Comprehensive Strategy on Science, Technology and Innovation of Japan, and Strategic Partnership with Europe

Yuko HARAYAMA
Executive Member
Council for Science and Technology Policy(CSTP)
<Contents>

1. Current Status of Japan’s STI

2. Organizational and Policy Framework

3. STI Policy Under the Abe Administration

4. Strategic Partnership with EU
1. Current Status of Japan’s STI

2. Organizational and Policy Framework

3. STI Policy Under the Abe Administration

4. Strategic Partnership with EU
R&D Expenditures

R&D Expenditures as a percentage of GDP

<table>
<thead>
<tr>
<th>Country</th>
<th>1999</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israel</td>
<td>4.28</td>
<td>3.96</td>
</tr>
<tr>
<td>Finland</td>
<td>3.96</td>
<td>3.62</td>
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<tr>
<td>Sweden</td>
<td>3.62</td>
<td>3.36</td>
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<tr>
<td>Korea</td>
<td>3.36</td>
<td>3.33</td>
</tr>
<tr>
<td>Denmark</td>
<td>3.33</td>
<td>3.02</td>
</tr>
<tr>
<td>Switzerland</td>
<td>3.02</td>
<td>3.00</td>
</tr>
<tr>
<td>United States</td>
<td>3.00</td>
<td>2.79</td>
</tr>
<tr>
<td>Germany</td>
<td>2.79</td>
<td>2.78</td>
</tr>
<tr>
<td>Austria</td>
<td>2.78</td>
<td>2.75</td>
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<tr>
<td>Iceland</td>
<td>2.75</td>
<td>2.64</td>
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<tr>
<td>Australia</td>
<td>2.64</td>
<td>2.21</td>
</tr>
<tr>
<td>France</td>
<td>2.21</td>
<td>2.21</td>
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<tr>
<td>Belgium</td>
<td>2.21</td>
<td>1.96</td>
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<tr>
<td>Canada</td>
<td>1.96</td>
<td>1.92</td>
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<tr>
<td>Slovenia</td>
<td>1.92</td>
<td>1.86</td>
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<tr>
<td>United Kingdom</td>
<td>1.86</td>
<td>1.85</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1.85</td>
<td>1.82</td>
</tr>
<tr>
<td>Ireland</td>
<td>1.82</td>
<td>1.79</td>
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<tr>
<td>Norway</td>
<td>1.79</td>
<td>1.76</td>
</tr>
<tr>
<td>China</td>
<td>1.76</td>
<td>1.70</td>
</tr>
</tbody>
</table>

OECD STI Outlook 2012
**S&T Budget**

**Transition of Japan’s S&T Budget in the 2000s**

<table>
<thead>
<tr>
<th>Initial budget</th>
<th>S&amp;T promotion expenditures (as part of initial budgets)</th>
<th>Supplementary budget</th>
<th>Spending of local public entities</th>
</tr>
</thead>
</table>

**1st Plan (FY1996-2000)**
- Investment under the basic plan: Approx. 17 trillion yen
- Actual budget: 17.6 trillion yen

**2nd Plan (FY2001-2005)**
- Investment under the basic plan: Approx. 24 trillion yen
- Actual budget: 21.1 trillion yen

**3rd Plan (FY2006-2010)**
- Investment under the basic plan: Approx. 25 trillion yen
- Actual budget: 21.7 trillion yen

**4th Plan (FY2011-2015)**
- Investment under the basic plan: Approx. 25 trillion yen

**Total S&T budget**
- FY2001: 4,584.1 trillion yen
- FY2002: 4,358.1 trillion yen
- FY2003: 4,049.0 trillion yen
- FY2004: 4,084.1 trillion yen
- FY2005: 4,040.4 trillion yen
- FY2006: 4,140.1 trillion yen
- FY2007: 4,044.7 trillion yen
- FY2008: 4,240.5 trillion yen
- FY2009: 5,046.3 trillion yen
- FY2010: 4,244.4 trillion yen
- FY2011: 4,695.9 trillion yen
- FY2012: 4,40.0 trillion yen
- FY2013: 1,020.4 trillion yen
- FY2014: 4,059.9 trillion yen
- FY2015: 4,173.6 trillion yen

