

Financing Science, or Innovation? Policy Debate?

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Setting the tone

- “Science policy”?
- “Innovation policy”?
- “Science” for “Innovation policy”?

- Stakeholders (or Players)?
 - Government, Academia, Business, NPO, Citizen,...
- Actors?

- Potential, Expectation, Illusion, ...

- Evidence-based policy making?
 - Between theory and reality
 - Sustained by a dialogue with the ground & a sense of pragmatism

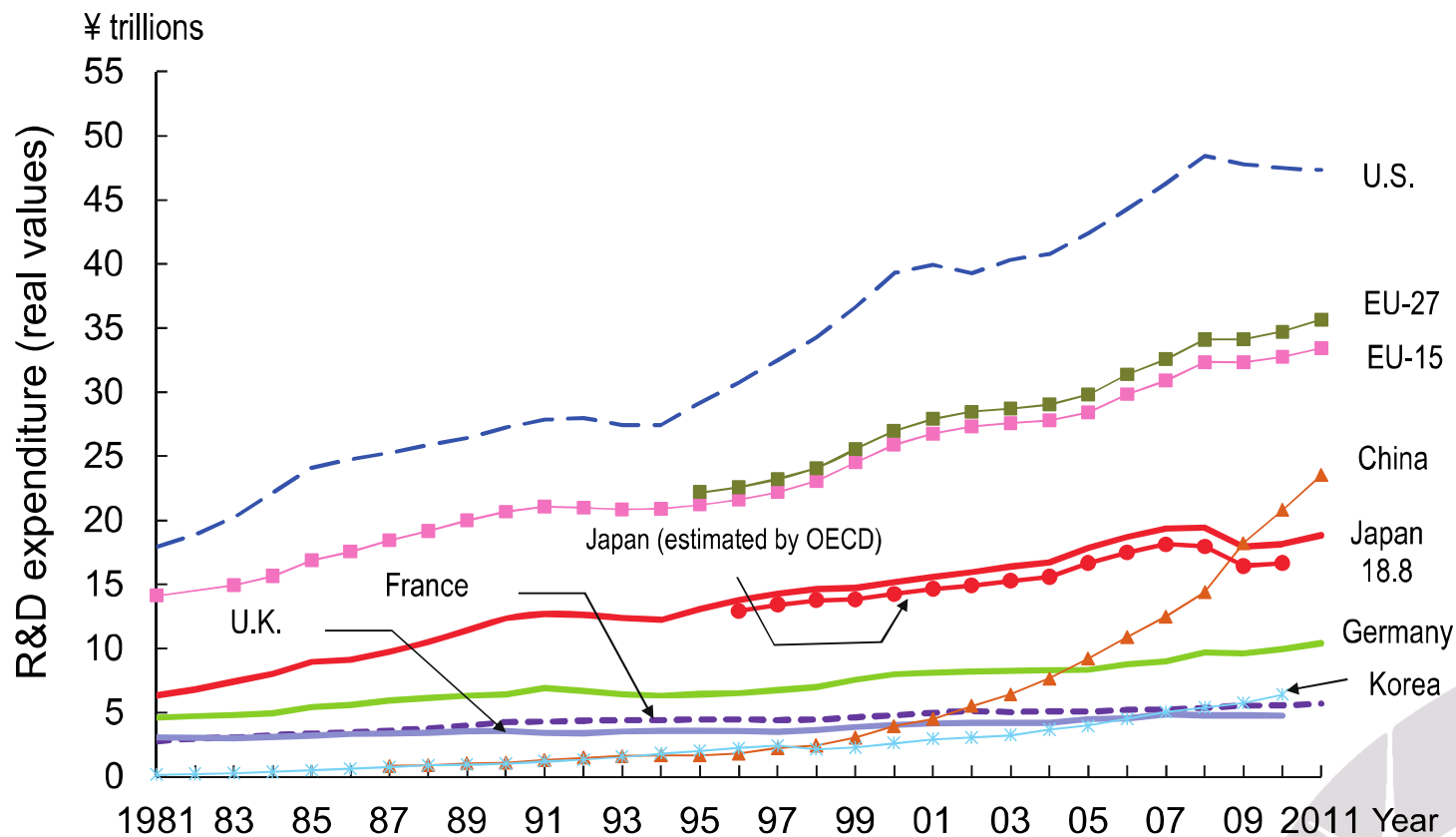


NISTEP Japanese S&T Indicators 2013
OECD STI Outlook 2013

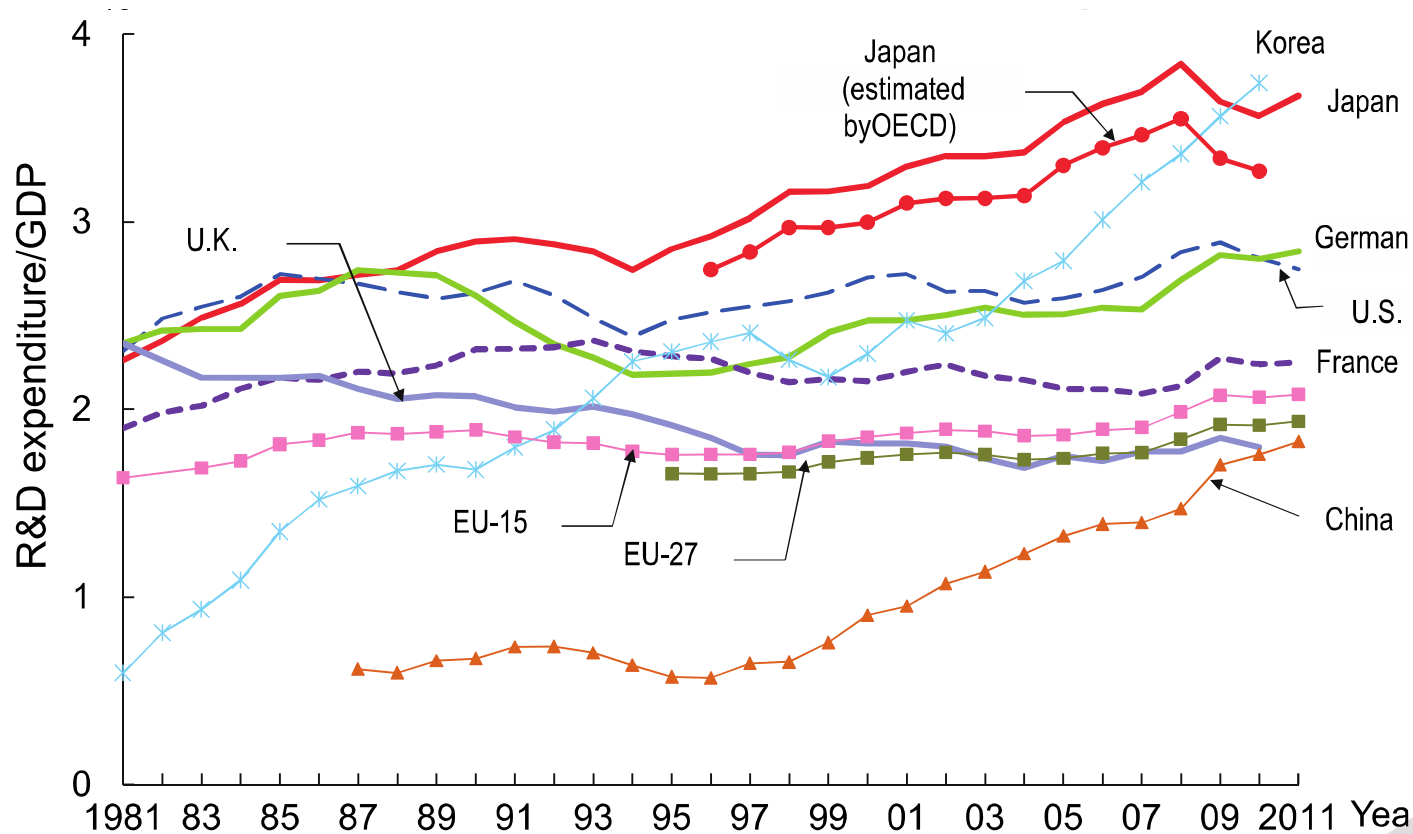
A SNAPSHOT OF JAPAN'S STI

Trend in total R&D Expenditure

(B) Real values
(2005 base: OECD purchasing power parity equivalent)



