rate of 3.1 %)

Policy Goal: Sustainable Development -economic growth & environmental protection-

- **Global Warming and Energy Problems**
  - Observation of the Earth, Prediction of Global Climate
  - Being a Top Level Energy-Saving Country
  - Establishment of Pro-Environmental Energy Supply
  - Popularization of Fuel Cell Technology
  - Long term commitment to the Atomic Energy Generation
  - Stable and Efficient Supply of Energy and Electricity
- **Establishment of Eco-Friendly Society**
  - Promotion for Biomass Technology
  - Promotion of 3R (Reduce Re-use recycle)
  - Risk and Security Management of Chemical Substances
  - Sustainable Preservation and Utilization of Ecosystem
  - Clean Water Circulation and Sustainable Utilization
  - Reduction of Greenhouse Gas, Air Pollution, Ocean Pollution

Strategic Priority Setting in S&T

- **Strategic Prioritized S&T : 62 areas**
  - Emerging Infectious Diseases
  - Process innovation for Sustainable Development & Aging society
  - etc.
  - **5 Key Technologies of National Importance**
    - Super Computing Technology
    - X-ray Free Electron Laser
    - Space Transportation System
    - Fast-Breeder Reactor Cycle Technology
    - Earth Observation and Ocean Exploration System
- **Essential R&D issues: 273 items**
  - Bio Imaging etc.



8 fields

3. Innovation 25 Policy, Foresight and Policy

What is “Innovation 25”?

The policy speech of the Abe administration (29 September 2006)

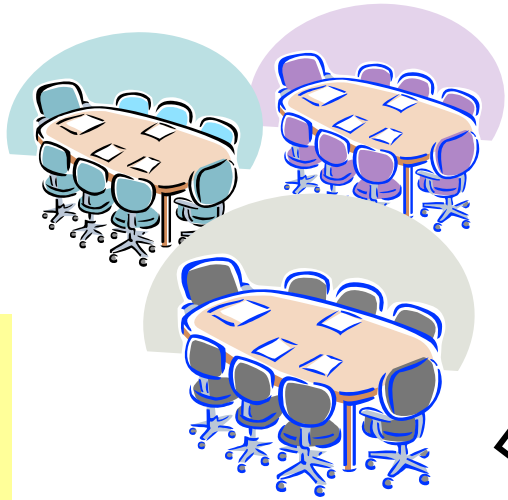
The long-term strategy initiative "Innovation 25" will be put together and executed with an eye on the year 2025 in each field of medicine, engineering, and information technology, etc. for the creation of innovation contributing to the growth.

(From the website of “Innovation 25”)

- "Innovation 25" is one of the promises made in the policy speech of the Abe administration.
- It is a long-term strategy initiative for the creation of innovation that will drive growth and lead sustainable development.
- Under Ms. Sanae Takaichi, Minister of State for innovation, the Innovation 25 Strategy Council was set up in the Cabinet Office.

NISTEP implemented the Foresight study for “Innovation 25” Initiative

Steering committee
- consisted of a chair and 15 members including social scientists;
- had two meetings;
- supervised the progress.



Experts panels by theme
Each panel
- consisted of a chair and around 10 members;
- had two meetings;
- looked toward the future of the relevant theme.

