# STI Policy for Addressing the Grand Challenges

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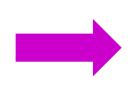
# Grand challenges we face today

# Grand challenges of natural disasters and nuclear energy crisis in the 3.11 earthquake

- □ The 3.11 Great Earthquake is the toughest and most difficult crisis for Japan in the 65 years with the multiple grand challenges of natural disasters and TEPCO Fukushima Daiichi Nuclear Power Plant accident.
- □ Japan has been devoting on recovery from the Great Earthquake by any measures that can contribute on addressing the issues towards even more splendid country.
- □ But, the crippled Nuclear Power Plant remains unsettled with suffering from radiation hazards and electricity shortage, which raises the safety issue of nuclear power as crucial in the world.

# Coping with the grand challenges of natural disasters and nuclear energy crisis

- **□** Enhance resiliency against natural disasters
- Strengthen safety of nuclear energy
- Secure energy supply with low carbonization
- □ Tighten risk management and communication



S&T and innovation should play a key role on addressing these issues with global perspective.

# More challenges we face today

Issues in the world

**Issues in Japan** 

Global issues of climate change and environment

Global issues of energy and resources

Global issues of food and water

Global issues of health and safety

Global issues of population

Reconstruction from the great earthquake

Demographic decline Ageing

Issues in Japan and in the world

Knowledge integration in S&T across disciplines

**Issue-driven S&T Innovation** 

Sustainability

**Open and Global** 

Solution for the transformation of the issue

Value creation in global and local

# S&T is key to address the issues

- □ Despite the multiple challenges we face today, Japan must be a country that takes pride in global leadership to transform these to opportunities for growth with sustainability and prosperity of society by S&T and innovation (STI).
- □ But, the STI policy must shift from the discipline-oriented to the issue-driven for addressing these challenges we face in Japan and in the world, because on each of these there is a sign of hope that STI can contribute.
- □ Due to the complexity of these issues, we are obliged to recognize that the knowledge integration in S&T across disciplines and sectors is key to drive innovation for the transformation with creating broader values.

# S&T policy shift in The 4<sup>th</sup> S&T Basic Plan

The 2<sup>nd</sup> and 3<sup>rd</sup> S&T Basic Plan
Prioritized in the 8 Research Areas (Life science, IT,
Environment, Nanotech-Materials, Energy,
Manufacturing, Social infrastructure, Frontier

Japan has long invested in discipline-oriented S&T.

Now is the time for the knowledge integration in S&T across disciplines to transform the multiple challenges towards opportunities of sustainable growth and societal prosperity.

**Policy Shift!** 



The 4th S&T Basic Plan

**Issue-driven STI** 

**Basic research and Human resources** 



Integral Promotion of S&T and Innovation

## "The 4th S&T Basic Plan" decided by the Cabinet, August 19, 2011

# I. Basic Concept

# **Positioning of the 4th S&T Basic Plan**

- 1) A five-year-plan with the foresight of 10 years ahead
- 2) Tight link with Growth Strategy and Reconstruction Plan
- 3) Comprehensive promotion of S&T and innovation

## **Perspective of the Nation**

- 1) Realize reconstruction from the great earthquake and sustainable growth with societal prosperity
- 2) Realize high quality of life with people's safety and fullness
- 3) Lead the world in addressing the global issues of large natural disasters
- 4) Secure the nation's bases of science and technology
- 5) Create the world-leading knowledge to be culture

# "The 4th S&T Basic Plan" decided by the Cabinet, August 19, 2011 II. Realization of Sustainable Growth and Societal Prosperity

## **Recovery and Revitalization**

Realizing vital recovery and revitalization from the great earthquake by enhanced promotion of STI as national strategy

#### **Green Innovation**

Toward energy-secured and low carbon society with sustainability by addressing the issues of climate change and energy crisis

1) Clean and secured energy supply 2) Highly efficient and smart energy.

1) Clean and secured energy supply 2) Highly efficient and smart energy use, and 3) Greener social infrastructures

#### **Life Innovation**

Toward nation of health with high quality of life by addressing the issues of ageing

1) Innovation for preventive medicine 2) Innovative diagnostics and treatment 3) Life supporting technology for elderly and disability people

# "The 4th S&T Basic Plan" decided by the Cabinet, August 19, 2011

# III. Addressing the Nation's Grand Issues

#### **Promotion of Issue-driven STI**

- 1) Realize the high quality of life with safety and fullness of people
- 2) Enhance the industrial competitiveness
- 3) Address the global issues
- 4) Secure the nation's base
- 5) Reinforce the common bases for STI





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# **Globally Harmonized International Activities**

- 1) East-Asia Science and Innovation Area
- 2) Reinforce S&T Diplomacy

# "The 4th S&T Basic Plan" decided by the Cabinet, August 19,2011 IV. Enhancing Basic Research and Human Resources

## **Comprehensive Enhancement of Basic Research**

- 1. Enhance diversity of creative basic research
- 2. Enhance globally competitive basic research

# Fostering human resources

- 1. Foster human resources who play key roles in new age
- 2. Foster creative and superior researchers
- 3. Foster next generation of human resources