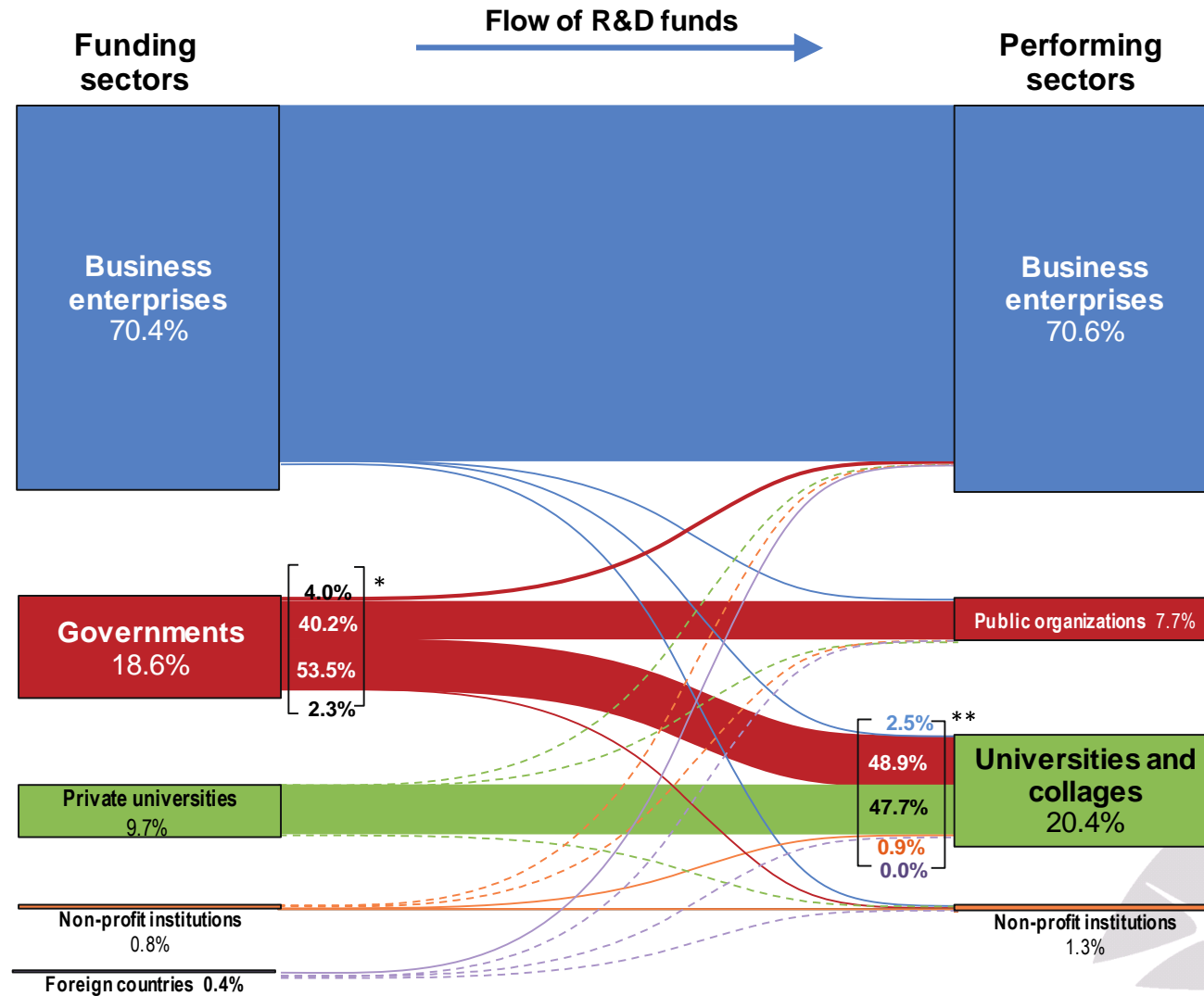
Trend in the ratio of the total R&D expenditure against GDP



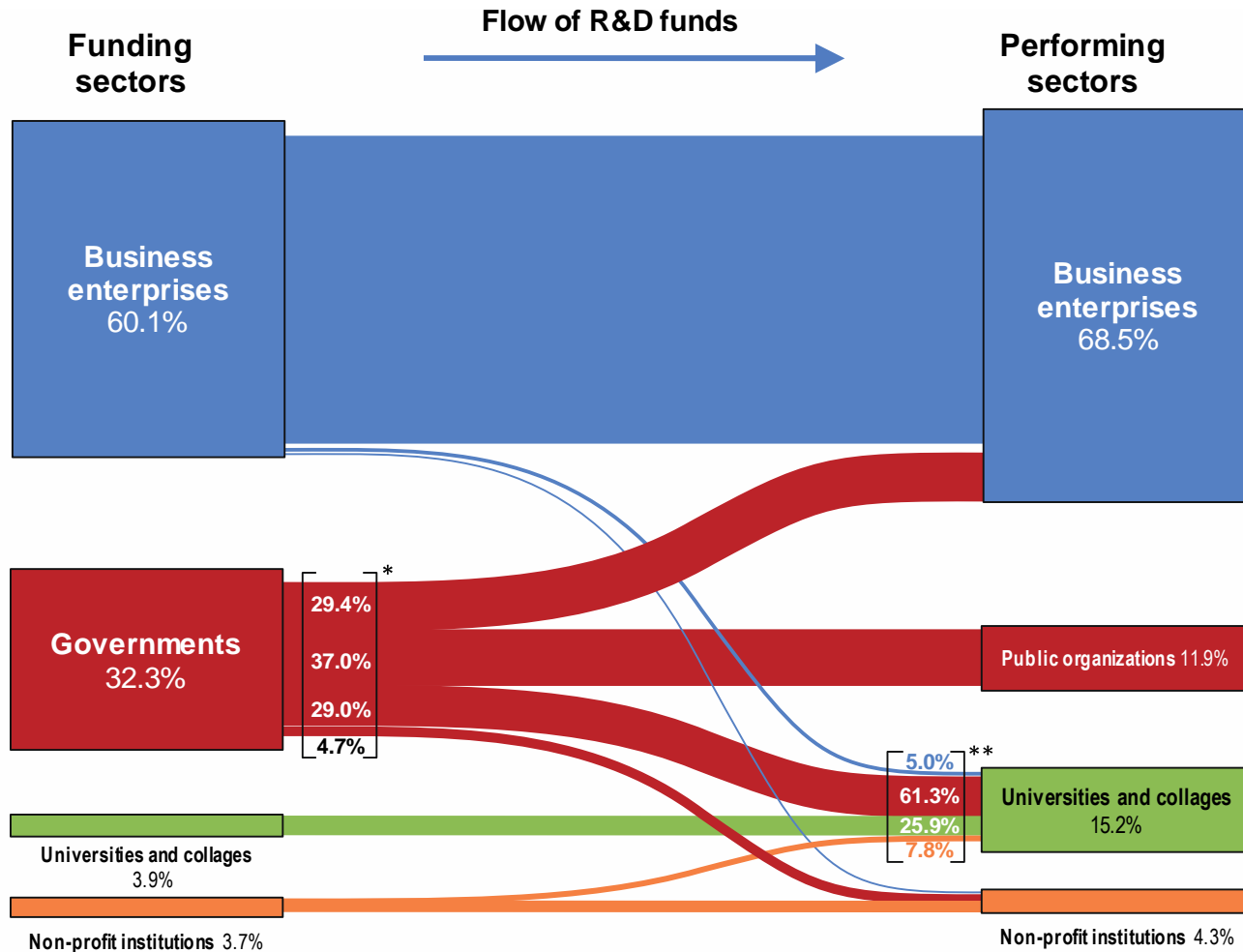
Note: The “attention to international comparison” and R&D expenditures are the same as those given in Chart 1-1-1.