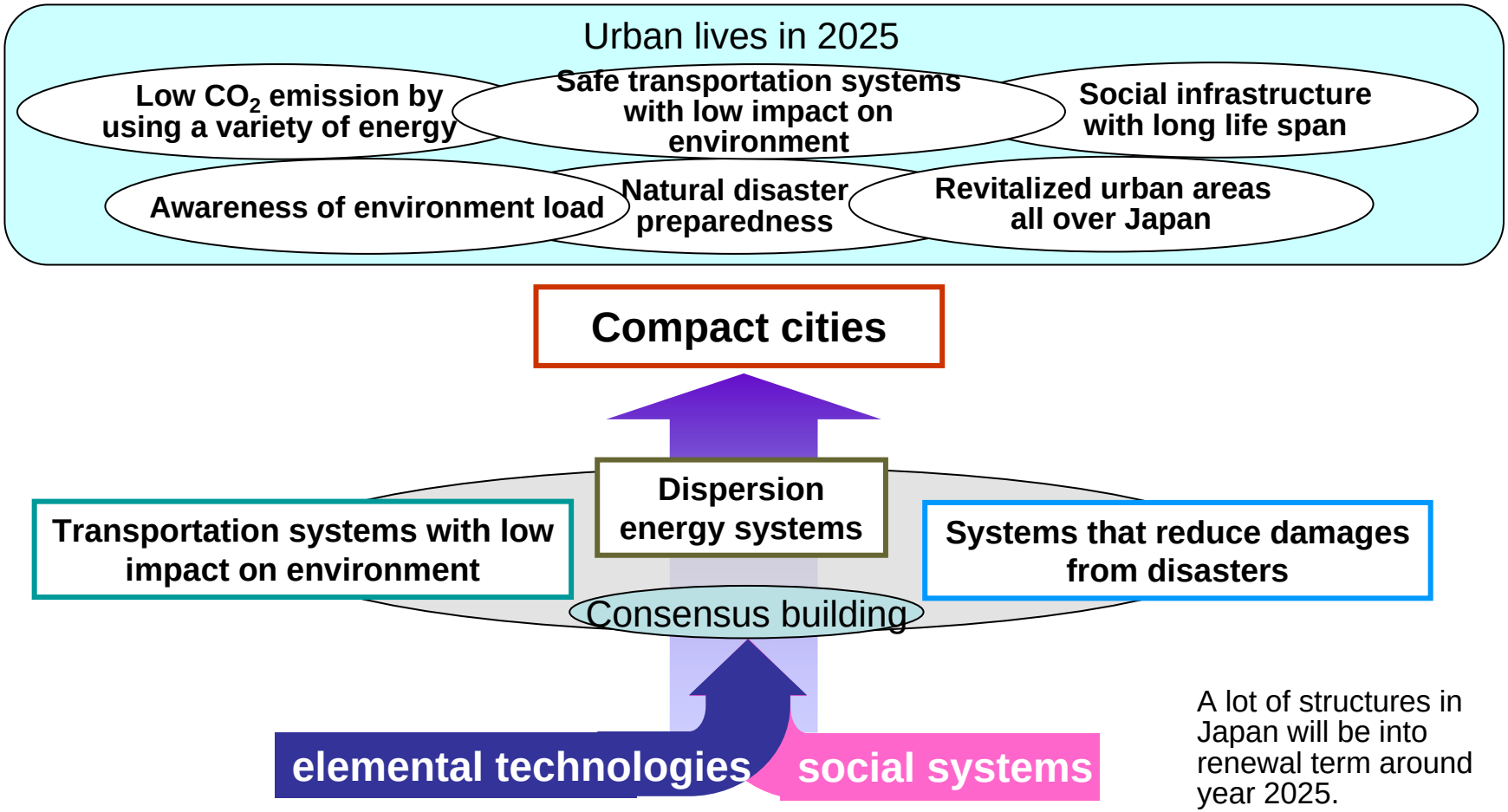
Workshops by theme
From 30 to 50 people joined each workshop. Participants were; S&T experts, social scientists, younger researchers, users, etc.

*Around 300 experts joined the discussion.

Six themes for “Innovation 25”

Theme 1	Staying healthy throughout your life
Theme 2	Information and telecommunications infrastructure to improve quality of life: benefit of ubiquitous computing
Theme 3	Assistance for activities of daily life based on the development of brain science
Theme 4	Safe and sustainable cities
Theme 5	Keeping yourself vigorous and open-minded: career choices, child-raising and diversification in seniors’ lifestyles
Theme 6	Efforts against global environmental issues and toward coexistence in the world