# Forming globally competitive R&D environment

- 1. Improve the R&D environment in universities and research institutes
- 2. Strengthen the strategy for IP and international standard
- 3. Strengthen information base for STI

"The 4th S&T Basic Plan" decided by the Cabinet, August 19, 2011

# V. Development of Policies Created and Promoted with Society

## **Enhancement of STI for Society**

- New development of S&T communication

## **Effective Promotion of STI Policy**

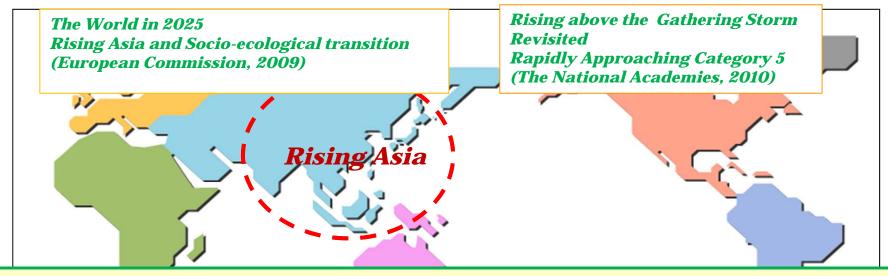
- Strengthen the PDCA (Plan-Do-Check-Action) cycle

#### Reinforcement of R&D Investment

- Increase government investment in R&D to 1% of GDP

# Competitive and cooperative under enhanced interdependency

# Competitive and cooperative under enhanced interdependency



In 2025, the world population will increase from 6.9 billion in 2011 to 8.0 billion, and its two thirds will live in Asia. Asia becomes the first producer and exporter of the world. Asia catches up with the U.S. and Europe in the area of research.

Fiercer competition in S&T and innovation Enhancing interdependency and cooperation

# Japan's International Strategy for S&T

#### 3 Key Principles

- Japan strengthens R&D system by being integrated with excellent research resources of the world.
- Japan utilizes its outcomes of science and technology widely in foreign countries for the national benefit. Also Japan lead the realization of the East Asian Community Initiative through S&T.
- Japan strengthens the system of government for the purpose of promoting international S&T cooperation strategically.

#### 5 Goals and Specific Efforts

#### 1. Building a R&D system integrated with world vitality

- Promoting free cross-border flow of people and being integrated with world's excellent research resources goods and capital
- Building a mutually-beneficial relationship with the foreign research institutions
- →Formulating world's leading research network
- ① Building a framework for multilateral cooperation
- 2 Building a global human resource network
- 3 Reforming research and living environment
- Strengthening intellectual property protection and information control
- ⑤ Providing assistance to joint research forming partnership with the world vitality

# 2. Promoting R&D activities to resolve common issues in Asia

- ●Widening the scope of the mission of Japan's R&D to the resolution of common issues in Asia and resolving various issues faced by Asian countries with Japan's advanced S&T
  → Promoting innovation all over the Asia
- ① Conducting pilot projects
- Green Innovation
- Life Innovation
- Safety and Security
- ② Promoting basic or fundamental research
- ③ Establishing the Roadmap for Asia concerning large-scale research facilities

# 3. Developing cooperation for innovation beyond research cooperation

- Providing cooperation that covers the overall innovation process, by combining R&D cooperation with international standardization, development of institutions and capacity building etc
- →Realizing drastic acceleration of innovation through cooperation

# ① Strengthening research cooperation in line with the ODA

- ② Promoting international standardization
- 3 Making collaboration and cooperation with Asia in the field of standards and certification
- Strengthening R&D cooperation combined with development of institutions and capacity building

#### 4. Exploring a new stage of science and technology diplomacy

- ●Widening the target of S&T diplomacy and collaborating with more diversified entities → Realizing the national benefit economically and socially so as to share the fruit of S&T broadly.
- ① Encouraging S&T diplomacy by the private sector
- ② Fostering human resources who work for S&T diplomacy
- ③ Strengthening collaboration among S&T, industry and diplomacy
- 4 Assisting international expansion by leveraging Japan's potential
- (5) Collaboration with international organizations

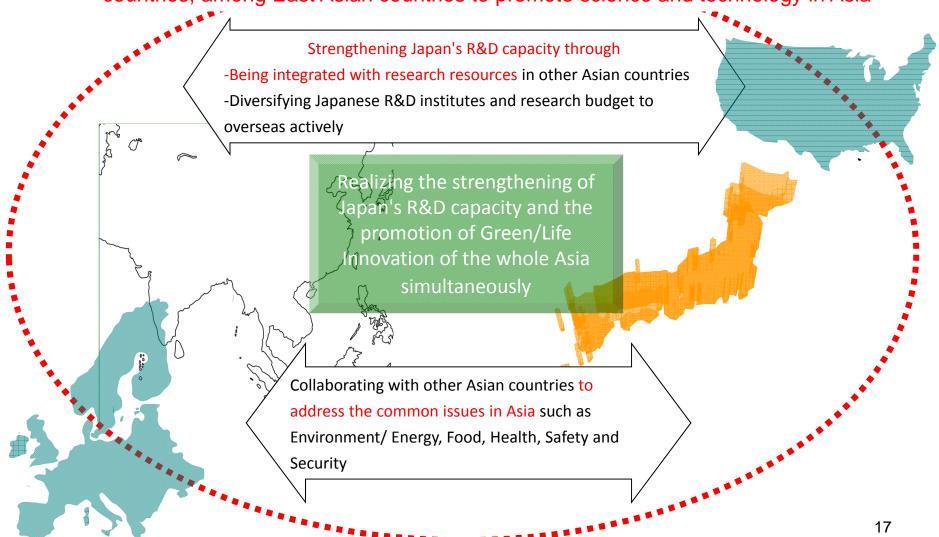
# 5. Strengthening the system of government to carry out the strategy