Source: The details of the R&D values are the same as those given in the notes to Chart 1-1-1. GDP is the same as for reference statistics C.

Flow of R&D funds from funding sectors to performing sectors (Japan 2011)

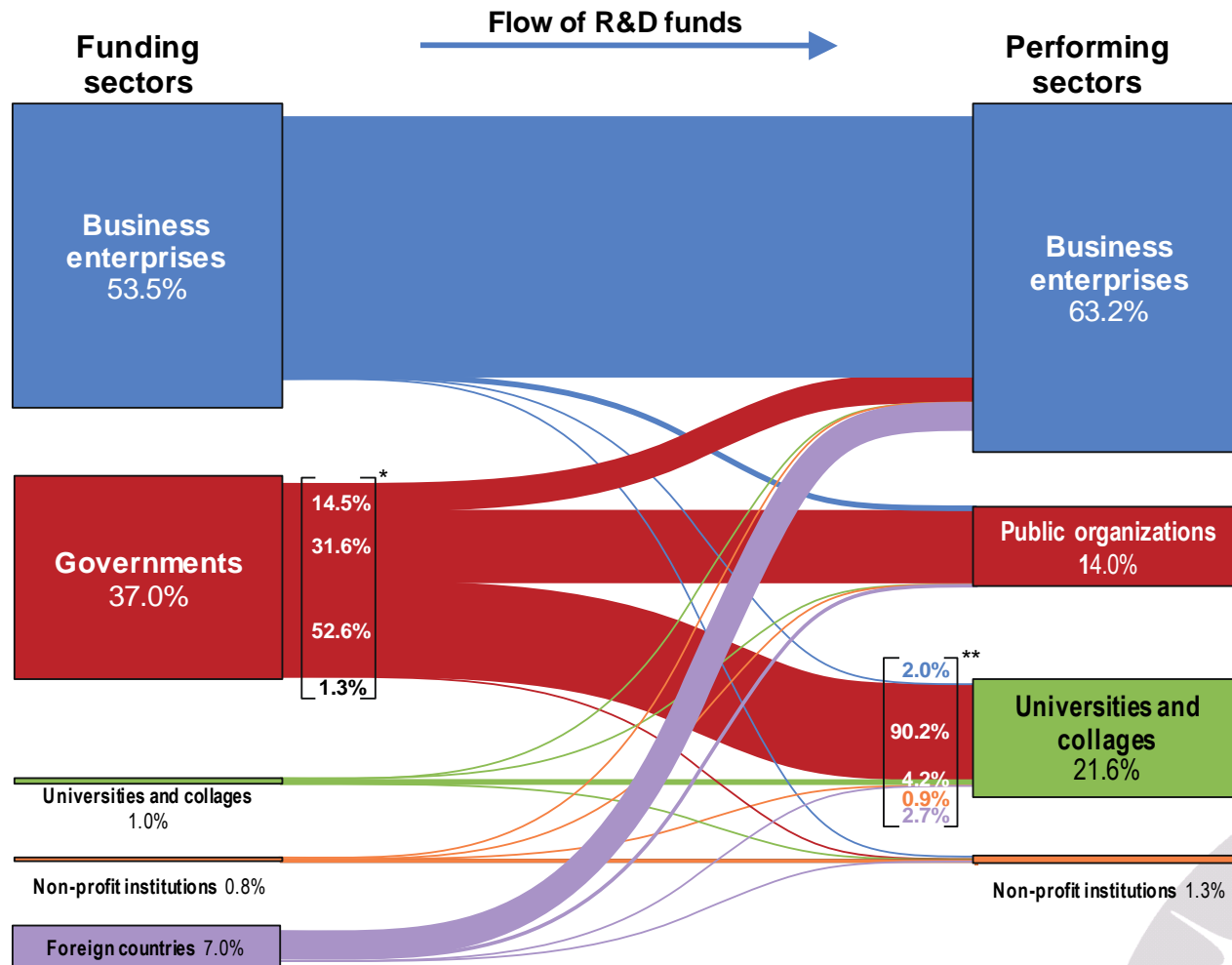


Flow of R&D funds from funding sectors to performing sectors (US 2011)