**Spending of local public entities**
- FY2001: 3,468.5 billion yen
- FY2002: 3,544.4 billion yen
- FY2003: 3,597.4 billion yen
- FY2004: 3,608.4 billion yen
- FY2005: 3,577.9 billion yen
- FY2006: 3,574.3 billion yen
- FY2007: 3,511.3 billion yen
- FY2008: 3,570.8 billion yen
- FY2009: 3,563.9 billion yen
- FY2010: 3,589.0 billion yen
- FY2011: 3,664.7 billion yen
- FY2012: 3,692.6 billion yen
- FY2013: 3,609.1 billion yen
- FY2014: 4,173.6 billion yen

**Budget request**
- FY2001: 4,584.1 trillion yen
- FY2002: 4,358.1 trillion yen
- FY2003: 4,049.0 trillion yen
- FY2004: 4,084.1 trillion yen
- FY2005: 4,040.4 trillion yen
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- FY2012: 4,400.0 trillion yen
- FY2013: 1,020.4 trillion yen
- FY2014: 4,059.9 trillion yen
- FY2015: 4,173.6 trillion yen

**15 months budget**
- FY2001: 3,468.5 billion yen
- FY2002: 3,544.4 billion yen
- FY2003: 3,597.4 billion yen
- FY2004: 3,608.4 billion yen
- FY2005: 3,577.9 billion yen
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- FY2011: 3,664.7 billion yen
- FY2012: 3,692.6 billion yen
- FY2013: 3,609.1 billion yen
- FY2014: 4,173.6 billion yen
### Strength in Basic Research

#### # of Nobel laureates in natural sciences since 1901 (since 2000)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(1)</td>
<td>US</td>
<td>289(50)</td>
</tr>
<tr>
<td>2(2)</td>
<td>UK</td>
<td>85(11)</td>
</tr>
<tr>
<td>3(4)</td>
<td>Germany</td>
<td>69(6)</td>
</tr>
<tr>
<td>4(5)</td>
<td>France</td>
<td>32(5)</td>
</tr>
<tr>
<td>5(7)</td>
<td>Sweden</td>
<td>18(1)</td>
</tr>
<tr>
<td>6(3)</td>
<td>Japan</td>
<td>15(10)</td>
</tr>
<tr>
<td>6(6)</td>
<td>Russia</td>
<td>15(4)</td>
</tr>
<tr>
<td>6(7)</td>
<td>Swiss</td>
<td>15(1)</td>
</tr>
<tr>
<td>6(7)</td>
<td>Netherlands</td>
<td>15(1)</td>
</tr>
<tr>
<td>10(10)</td>
<td>Italy</td>
<td>7(0)</td>
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</tbody>
</table>

#### Japanese Nobel laureates in natural sciences

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Prize</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Shinya Yamanaka</td>
<td>Physiology / Medicine</td>
</tr>
<tr>
<td>2010</td>
<td>Akira Suzuki</td>
<td>Chemistry</td>
</tr>
<tr>
<td>2010</td>
<td>Ei-ichi Negishi</td>
<td>Chemistry</td>
</tr>
<tr>
<td>2008</td>
<td>Osamu Shimomura</td>
<td>Chemistry</td>
</tr>
<tr>
<td>2008</td>
<td>Makoto Kobayashi</td>
<td>Physics</td>
</tr>
<tr>
<td>2008</td>
<td>Toshiihide Maskawa</td>
<td>Physics</td>
</tr>
<tr>
<td>2002</td>
<td>Masatoshi Koshiba</td>
<td>Physics</td>
</tr>
<tr>
<td>2002</td>
<td>Koichi Tanaka</td>
<td>Chemistry</td>
</tr>
<tr>
<td>2001</td>
<td>Ryōji Noyori</td>
<td>Chemistry</td>
</tr>
<tr>
<td>2000</td>
<td>Hideki Shirakawa</td>
<td>Chemistry</td>
</tr>
<tr>
<td>1987</td>
<td>Susumu Tonegawa</td>
<td>Physiology / Medicine</td>
</tr>
<tr>
<td>1981</td>
<td>Kenichi Fukui</td>
<td>Chemistry</td>
</tr>
<tr>
<td>1973</td>
<td>Leo Esaki</td>
<td>Physics</td>
</tr>
<tr>
<td>1965</td>
<td>Sin-Itiro Tomonaga</td>
<td>Physics</td>
</tr>
<tr>
<td>1949</td>
<td>Hideki Yukawa</td>
<td>Physics</td>
</tr>
</tbody>
</table>
International aspect of Japan’s research activity