Theme 4: Safe and sustainable cities

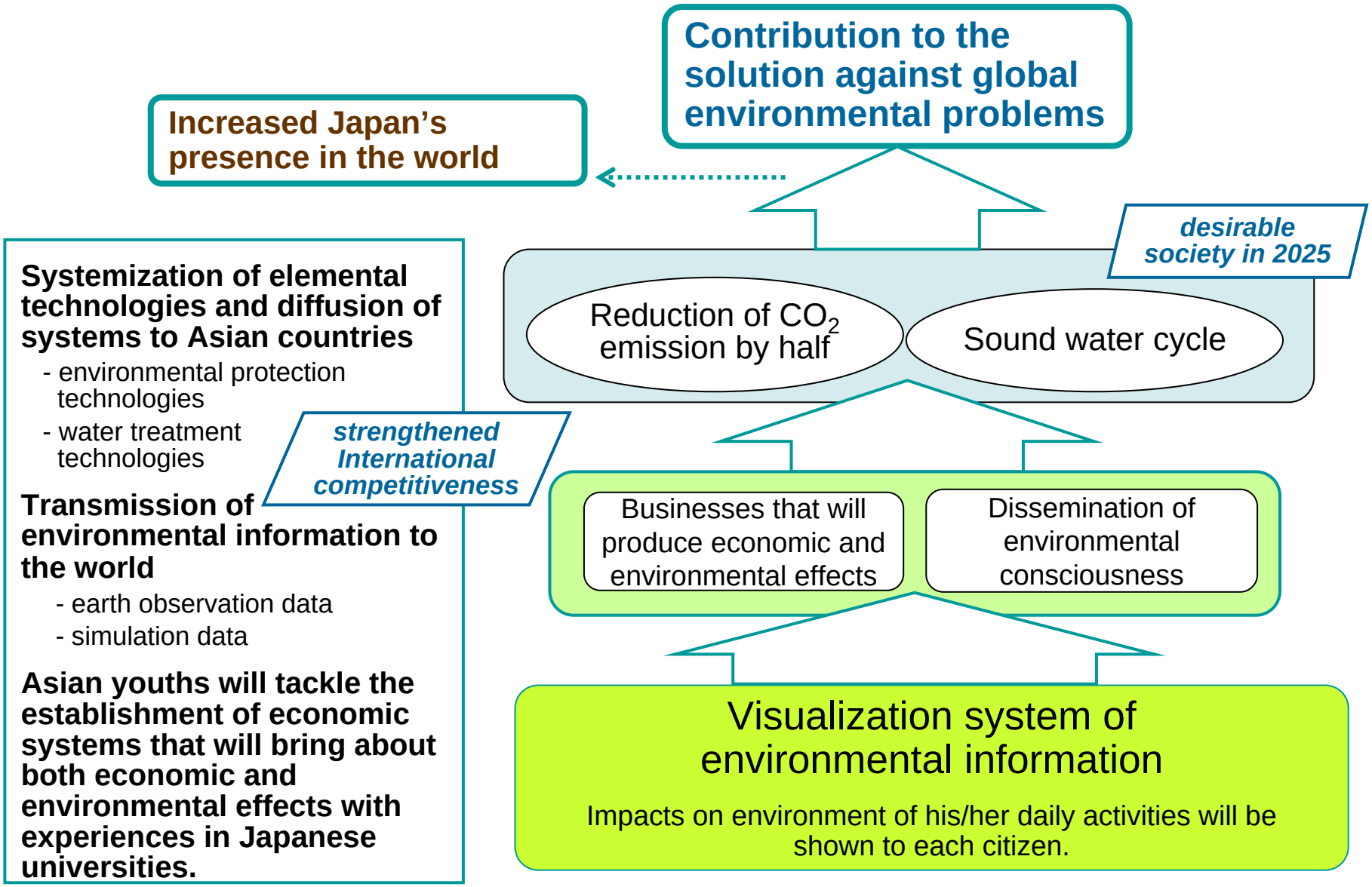


A lot of structures in Japan will be into renewal term around year 2025.

Urban problems

Escalation of environment/energy problems
Deterioration caused by decrease/diffusion of population
Increased traffic accident brought by automobile dependency
Vulnerability to natural disasters

Theme 6: Efforts against global environmental issues and toward coexistence in the world