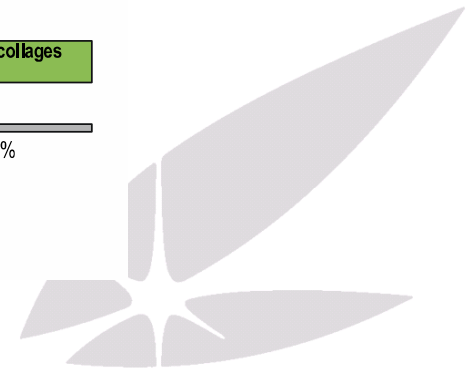
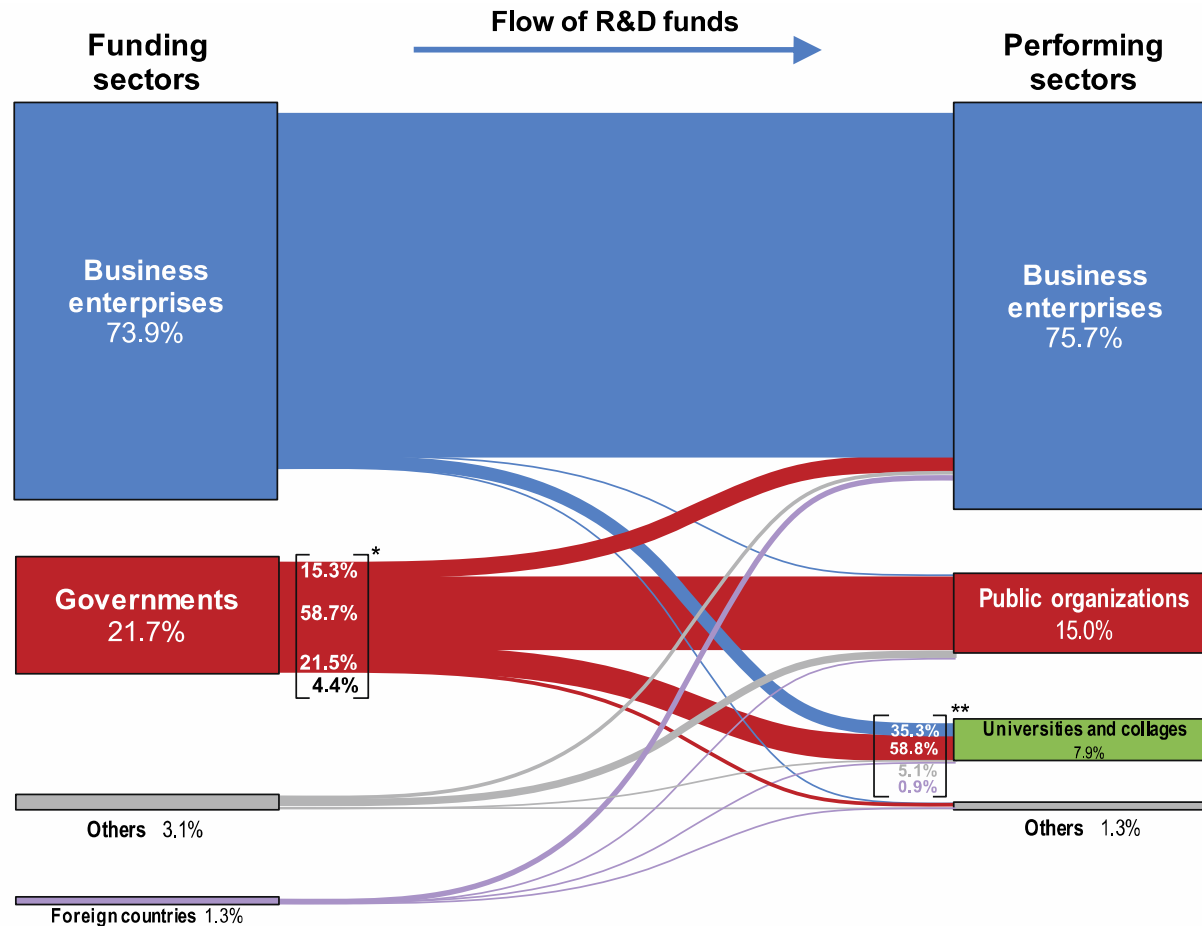


*U.S. funding sectors do not include "foreign countries."

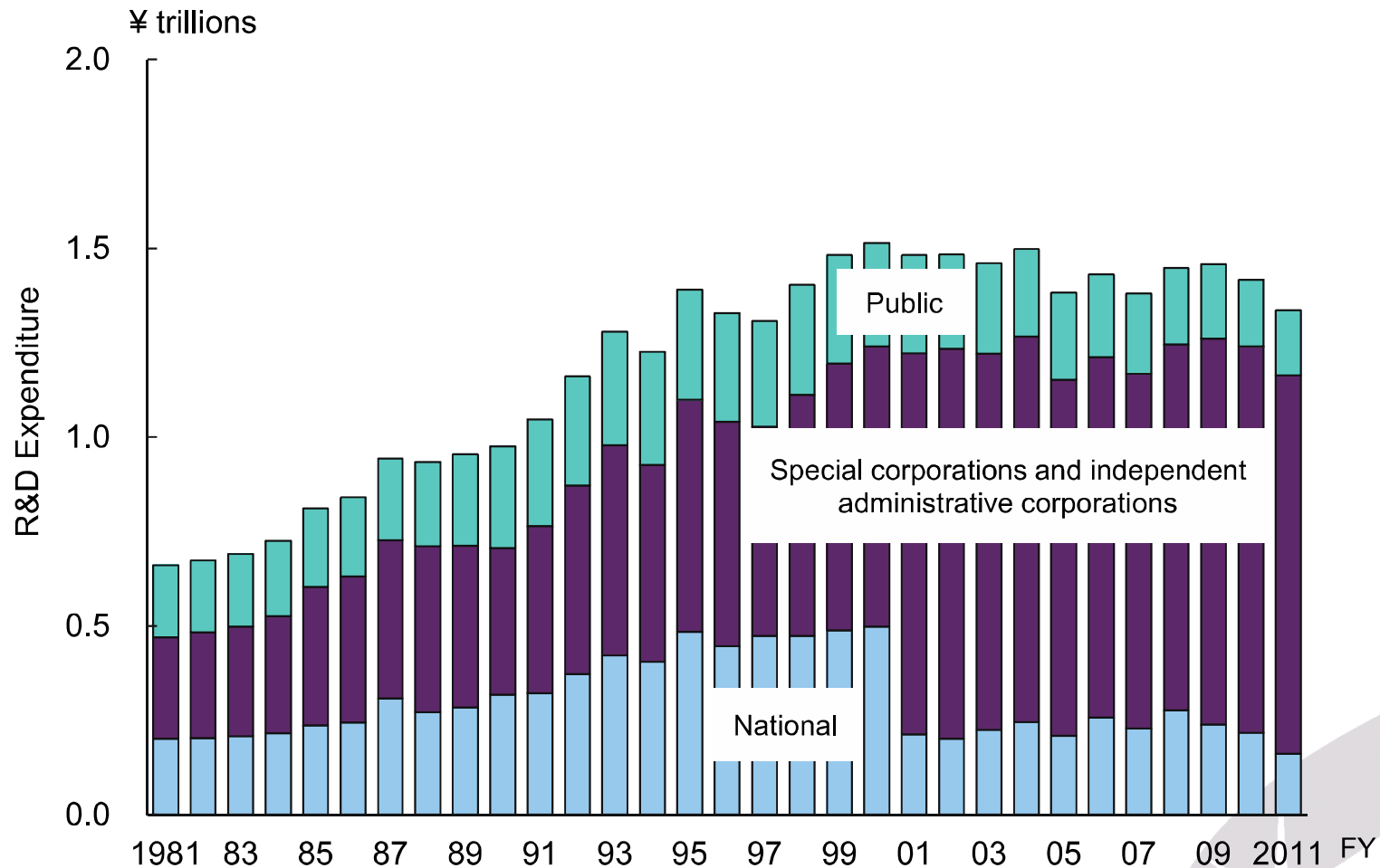
Flow of R&D funds from funding sectors to performing sectors (France 2011)