- High level of R&D expenditure but...
- International collaboration in S&I not so active in Japan
- Limited impact of scientific production

after OECD ST & I Scoreboard
Mobility of Human Resources in S&T

Trends in Student Exchange (higher education stages)


Number of outgoing researchers

Middle-/long-term means that period of stay for research is over 30 days
Women’s Participation in Science and Technology

Ratio of Female Researchers

Note: the latest available statistical data is used. Main Science and Technology Indicators, OECD ST and R&D Statistics 2013, et al.
Global innovation index 2007-2013
## Innovation Power

<table>
<thead>
<tr>
<th>Rank</th>
<th>GII</th>
<th>GCI</th>
<th>TRGI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switzerland</td>
<td>Switzerland</td>
<td>United States(45)</td>
</tr>
<tr>
<td>2</td>
<td>Sweden</td>
<td>Singapore</td>
<td>Japan(28)</td>
</tr>
<tr>
<td>3</td>
<td>United Kingdom</td>
<td>Finland</td>
<td>France(12)</td>
</tr>
<tr>
<td>4</td>
<td>Netherlands</td>
<td>Germany</td>
<td>Switzerland(4)</td>
</tr>
<tr>
<td>5</td>
<td>United States</td>
<td>United States</td>
<td>Germany(3)</td>
</tr>
<tr>
<td>6</td>
<td>Finland</td>
<td>Sweden</td>
<td>Korea(3)</td>
</tr>
<tr>
<td>7</td>
<td>Hong Kong</td>
<td>Hong Kong</td>
<td>Sweden(2)</td>
</tr>
<tr>
<td>8</td>
<td>Singapore</td>
<td>Netherlands</td>
<td>Canada(1)</td>
</tr>
<tr>
<td>9</td>
<td>Denmark</td>
<td>Japan</td>
<td>Netherlands(1)</td>
</tr>
<tr>
<td>10</td>
<td>Ireland</td>
<td>United Kingdom</td>
<td>Taiwan(1)</td>
</tr>
</tbody>
</table>

**Rank of Japan**

22 9 2

GII: Global Innovation Index 2013 by Cornell University, INSEAD, and WIPO (2013)
TRGI: Thomson Reuters 2013 Top 100 Global Innovators, Thomson Reuters (2013)

# of companies shown in parenthesis
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Cabinet Office

Roles:
- Support the Cabinet in formulating important policies and in overall coordination of Ministries
- Make total planning and coordination from a higher standpoint of view than other Ministries

Policy Councils on key policy fields
- As "the place of wisdom" that helps the Cabinet and the Prime Minister, the Cabinet Office has four important councils.
  2. Council for Science and Technology Policy
  3. Central Disaster Management Council
  4. Council for Gender Equality
- The chairperson of each council should be either the Prime Minister or the Chief Cabinet Secretary.

Council for Science and Technology Policy

Chair: Prime Minister
Member: 7 ministers (including PM & Minister of State for S&T policy) and 8 executive members
Secretariat: Bureau of STI Policy, CAO

<Main Functions>
1. Investigate and discuss basic S&T policies
2. Investigate and discuss S&T budgets and the allocation of human resources
3. Assess Japan’s key R&D

Ministries (14 ministries)
- In conformity with the basic policy indicated by CSTP, each ministry promotes S&T according to the division of duties

MEXT (Ministry of Education, S&T)
- University policy
- Basic research
- General promotion of S&T

METI (Ministry of Economy, Trade and Industry)
- Industrial policy
- Energy, Nuclear power

MHLW (Ministry of Health, Labor and Welfare)
- Clinical study

MAFF (Ministry of Agriculture, Forestry and Fisheries)
- GMO
- Agriculture and Fisheries