- ●Strengthening the government function to plan and promote the measures to be taken in full collaboration among ministries
  →Implementing the strategy with the cooperation of the whole government
- ① Strengthening collaboration among ministries
- ② Studying how to utilize overseas offices of government institutions more effectively

## 2 Projects to Accelerate Green / Life Innovation (1)

#### "East-Asia Science and Innovation Area" Initiative

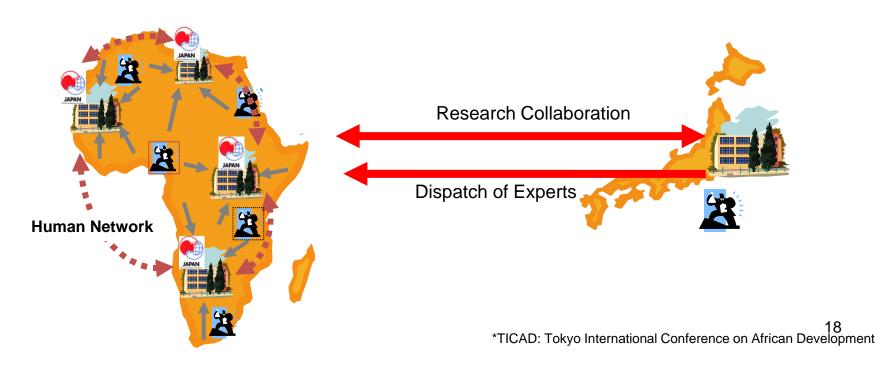
Building a community, open to global partners such as U.S.A and European countries, among East Asian countries to promote science and technology in Asia



# 2 projects to accelerate Green / Life Innovation (2)

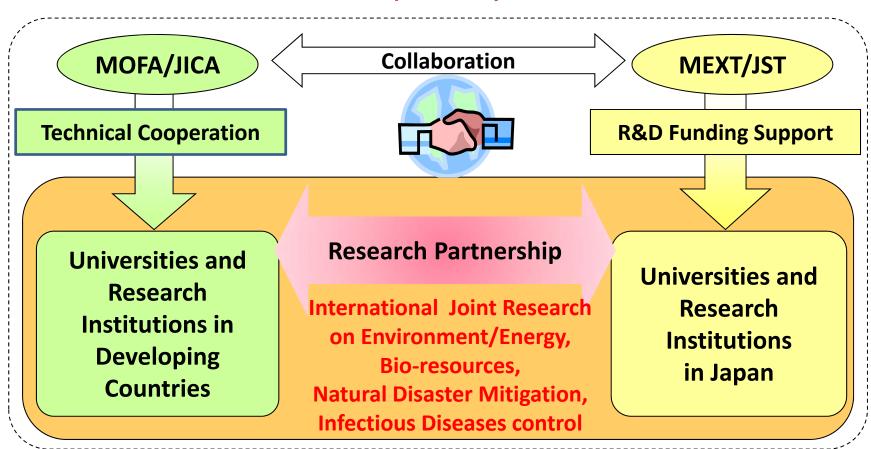
## "Green / Life Innovation in Africa" Initiative

- •Japan has been strengthen the cooperative relationship with Africa through TICAD\*. At TICAD IV in 2008, the Japan–Africa Science and Technology Ministers' Meeting was proposed. It means S&T became a new agenda for cooperation between Japan and Africa.
- •In October 2008, 1st Japan Africa S&T Ministers Meeting was successfully held in Tokyo. For the 2nd Ministers' Meeting, which will be held within this year, a proposal to create the hubs aiming at continuous cooperation with Africa is under consideration.
- •Japan will promote cooperation with Africa, especially in the field of Green/Life Innovation, in collaboration with developed countries and international organizations which have a great store of experience of S&T cooperation with Africa.



# Program to Promote S&T Diplomacy

Science and Technology Research Partnership for Sustainable Development (SATREPS)



MOFA: Ministry of Foreign Affairs MEXT: Ministry of Education, Culture, Sports, Science and Technology

JICA: Japan International Cooperation Agency

JST: Japan Science and Technology

This program encourages international joint research, which addresses global issues and envisages future utilization of research outcomes, based on the needs of developing countries with a funding scheme based on the collaboration between research funds and ODA.