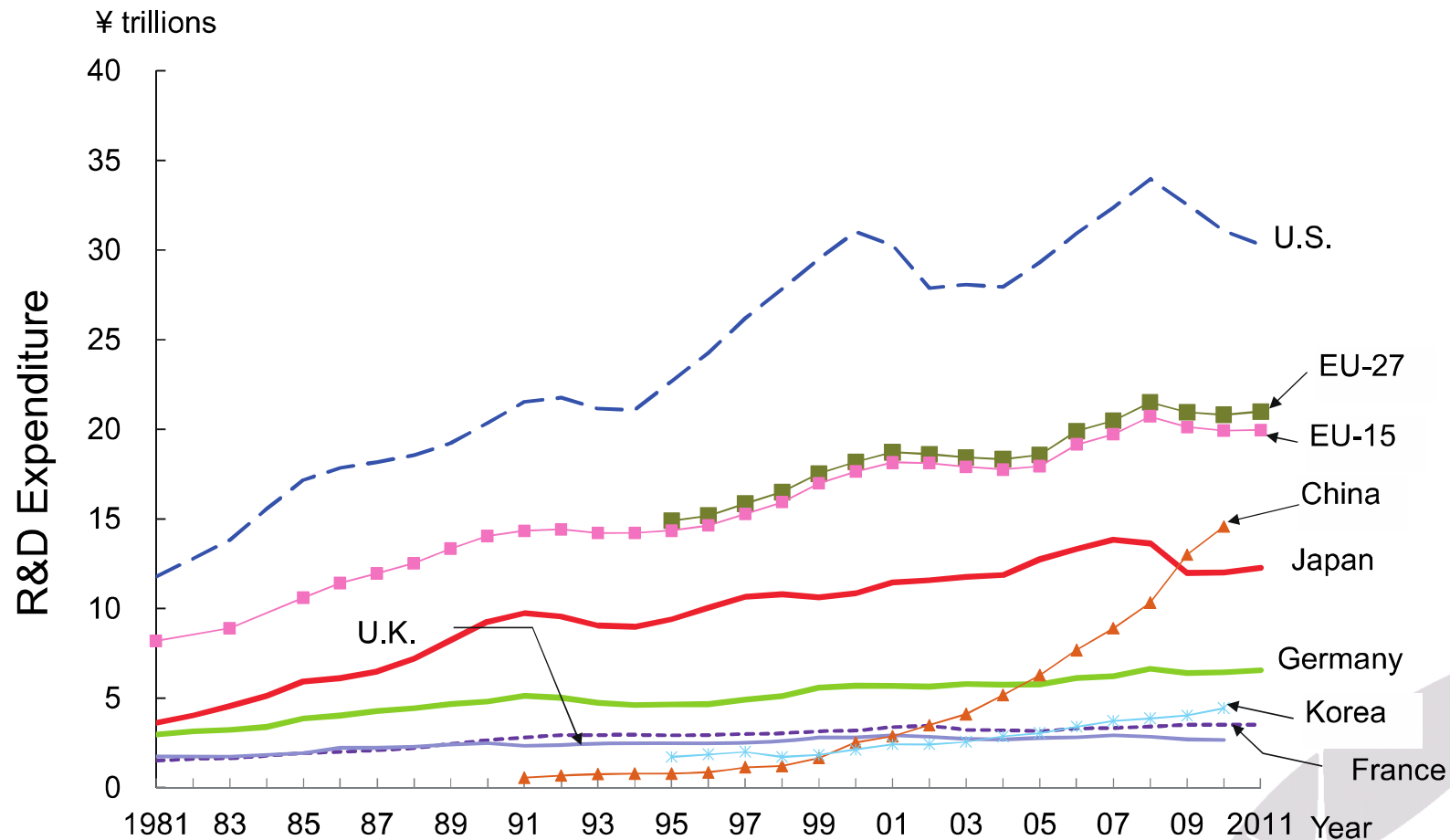
Flow of R&D funds from funding sectors to performing sectors (China 2011)



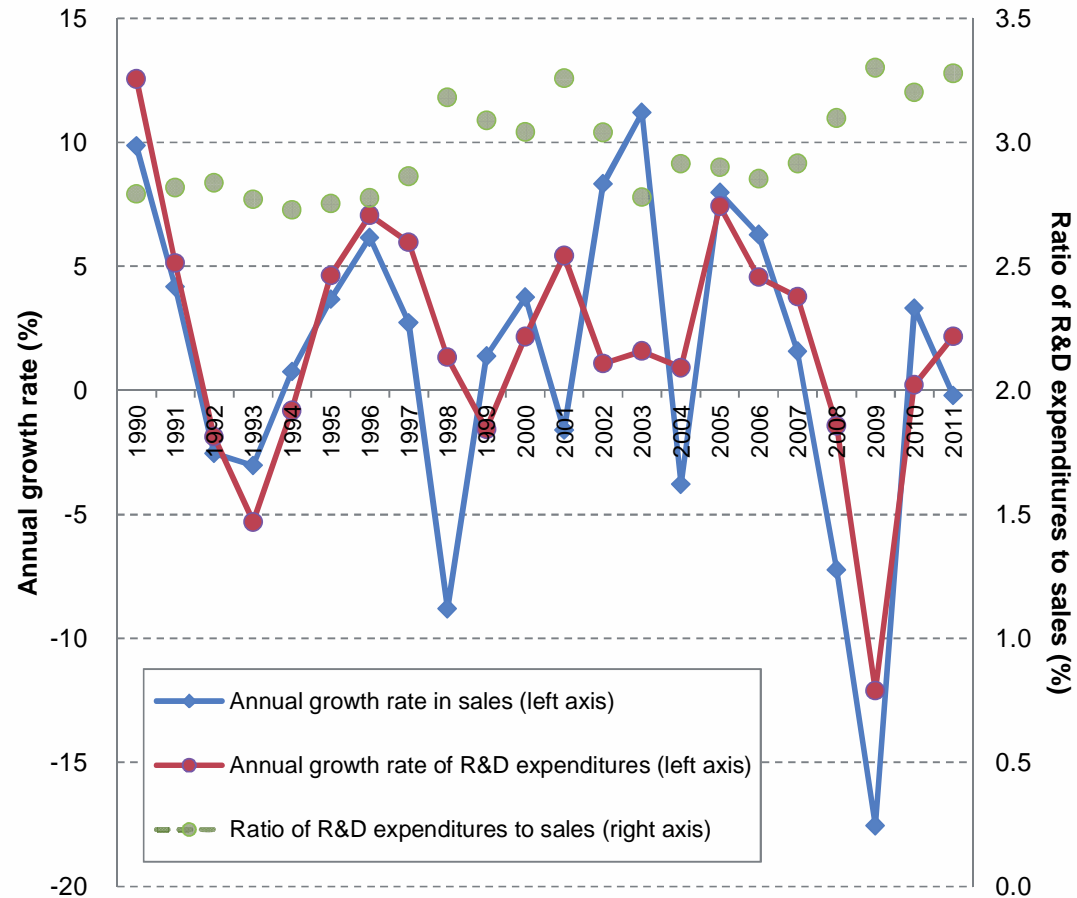
Trend of R&D expenditure used by public organization sector (Japan)



R&D expenditure in the business sector (nominal values PPP)