Consultation

Other ministries...
## Executive Members of CSTP

<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Title and Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dr. Yuko Harayama</td>
<td>Professor Emeritus, Tohoku University</td>
</tr>
<tr>
<td></td>
<td>Dr. Reiko Aoki</td>
<td>Professor, Institute of Economic Research, Hitotsubashi University</td>
</tr>
<tr>
<td></td>
<td>Dr. Kazuo Kyuma</td>
<td>Former Executive Advisor, Mitsubishi Electric Corporation</td>
</tr>
<tr>
<td></td>
<td>Mr. Hiroaki Nakanishi</td>
<td>President, Hitachi, Ltd.</td>
</tr>
<tr>
<td></td>
<td>Dr. Kazuhito Hashimoto</td>
<td>Professor, University of Tokyo</td>
</tr>
<tr>
<td></td>
<td>Dr. Toshio Hirano</td>
<td>President, Osaka University</td>
</tr>
<tr>
<td></td>
<td>Mr. Takeshi Uchiyamada</td>
<td>Chairman of the Board, Toyota Motor Corporation</td>
</tr>
<tr>
<td></td>
<td>Dr. Takashi Onishi</td>
<td>President, Science Council of Japan</td>
</tr>
</tbody>
</table>
# S&T Basic Law and S&T Basic Plans

## Science and Technology Basic Law (1995)

### S&T Basic Plan

<table>
<thead>
<tr>
<th>S&amp;T Basic Plan</th>
<th>Major Achievements and Epochs</th>
</tr>
</thead>
</table>
| **1\textsuperscript{st} Basic Plan (1996-00)** | ◆ Introduction of R&D evaluation system ('97)  
 ◆ Actual support of 10,000 post-docs ('99)  
 ◆ Competitive funding doubled ('00) |
| ● Support plan for 10,000 post-docs  
 ● Implementation of evaluation system  
 ● R&D expenditure over ¥17tri |                                                                                                 |
| **2\textsuperscript{nd} Basic Plan (2001-05)** | ◆ Establishment of CSTP ('01)  
 ◆ Establishment of the independent administrative institutions ('01)  
 ◆ Intellectual Property Basic Act ('03)  
 ◆ Establishment of the Intellectual Property Strategy Headquarters ('03)  
 ◆ Establishment of National University Corporations ('04) |
| ● R&D Prioritization  
 ● Doubling competitive research funds  
 ● R&D expenditure over ¥24tri |                                                                                                 |
| **3\textsuperscript{rd} Basic Plan (2006-10)** | ◆ Long-term Strategic Guidelines “Innovation 25” ('07)  
 ◆ Basic Act on Ocean Policy ('07)  
 ◆ Act on Enhancement of R&D Capacity and Efficient Promotion ('08)  
 ◆ Aerospace Basic Act ('08) |
| ● R&D Prioritization with area-setting  
 ● Key technologies of national importance  
 ● R&D expenditure over ¥25tri |                                                                                                 |

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**Great East Japan Earthquake**

**Formulation of the 4th S&T Basic Plan (2011-15)**
The 4th S&T Basic Plan (1)

Main Points

- Comprehensive promotion of S&T and Innovation
- Issue-driven approach instead of discipline-oriented approach
- Emphasis on the promotion of basic research and human resources development
- STI for Society and STI Policy made with Society

Challenge to Realize Sustainable Growth & Societal Development

- Recovery and Revitalization from the Disaster
- Promotion of Green Innovation
- Promotion of Life Innovation
Addressing Other Grand Challenges Facing Japan

- Promotion of Issue-driven STI
- Strategic development of international activities in close cooperation with other countries

Basic Research & Human Resource Development

- Drastic enhancement of basic research
- Development of human resources for STI
- Formation of internationally competitive research environments and foundations

Enhancing Policy Dialogue with Society

- Deepening the relationship between society and STI
- Promotion of viable STI policy
- Expansion of R&D investment
  - R&D Investment by private and public: 4%+ of GDP
  - R&D Investment by public: 1% of GDP
  - Total R&D investment by the Government: Approx. ¥25 trillion for FY2011-2015
1. Current Status of Japan’s STI

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Greatest mission of the Abe Administration: “Restoration of robust economy”