The final interim report

Desirable society –Japan 2025 through innovation

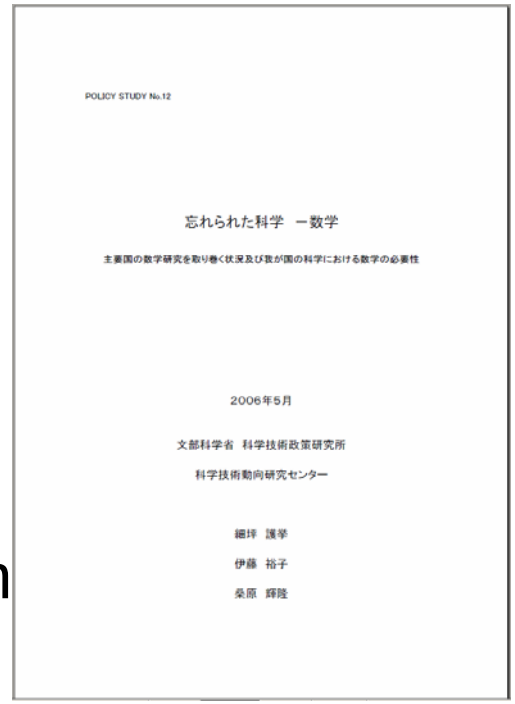
- **Long and healthy lives**
  - Preventive medicine tailored to an individual's needs, etc.
- **A Safe and secure society**
  - Advances in secure and monitoring technologies that will enable children, and the elderly or handicapped to live safe, secure and comfortable life, etc.
- **Society with diverse work styles**
  - Being able to chose and change jobs during their lives based on their abilities and capabilities, etc.
- **Society that contributes significantly to resolving global environmental issues**
  - The public as well as the government and corporations make daily efforts to resolve environmental issues at the global level, etc.
- **Society that is open to the world**
  - Mutual understanding that will increase through more frequent communication between the public and people of other countries using devices, etc.

Source: Long-term Strategic Guidelines "Innovation 25"
http://www.kantei.go.jp/foreign/innovation/innovation_final.pdf

4. Recent Research Activities in NISTEP

Policy Study for Researches in Math.

- Research environment for Math. in Japan is less prosperity in comparison with US/EU.
- Bioscience, Informatics, Nanotechnology etc. require more contributions from Math. to those fields.
- This study shows the importance of encouragement for the research in Math. in terms of science and technology policy.