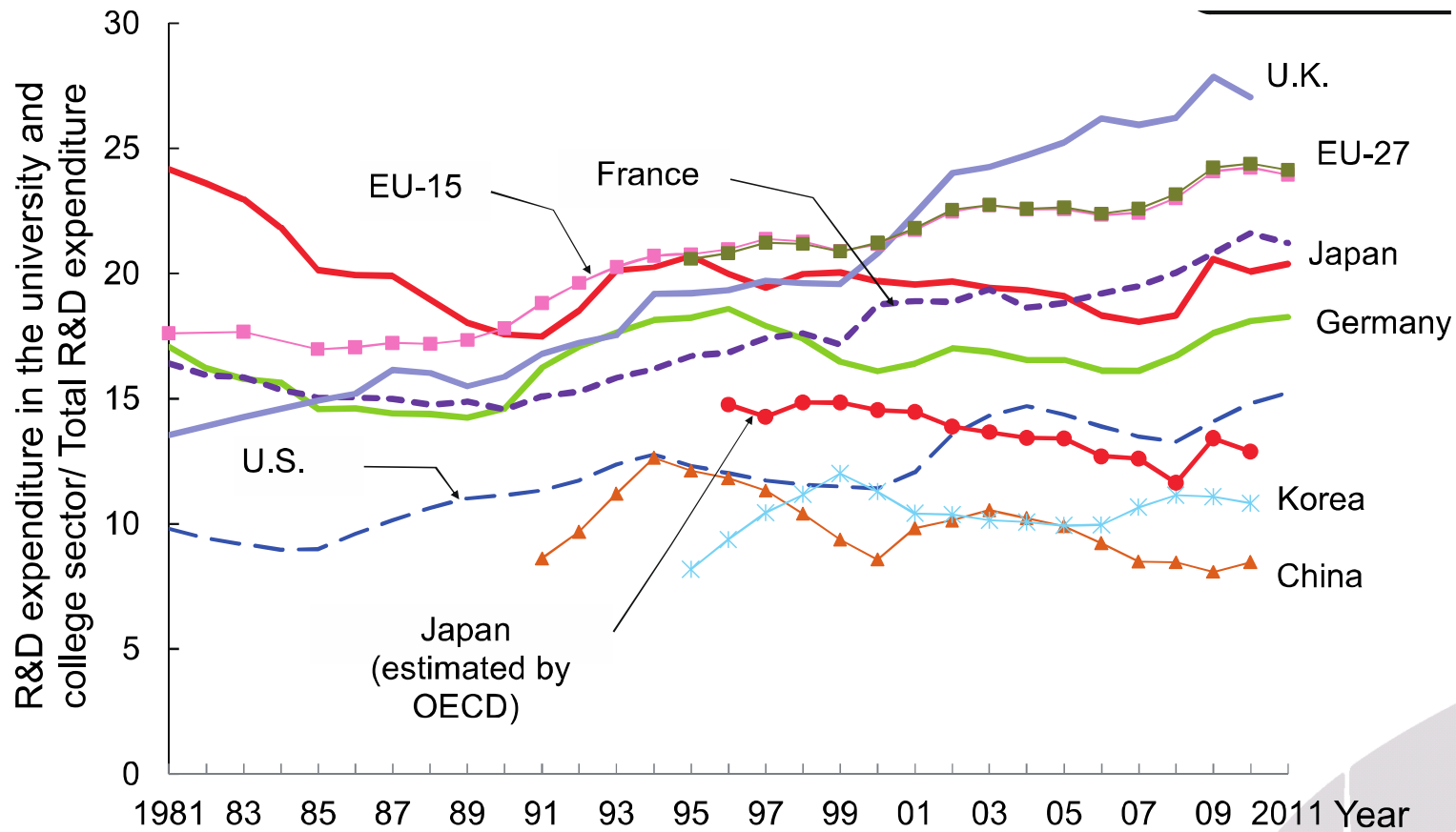
Year-on-year growth rate in sales and R&D exp. (Japanese business sector)



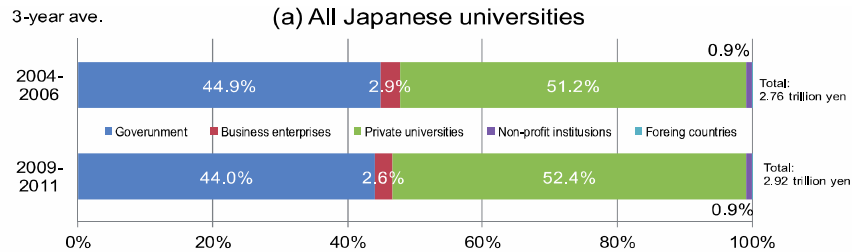
Note: R&D expenditures and sales are both nominal values and based on figures of businesses engaged in R&D (excluding finance and insurance industries),
 Sources: Ministry of Internal Affairs and Communications, "Report on the Survey of Research and Development"



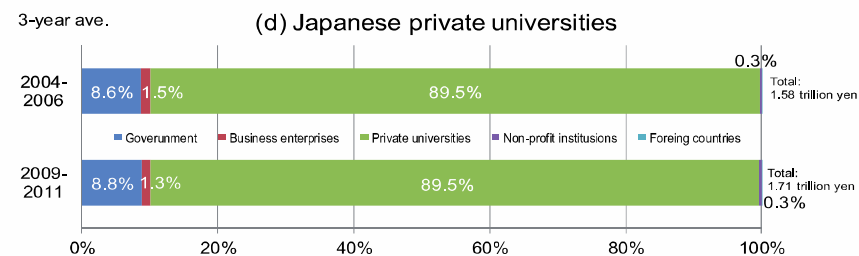
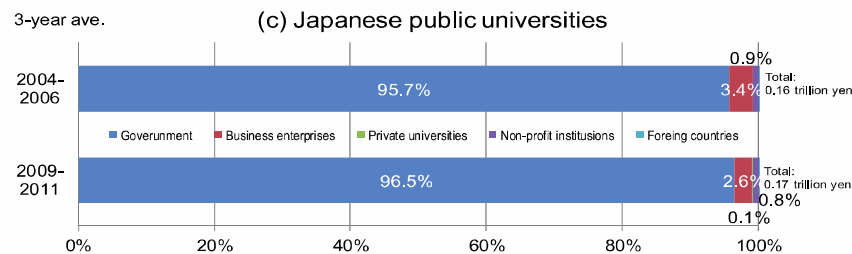
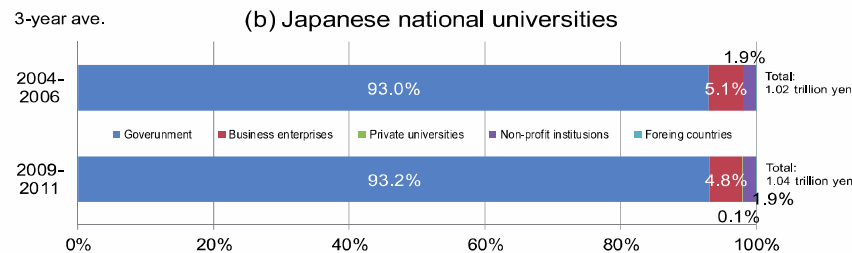
Trend of the ratio of total R&D expenditure in University sector against the tot. R&D exp.



Funding structure for universities (Japan)



Quasi absence of institutional funds



Strength in Basic Research

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



Japanese Nobel laureates in natural sciences

Rank	Country	Total
1(1)	US	289(50)
2(2)	UK	85(11)
3(4)	Germany	69(6)
4(5)	France	32(5)
5(7)	Sweden	18(1)
6(3)	Japan	15(10)
6(6)	Russia	15(4)
6(7)	Swiss	15(1)
6(7)	Netherlands	15(1)
10(10)	Italy	7(0)

	year	Name	prize
1	2012	Shinya Yamanaka	Physiology / Medicine
2	2010	Akira Suzuki	Chemistry
3	2010	Ei-ichi Negishi	Chemistry
4	2008	Osamu Shimomura	Chemistry
5	2008	Makoto Kobayashi	Physics
6	2008	Toshihide Maskawa	Physics
7	2002	Masatoshi Koshiro	Physics
8	2002	Koichi Tanaka	Chemistry
9	2001	Ryōji Noyori	Chemistry
10	2000	Hideki Shirakawa	Chemistry
11	1987	Susumu Tonegawa	Physiology / Medicine
12	1981	Kenichi Fukui	Chemistry
13	1973	Leo Esaki	Physics
14	1965	Sin-Itiro Tomonaga	Physics
15	1949	Hideki Yukawa	Physics