Launch of “three arrows” for economic revival:
“Japan Revitalization Strategy”
(Bold monetary policy, Flexible fiscal policy, New growth strategy)

Role of STI to contribute to the Growth Strategy:
“Comprehensive STI Strategy” formulated in June, 2013

Three Action Plans (AP) were formulated:
“Plan for the revitalization of Japanese industry”, “Strategic market creation”, “Strategy of global outreach”
Relevant Councils and Headquarters

Prime Minister Abe

Minister Inada
- Council for Regulatory Reform
  - Administrative Reform Promotion Council

Minister Amari
- Council on Fiscal and Economic Policy
- Headquarters for Japan's Economic Revitalization
  - Industrial Competitiveness Council

Minister Yamamoto
- Council for Science and Technology Policy
  - HQ for IT Strategy
  - HQ for IP Strategy
  - HQ for Space Development Strategy
  - HQ for Ocean Policy

Chief Cabinet Secretary Suga
- Office for Healthcare and Medical Strategy
Chap. 1 Toward Establishing a Nation on STI
Need for the Comprehensive STI Strategy, Basic Concept, Shape of nation to be attained in 2030, 3 perspectives to promote STI policies, etc.

Chap. 2 Challenges to Be Addressed by STI
- Realization of a Clean and Economic Energy System
- Realization of Healthy and Active Aging Society as a Top-runner in the World
- Development of Next Generation Infrastructures as a Top-runner in the World
- Regional Revitalization taking advantage of the Regional Resources
- Early Recovery and Revitalization from the Great East Japan Earthquake

Chap. 3 Creating Environment to Make Japan World’s Most Innovation Friendly Country

Chap. 4 Reinforcing Headquarter Function of CSTP

Basic Concept

- Comprised of long-term vision and immediate action programs
- Comprehensive package of mission-oriented STI policies
- Clarified roles of various players (between industry, academia and government, between government ministries) and policy-mix (including budget, taxation, deregulation etc.)

Shape of the nation to be attained in 2030

- Remaining a world top-class economic power in a sustainable manner
- People enjoying wellness, security and safety
- Contributing actively to the progress of humankind and international community

3 perspectives to promote STI policies

Acting “smart”, Implementing “system” thinking, Thinking “global”
Comprehensive STI Strategy (Chap.2)

Challenges to be addressed by STI

- Five grand policy challenges to tackle toward realizing the aforementioned shape of the nation
- “Focused policy challenges” and “focused measures” therefor described for each of the five grand challenges
- Roadmap tailored for each of the “focused policy challenges” toward FY2030

1. Realization of clean and economical energy system
2. Realization of a healthy and active ageing society as a top-runner in the world
3. Development of next generation infrastructures as a top-runner in the world
4. Regional revitalization taking advantage of the regional resources
5. Early recovery and revitalization from the Great East Japan Earthquake
## Creating Environment to Make Japan World’s Most Innovation-friendly Country

<table>
<thead>
<tr>
<th>Focused policy challenges</th>
<th>Focused measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurturing the sprouts of innovation</td>
<td>(1) Establishing an environment which enables diverse people to take the leadership in enterprises, universities and R&amp;D corporations</td>
</tr>
<tr>
<td></td>
<td>(2) Reinforcing universities and R&amp;D corporations as international hubs</td>
</tr>
<tr>
<td></td>
<td>(3) Restructuring systems of competitive funds</td>
</tr>
<tr>
<td>Activating the innovation system</td>
<td>(4) Reinforcing industry-academia-government collaboration and inter-ministry collaboration</td>
</tr>
<tr>
<td></td>
<td>(5) Promoting mobility of human resources</td>
</tr>
<tr>
<td></td>
<td>(6) Improving research support system</td>
</tr>
<tr>
<td>Fructifying innovation</td>
<td>(7) Activating private enterprises engaging in new projects</td>
</tr>
<tr>
<td></td>
<td>(8) Promoting regulatory reform</td>
</tr>
<tr>
<td></td>
<td>(9) Reinforcing the strategies for international standardization and IP</td>
</tr>
</tbody>
</table>
## Reinforcing headquarter function of CSTP

- Empowering CSTP both in authority and budget to be able to perform its headquarter function to make Japan world’s most innovation-friendly country

