Framework of 'STI for SDGs Roadmap' – case in Japan

May 8th, 2018

Science, Technology and Innovation Policy

Cabinet Office, Japan

SUSTAINABLE DEVELOPMENT GOALS

Current Status of Japan – Strength and Weakness

▌ Japan is ranked 11th in the SDG Index and Dashboards Report 2017. (reported by the Bertelsmann Stiftung, 2017)
- The report indicated Japan's weakness such as SDG 1, 2, 5, 7, etc.

▌ Serious national challenges
- Declining birth rate and rapidly aging population
- Gap and Separation, large enterprises and SMEs, urban and rural area
- Uncertainty for societal and economical sustainable growth

▼

Achieving SDGs is identical with solving Japan's social issues

Current Status of Japan – Strength and Weakness

▌ How can Japan overcome these challenges
- • 5th Science and Technology Basic Plan (Apr.2016)
- • A new concept " Society 5.0"

▌ Formulating "Roadmap of STI for SDGs" announced by the Prime minister (Dec.2017)

Concept of "Society 5.0"

▮ "Society 5.0"
- The basic concept: "human-centered" society pursuing human well-being and happiness released from physical restrictions
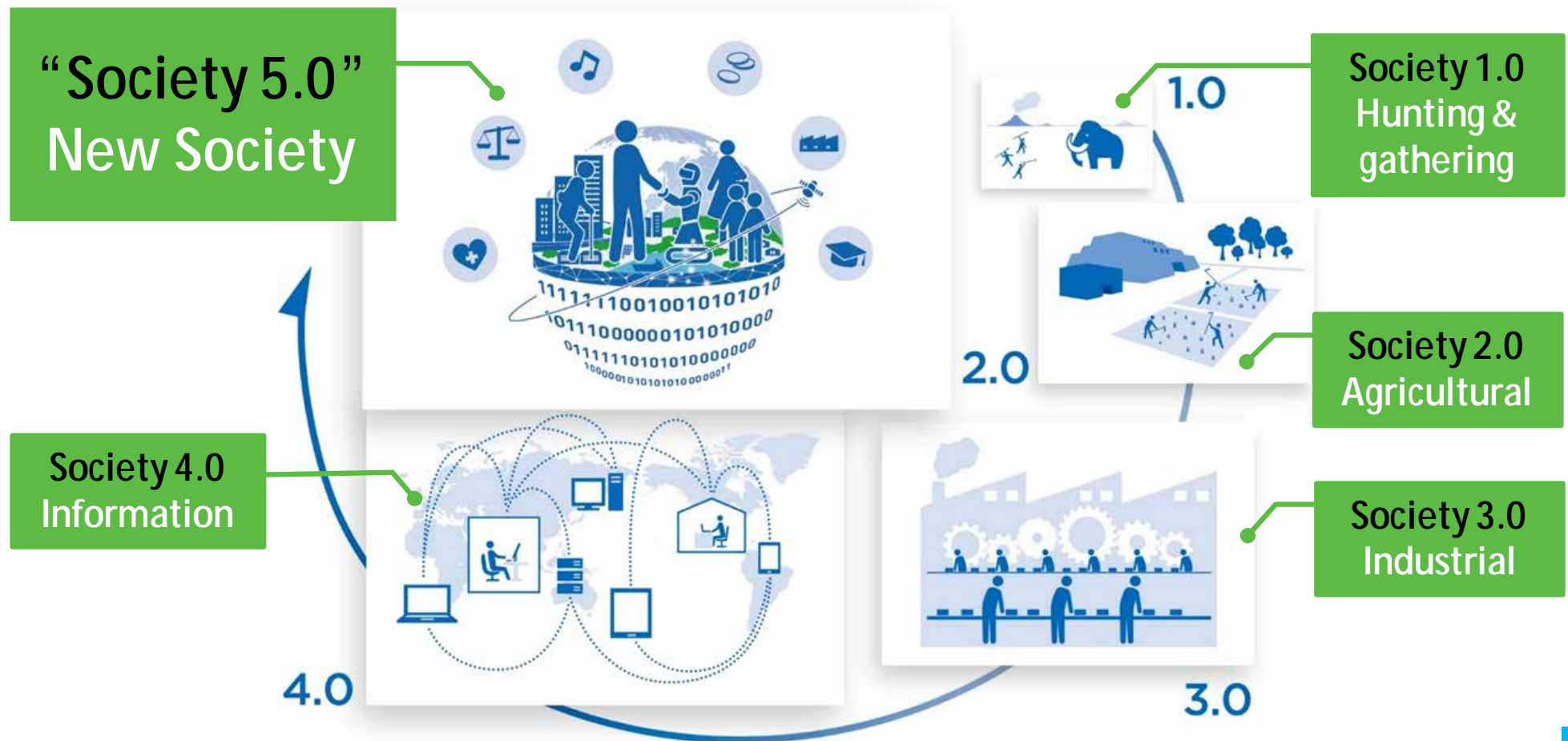- Same idea aimed at SDGs which is " No one will be left behind"