Innovation Power

Rank	GII	GCI	TRGI
1	Switzerland	Switzerland	United States(45)
2	United Kingdom	Singapore	Japan(28)
3	Sweden	United States	France(12)
4	Finland	Finland	Switzerland(4)
5	Netherlands	Germany	Germany(3)
6	United States	Japan	Korea(3)
7	Singapore	Hong Kong	Sweden(2)
8	Denmark	Netherlands	Canada(1)
9	Luxembourg	United Kingdom	Netherlands(1)
10	Hong Kong	Sweden	Taiwan(1)
Rank of Japan	21	6	2

GII: Global Innovation Index 2014 by Cornell University, INSEAD, and WIPO (2014)

GCI: Global Competitiveness Index 2014-2015 , World Economic Forum (2014)

TRGI: Thomson Reuters 2013 Top 100 Global Innovators, Thomson Reuters (2013)

of companies shown in parenthesis

Innovation potential can be measured in various ways with different indices combined but Japan's innovation potential is not highly evaluated in general

ORGANIZATIONAL AND POLICY FRAMEWORK

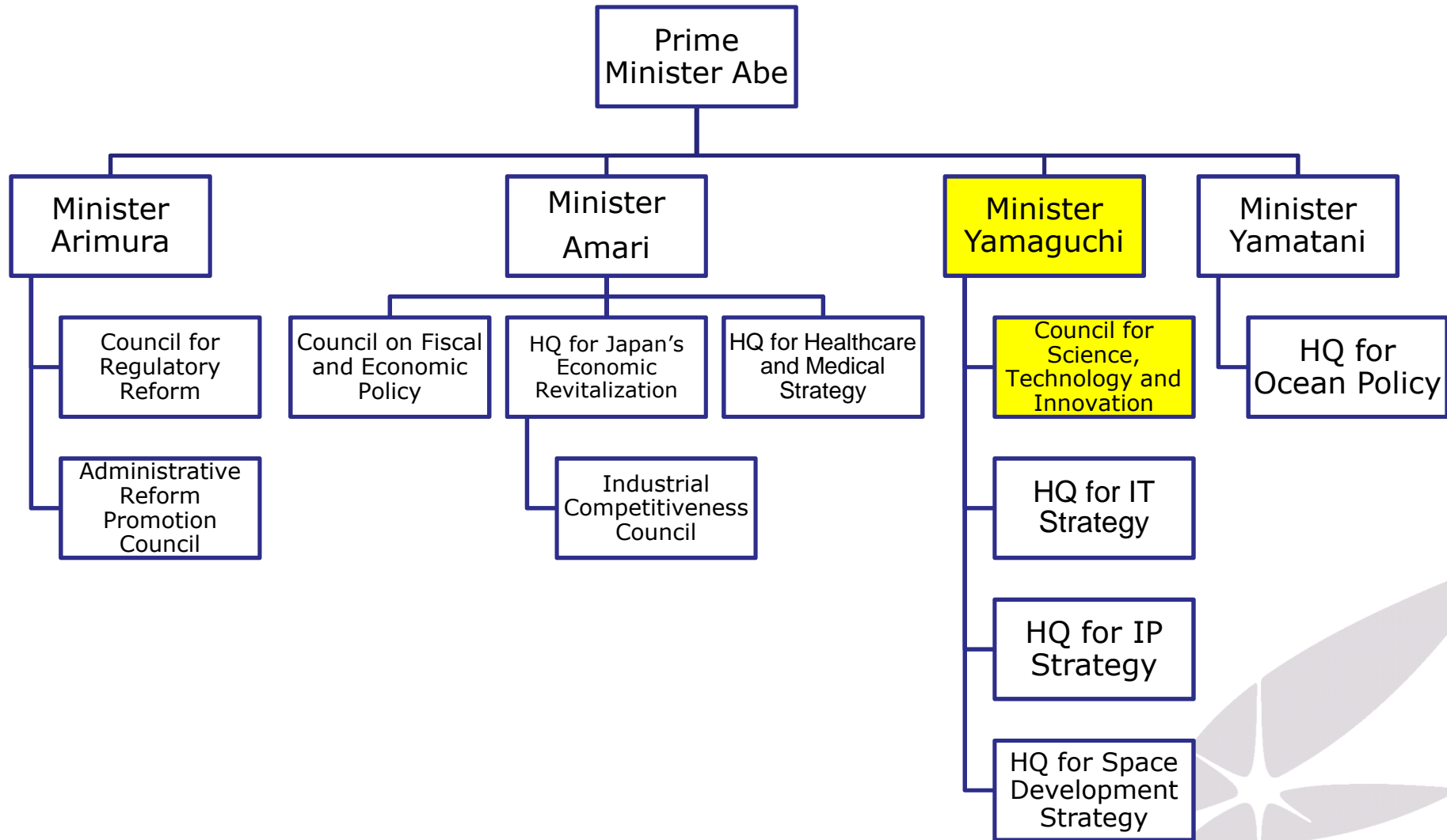
Council for Science, Technology and Innovation

From CSTP to CSTI

- Act on the Establishment of the Cabinet Office amended (into force as of May 19, 2014)
 - Former Council for **Science and Technology Policy** (CSTP) is now Council for **Science, Technology and Innovation** (CSTI)
 - New mandate is added which is to deal with the issues related to the development of innovation eco-system in addition to “the promotion of science and technology”
 - Term of office of executive members of the Council is extended from 2 years to 3 years