### <Immediate actions>

<table>
<thead>
<tr>
<th>Leading the formulation of Japan’s overall “S&amp;T budget” through such means as;</th>
<th>● Establishment of S&amp;T budget strategy meeting with members of all related ministries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>● Establishment of cross-ministry programs to promote innovation</td>
</tr>
<tr>
<td></td>
<td>● Development of ImPACT program</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reinforcing the CSTP secretariat both in terms of workforce and its think tank function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activating CSTP</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Implementation Phase of the Comprehensive STI Strategy (1)

“Toward formulating S&T Related Budget for FY2014” (November 27, 2013)

Basic thoughts to make the budget formulation appropriate for the 1st year of the Comprehensive STI Strategy

• **Budget for FY 2014**
  - Prioritization by “Action Plan for S&T Priority Measures” (¥335bil)
  - Prioritization by “Cross-Ministerial Strategic Innovation Promotion Program (SIP)” (¥52bil)

• **Supplementary budget for FY 2013**
  - Establishing “Impulsing PAradigm Change through disruptive Technologies (ImPACT) program”
# Implementation Phase of the Comprehensive STI Strategy (2)

## Action Plan for S&T Priority Measures for FY2014 (1)

### Features of AP for FY2014

1. **Promoting measures to address challenges by providing concrete roadmaps**
   
   Providing concrete roadmaps and encouraging relevant ministries to propose measures to address challenges. Roadmaps to be further elaborated to include goals with numerical targets and timelines, concrete measures to achieve goals and the interim goals to enable the examination of results in terms of PDCA process.

2. **Promoting vigorous packaging bundling of policy measures**
   
   Promoting vigorous packaging of policy measures to achieve efficient and effective results through cooperation between ministries by presenting the viewpoints of achieving social challenges based on experts' views prior to the proposal of policy measures by the relevant ministries.

3. **Clarification of management structure**
   
   Soliciting clear management system including not only the progress management of R&D of the program as a whole but also the progress management and coordination toward social implementation.

### Topics of AP for FY2014

Five grand policy challenges of Comprehensive STI Strategy Chap. 2 set as the priority target.

<table>
<thead>
<tr>
<th>1. Realization of clean and economical energy system</th>
<th>2. Realization of a healthy and active ageing society as a top-runner in the world</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Development of next generation infrastructures as a top-runner in the world</td>
<td>4. Regional revitalization taking advantage of the regional resources</td>
</tr>
<tr>
<td>5. Early recovery and revitalization from the Great East Japan Earthquake</td>
<td></td>
</tr>
</tbody>
</table>
Implementation Phase of the Comprehensive STI Strategy (3)


- 98 measures for ¥335bn (request base) identified as those in line with policy challenges designated by AP
- Identified measures expected to be given due consideration in the budget formation process

<table>
<thead>
<tr>
<th>Priority policy issues</th>
<th># of identified measures</th>
<th>Amount of budget request (bn yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Realization of clean and economic energy system</td>
<td>35</td>
<td>128</td>
</tr>
<tr>
<td>2. Realization of a healthy and active ageing society as a top-runner in the world</td>
<td>7</td>
<td>88</td>
</tr>
<tr>
<td>3. Development of next generation infrastructures as a top-runner in the world</td>
<td>15</td>
<td>57</td>
</tr>
<tr>
<td>4. Regional revitalization taking advantage of the regional resources</td>
<td>15</td>
<td>31</td>
</tr>
<tr>
<td>5. Early recovery and revitalization from the Great East Japan Earthquake</td>
<td>26</td>
<td>30</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td><strong>98</strong></td>
<td>*<strong>335</strong></td>
</tr>
</tbody>
</table>

*Accounts for approx. 8% of the total amount of the S&T budget request for FY2014*
To achieve effective and efficient results through cooperation between ministries, CSTP encourages relevant ministries to promote packaging bundling of policy measures.
Aiming to realize STI through promoting R&D overlooking from basic research to implementation and commercialization by cross-ministerial cooperation.

CSTP to specify challenges and initiatives therefor and allocate the budget.