▮ Preparing new national innovation strategy
- Specify policy package for realizing "Society 5.0"
- Solution through IoT and AI for addressing social challenges, etc.
- Data exchange platform
- Reform of ecosystem of innovation for improving the effectiveness and productivity of STI.

Society 5.0

What is "Society 5.0"?

Realize the advanced fusion of cyberspace and physical space,
To balance economic advancement with the resolution of social problems,
Bring about a human-centered society

"Society 5.0" New Society

Society 1.0
Hunting & gathering

Society 2.0
Agricultural

Society 4.0
Information

Society 3.0
Industrial

Society 5.0

Current society

Knowledge and information are not shared and cross-sector value is difficult to create.

IoT will connect all people and things, all sorts of knowledge and information will be shared, and totally new value will be born.

Current society

A variety of constraints exists with respect to social problems such as the aging society and regional depopulation making a sufficient response difficult.

Social issues will be overcome and humans will be liberated from various types of constraints.

AI will free humans from the burdensome work of analyzing huge amounts of information.

The possibilities open to humans will expand through the use of robots, automatic-driving cars, etc.

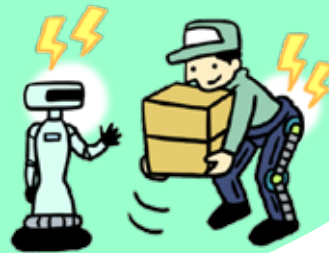**Current society**

With an overflow of information, the work of finding and analyzing the information desired is difficult and burdensome.
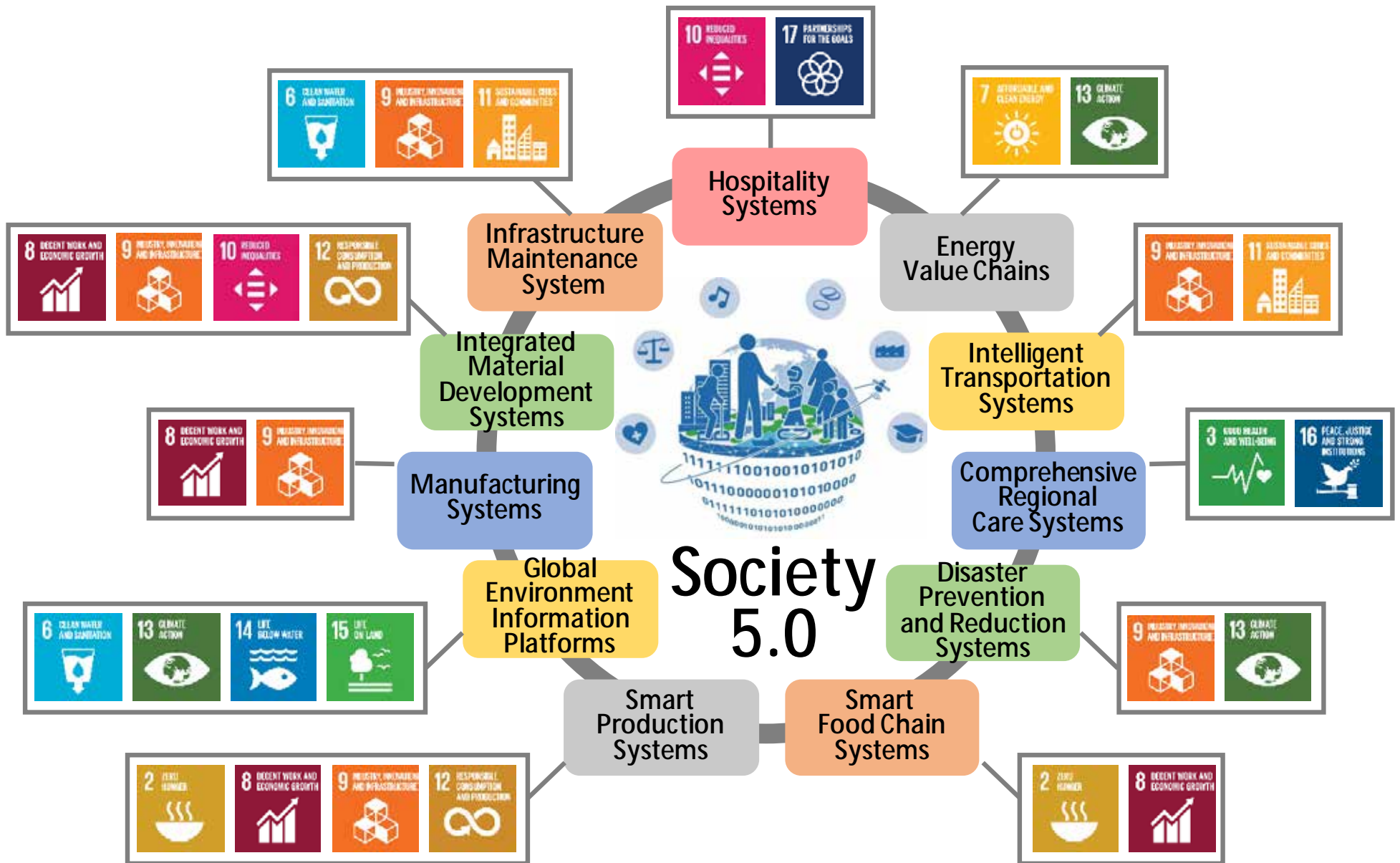
Current society

People do a large amount of work, their abilities had limitations, and the behavior of the physically challenged is constrained.