POLICY STUDY No.12

忘れられた科学 ー数学

主要国の数学研究を取り巻く状況及び我が国の科学における数学の必要性

2006年5月

文部科学省 科学技術政策研究所

科学技術動向研究センター

細坪 護挙

伊藤 裕子

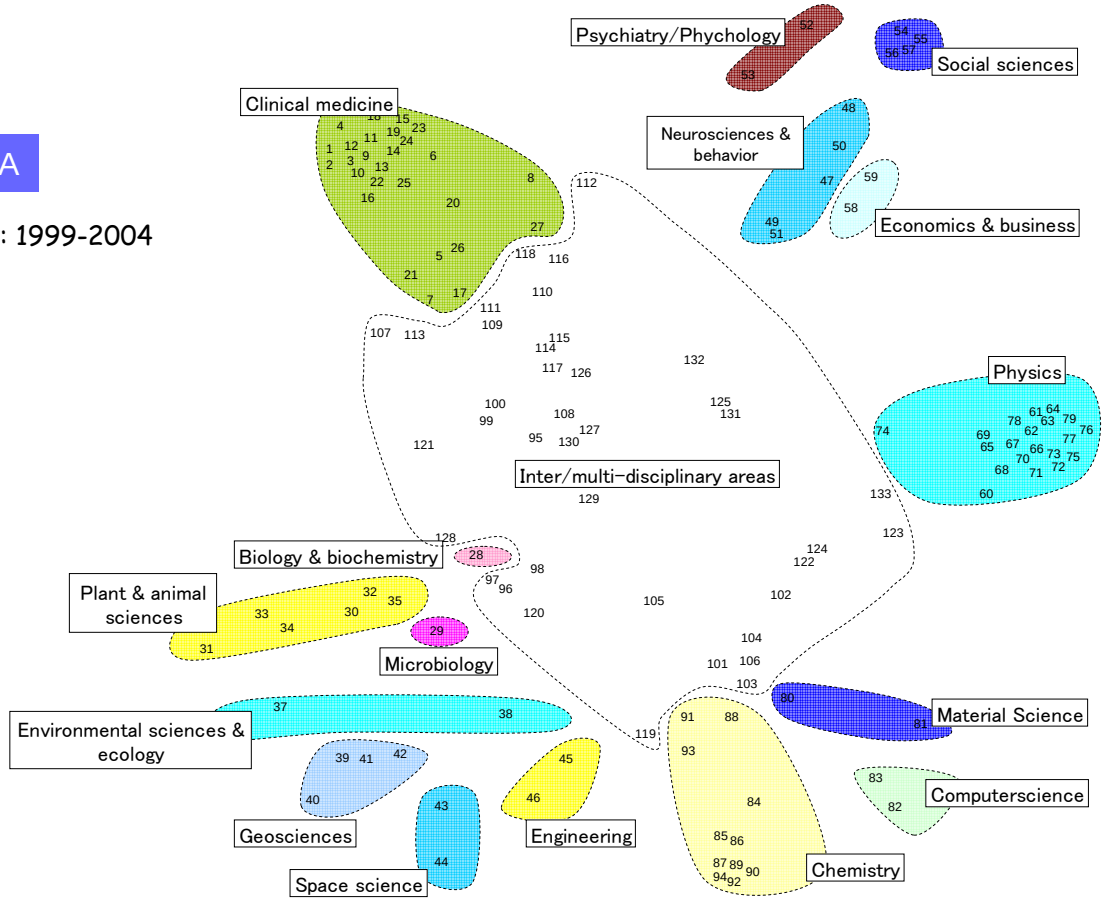
桑原 輝隆

Science Map 2004

- The map is created by a gravity model. In this model, attractive forces work between RAs having similar discipline distribution of core papers.
- Roughly 30%, or 39 of the RAs have been classified as inter/ multi-disciplinary areas because their core papers belong to no specific discipline.

Number: ID code of the RA

◆Time window: 1999-2004

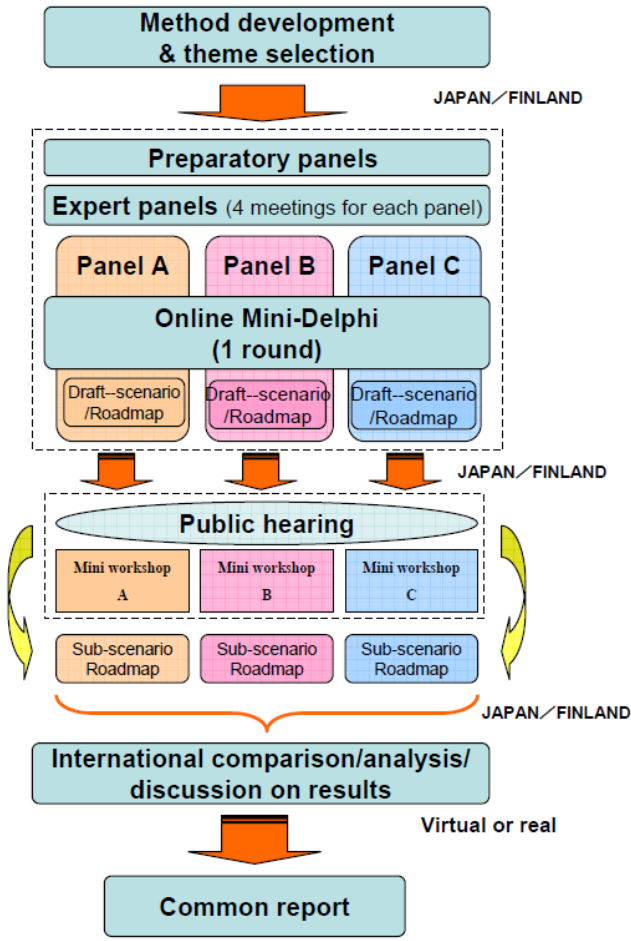


NISTEP Report No.100, http://www.nistep.go.jp/achiev/ftx/eng/rep100e/idx100e.html

New Approach to *FORESIGHT* mission-oriented, multiple-methods

■ Japan-Finland Collaborative Foresight (Trial)

- Expert panels & workshops 9/'07-12/'07
  - 3 themes:
    - Healthcare and wellbeing to prepare for aging society
    - Consumers, Media and Digital Convergence
    - Society based on Energy and Material efficiency
- Online mini- **Delphi** Survey
- Mission-Oriented **Scenario/Roadmap**.
- International workshop (cross-country comparison, virtual or real)
- Joint report in 3/08



Proposed flowchart of the collaborative foresight.

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