Total ¥51.7bn (budget request for FY2014)
## Implementation Phase of the Comprehensive STI Strategy(6)

### Cross-Ministerial Strategic Innovation Promotion Program (SIP) (2)

<table>
<thead>
<tr>
<th>Priority policy issues</th>
<th>Prospective subject</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy</strong></td>
<td>Innovative combustion technology</td>
<td>Improving fuel efficiency of automobile engines</td>
</tr>
<tr>
<td></td>
<td>Next-generation power electronics</td>
<td>Integrating new semiconductor materials into highly efficient power electronics system</td>
</tr>
<tr>
<td></td>
<td>Innovative structural materials</td>
<td>Developing ultra-strong and –light materials such as magnesium-, titanium-alloys and carbon fibers</td>
</tr>
<tr>
<td></td>
<td>Energy carrier</td>
<td>Promoting R&amp;D to contribute to the efficient and cost-effective technologies for utilizing hydrogen</td>
</tr>
<tr>
<td></td>
<td>Next-generation ocean resources development technologies</td>
<td>Establishing technologies for efficiently exploring submarine hydrothermal polymetallic ore</td>
</tr>
<tr>
<td><strong>Next-generation infrastructures</strong></td>
<td>Autonomous cruising (automatic driving) system</td>
<td>Developing new transportation system including technologies for avoidance accidents and alleviating congestion</td>
</tr>
<tr>
<td></td>
<td>Technologies for maintenance/upgrading/management of infrastructures</td>
<td>Developing low-cost operation and maintenance system for infrastructures</td>
</tr>
<tr>
<td></td>
<td>Reinforcement of resilient function for preventing and mitigating disasters</td>
<td>Developing technologies for observation, forecast and prediction of natural disasters</td>
</tr>
<tr>
<td><strong>Local resources</strong></td>
<td>Technologies for creating next-generation agriculture, forestry and fisheries</td>
<td>Realizing evolutionary high-yield and high-profit models by utilization of advanced IT etc</td>
</tr>
<tr>
<td></td>
<td>Innovative design/manufacturing technologies</td>
<td>Establishing new style of manufacturing with 3D printers</td>
</tr>
</tbody>
</table>
Implementation Phase of the Comprehensive STI Strategy(7)

Im P A C T
(Impulsing PAradigm Change through disruptive Technologies)

Background

- Need to realize discontinuous innovations to overcome keen global competition
- Need to conquer serious socio-economical issues confronting Japan

Establishment of ImPACT program

- High-risk/high-impact R&D toward creation of innovative STI which possibly revolutionizes industrial and social system modeled on DARPA
- Establishing program manager (PM) system and combining PMs’ planning/managing abilities with nation’s top class R&D potential.

Total amount TBD (budget request for FY2014)
<Contents>

1. Current Status of Japan’s STI

2. Organizational and Policy Framework

3. STI Policy Under the Abe Administration

4. Strategic Partnership with EU
Current status of Japan-EU STI cooperation

- STI research supports through matching fund system
  1. “Superconductivity” (JST)
  2. “Photovoltaic cells” (NEDO)
  3. “Anti-icing system for aviation and heat-exchanger for aero-engines” (METI)
  4. “High-speed aircraft” (METI)
  5. “Critical materials” (JST)
  6. “Next generation network” (NICT)

- Participation of Japanese researchers/institutions in int’l STI programs of EU
  1. 7th RTD Framework Programme (9 projects out of 17 include Japanese researchers/institutions)
  2. Human brain projects
  3. Marie Curie Actions
  4. Industrialized Countries Instrument Education Co-operation Programme (ICI-ECP) project
One of the main perspectives of “Comprehensive STI Strategy” is to “act globally” always looking outside for interaction.

The main points of the international efforts are;

- Establishing an environment which enables people to take the leadership in enterprises, universities and national research institute
- Reinforcing universities and national research institute int’l hubs
- Enhancing mobility of human resources

We hope that nomination of national contact point of EU-Japan Center for Industrial Cooperation enhances Japan-EU STI cooperation.
Future of Japan-EU STI cooperation

For example

• Exploiting mutually opportunity for training human resources of STI

• Contributing together to formulate new rules for promoting STI

• Welcoming EU’s advice on our new STI programs of SIP and ImPACT
Thank you for your attention!