5

Society
5.0

- Hospitality Systems
- Energy Value Chains
- Infrastructure Maintenance System
- Intelligent Transportation Systems
- Integrated Material Development Systems
- Comprehensive Regional Care Systems
- Manufacturing Systems
- Disaster Prevention and Reduction Systems
- Global Environment Information Platforms
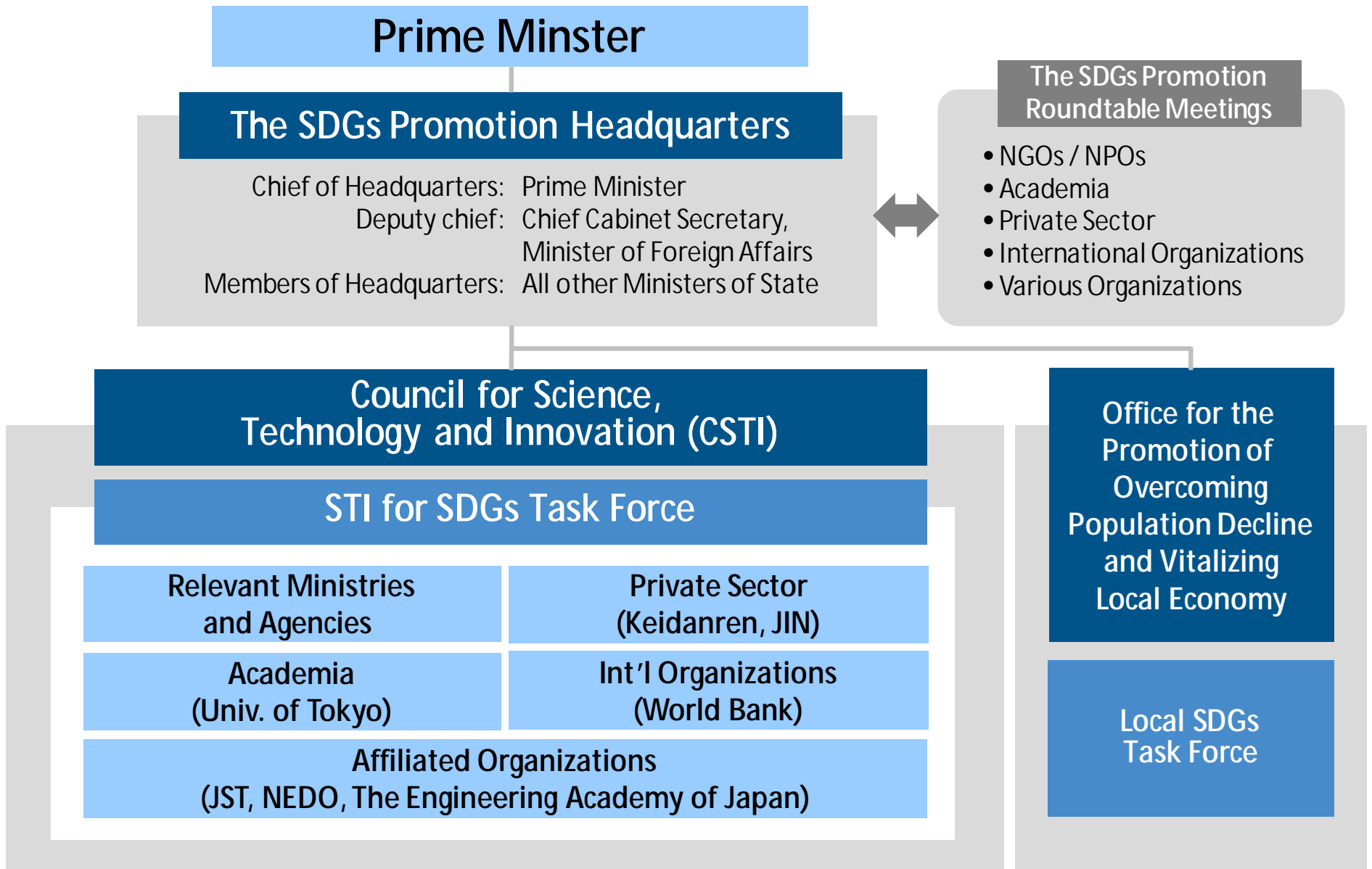- Smart Food Chain Systems
- Smart Production Systems

Implementation Framework for SDGs Initiative

- Leadership of Prime Minister

- Multi-stakeholder Engagement related to the SDGs; ministries, local government, NGO/NPO, universities