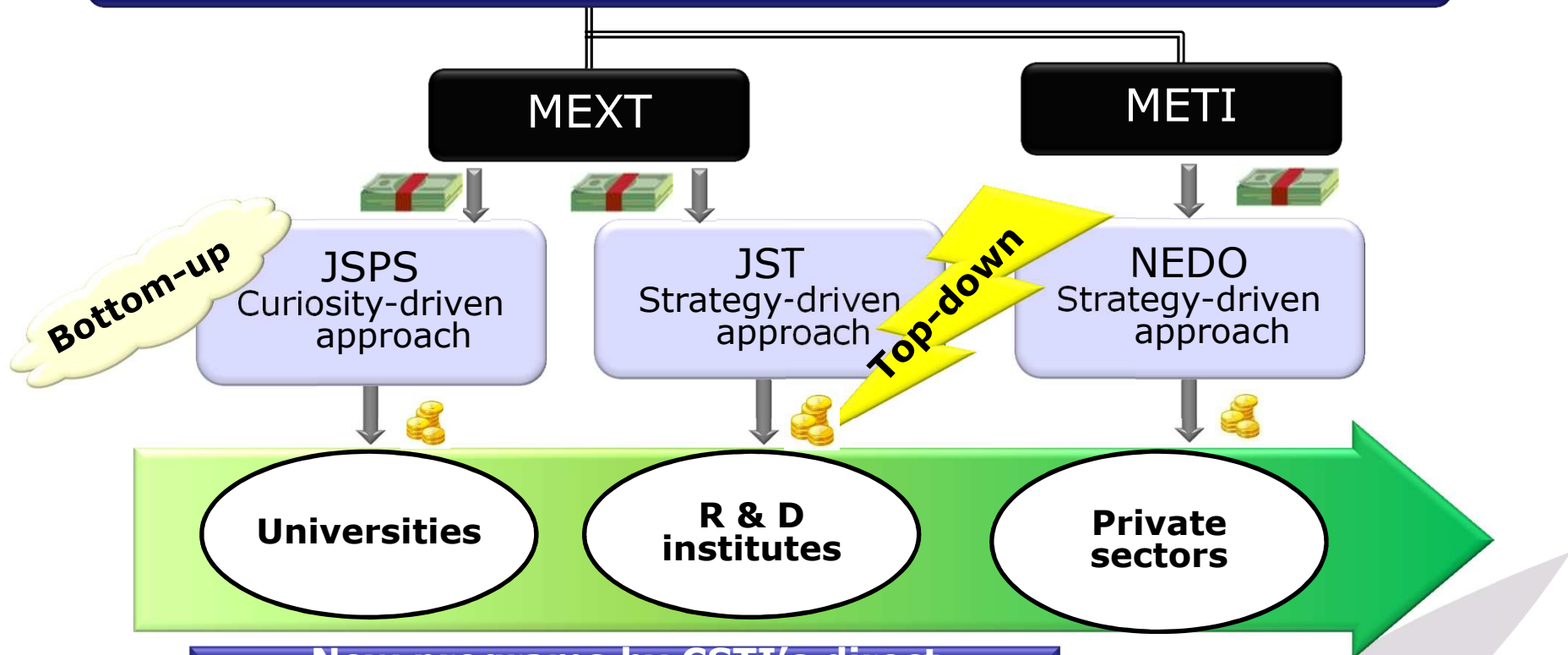


Relevant Councils and Headquarters



Funding Structure for Promoting STI

Council for Science, Technology and Innovation (CSTI)



New programs by CSTI's direct engagement

SIP (Cross-Ministerial **S**trategic **I**nnovation Promotion **P**rogram)

ImPACT (**I**mpulsing **PA**radigm **C**hange through disruptive **T**echnologies)

S&T Basic Plans

S&T Basic Plan	Major Achievements and Epochs
<p>1st Basic Plan (1996-00)</p> <ul style="list-style-type: none"> ● Support plan for 10,000 post-docs ● Implementation of evaluation system ● R&D expenditure over \17tri 	<ul style="list-style-type: none"> ◆ Introduction of R&D evaluation system('97) ◆ Actual support of 10,000 post-docs('99) ◆ Competitive funding doubled('00)
<p>2nd Basic Plan (2001-05)</p> <ul style="list-style-type: none"> ● R&D Prioritization ● Doubling competitive research funds ● R&D expenditure over \24tri 	<ul style="list-style-type: none"> ◆ 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)
<p>3rd Basic Plan (2006-10)</p> <ul style="list-style-type: none"> ● R&D Prioritization with area-setting ● Key technologies of national importance ● R&D expenditure over \25tri 	<ul style="list-style-type: none"> ◆ 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)
<p>4th Basic Plan (2011-15)</p> <ul style="list-style-type: none"> ● Comprehensive promotion of S&T and Innovation ● Issue-driven Approach instead of Discipline-oriented Approach ● Recovery and Revitalization from the Disaster, Green Innovation, Life Innovation ● Promotion of Basic Research & Human Resource Development ● Enhancing Policy Dialogue with Society 	

STI POLICY UNDER ABE ADMINISTRATION

Abe Administration

- Priority
 - Economic revival, growth and wealth
- Tools
 - “Bold monetary policy”
 - “Flexible fiscal policy”
 - “Growth strategy that encourages private sector investment”
 - Structural reforms
 - Innovation policy
- Strategies
 - Japan Revitalization Strategy (June 2013, June 2014) ← Elaborated by Industrial Competitiveness Council
 - Comprehensive STI Strategy (June 2013, June 2014) ← Elaborated by CSTI (CSTP)



Comprehensive STI Strategy

Basic Concept

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

Chronology

- June 7, 2013
Formulation of the original “Comprehensive STI Strategy”

- Implementation of the Strategy
- New developments, esp. 2020 Tokyo Olympics/Paralympics
- Need to drastically improve measures for STI environment

- June 24, 2014
Formulation of the “Comprehensive STI Strategy 2014”

Comprehensive STI Strategy 2014 (1)

Policy Challenges (1)

Challenges to be addressed	Focused policy challenges
1. Realization of clean and economical energy system	(1) Stable and low-cost supply of clean energy (production)
	(2) Improved utilization efficiency and consumption reduction through new technology (consumption)
	(3) Integration of sophisticated energy networks (distribution)
2. Realization of a healthy and active ageing society as a top-runner in the world	(1) Reinforcing the development of pharmaceuticals and medical devices
	(2) Improving a system for clinical research and trial
	(3) Realizing the cutting edge medical services as a top runner in the world
	(4) Reinforcing a research responded to disorder
3. Development of next generation infrastructures as a top-runner in the world	(1) Realizing a smart city as a model of "city planning" of the future
	(2) Constructing a resilient society

Comprehensive STI Strategy 2014 (2)

Policy Challenges(2)

Challenges to be addressed	Focused policy challenges
4. Nurturing new industries by taking advantage of the Regional Resources	(1) Nurturing agriculture, forest and fisheries as the next growth power through the utilization of STI
	(2) Reinforcing the competitiveness of local industries
5. Early recovery and revitalization from the Great East Japan Earthquake	(1) Realizing a society where residents' health are protected from disasters and children and the elderly people are sound and healthy
	(2) Establishing energy system resilient against disasters
	(3) Promoting new business models in Tohoku
	(4) Establishing next generation infrastructures resilient against disasters
	(5) Mitigating and resolving influences by radioactive material

Comprehensive STI Strategy 2014 (3)

Cross-cutting Technologies

to strengthen industrial competitiveness and address policy challenges

Cross-cutting Technologies	Viewpoints to address policy challenges	Related Policy Challenges
ITC	(1) Knowledge creation to contribute to the social and economic activities	Active ageing N-G infrastructures
	(2) Support for individuals participating in social activities to improve surrounding environment	Active ageing N-G infrastructures Regional resources
	(3) Sophisticated infrastructures and networks for providing a new value	Energy N-G infrastructures
Nano-technologies	(4) Developing next generation devices and systems for satisfying new social needs	Energy Active ageing N-G infrastructures Regional resources
	(5) Developing new materials for realizing new functions	Energy Active ageing N-G infrastructures Regional resources
Environmental technologies	(6) Conducting and utilizing monitoring to contribute to realizing a sustainable society	Energy Active ageing N-G infrastructures Regional resources
	(7) Recycle and regeneration of resources to contribute to the sustainable growth	N-G infrastructures Regional resources

Comprehensive STI Strategy 2014 (4)

Creating Environment Suitable for STI

Focused policy challenges	Focused measures
Nurturing the sprouts of innovation	(1) Extending opportunities for utilizing diverse and flexible inspirations and experiences
	(2) Enhancing the functions of universities and R&D corporations toward enhancing their strength in research and human resources development
	(3) Restructuring of research fund system
Activating the innovation system	(4) Establishing innovation hubs making use of the organizational strength and regional characteristics
	(5) Enhancing the bridging functions of public R&D corporations
	(6) Improving research promotion system
Fructifying innovation	(7) Activating private enterprises engaging in new businesses
	(8) Promoting regulatory and system reform
	(9) Reinforcing the strategies for international standardization and IP

Comprehensive STI Strategy 2014 (5)

Fulfilling the headquarter function of CSTI

- CSTI to fully achieve its headquarter function to make Japan world's most innovation-friendly country

Actions

1. Leading the formulation of Japan's overall "S&T budget"

- Utilizing STI budgeting committee

2. Inducing the development of innovation environment

- Making the most of SIP program

3. Investing in innovative research beyond traditional framework

- Implementation of ImPACT program

4. Realizing an innovation cycle through new system for R&D corporations of world's highest level

- Realize the new system ASAP

What's next?

- Preparation of the 5th Science and Technology Basic Plan (2016–2020)