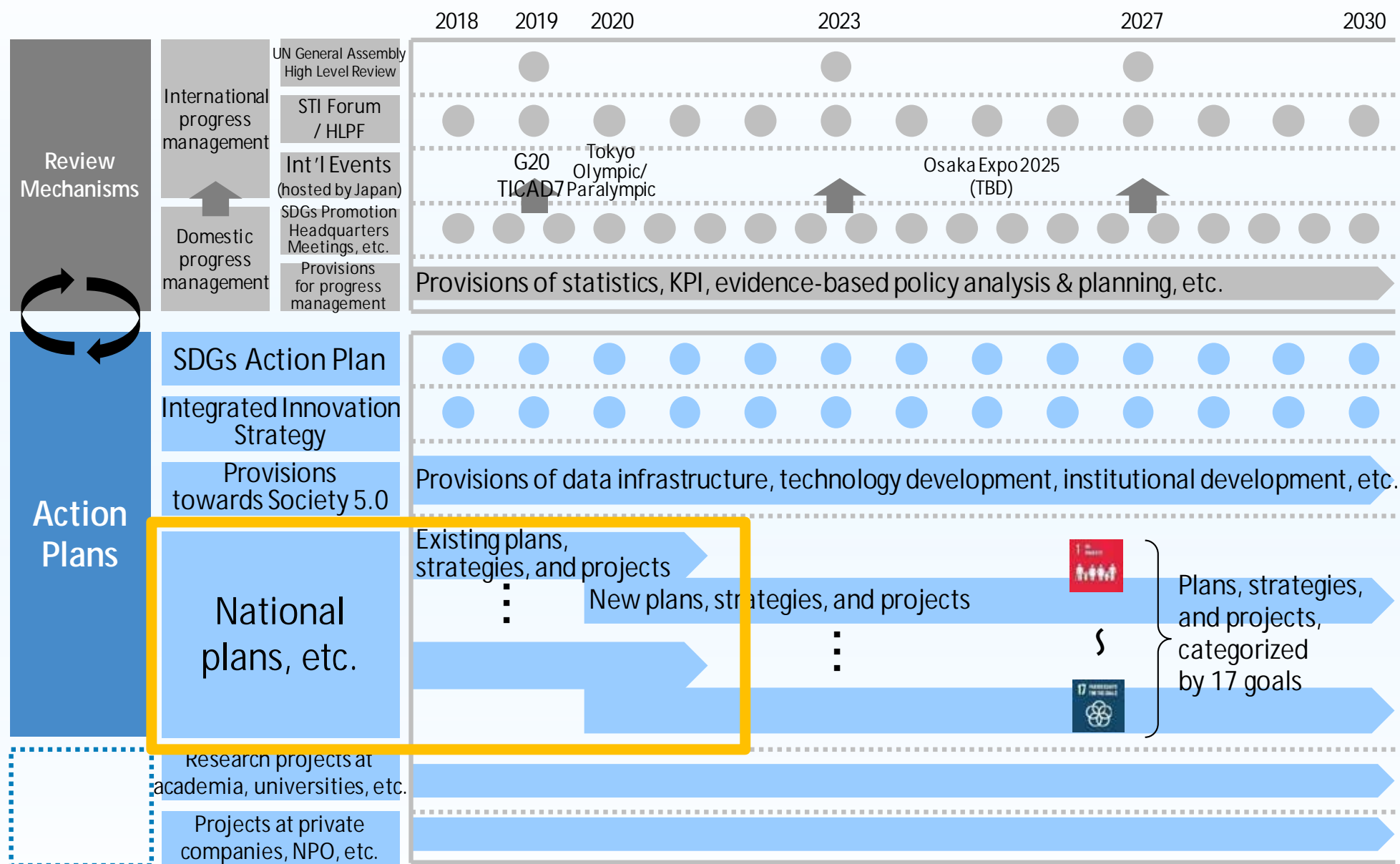- Council for Science, Technology and Innovation (CSTI) of Cabinet Office is promoting "STI for SDGs"

Overview Structure for SDGs Initiative

Prime Minster

The SDGs Promotion Headquarters

Chief of Headquarters: Prime Minister
Deputy chief: Chief Cabinet Secretary,
Minister of Foreign Affairs
Members of Headquarters: All other Ministers of State

The SDGs Promotion Roundtable Meetings

- NGOs / NPOs
- Academia
- Private Sector
- International Organizations
- Various Organizations

Council for Science, Technology and Innovation (CSTI)

STI for SDGs Task Force

Relevant Ministries and Agencies	Private Sector (Keidanren, JIN)
Academia (Univ. of Tokyo)	Int'l Organizations (World Bank)

**Affiliated Organizations
(JST, NEDO, The Engineering Academy of Japan)**

Office for the Promotion of Overcoming Population Decline and Vitalizing Local Economy
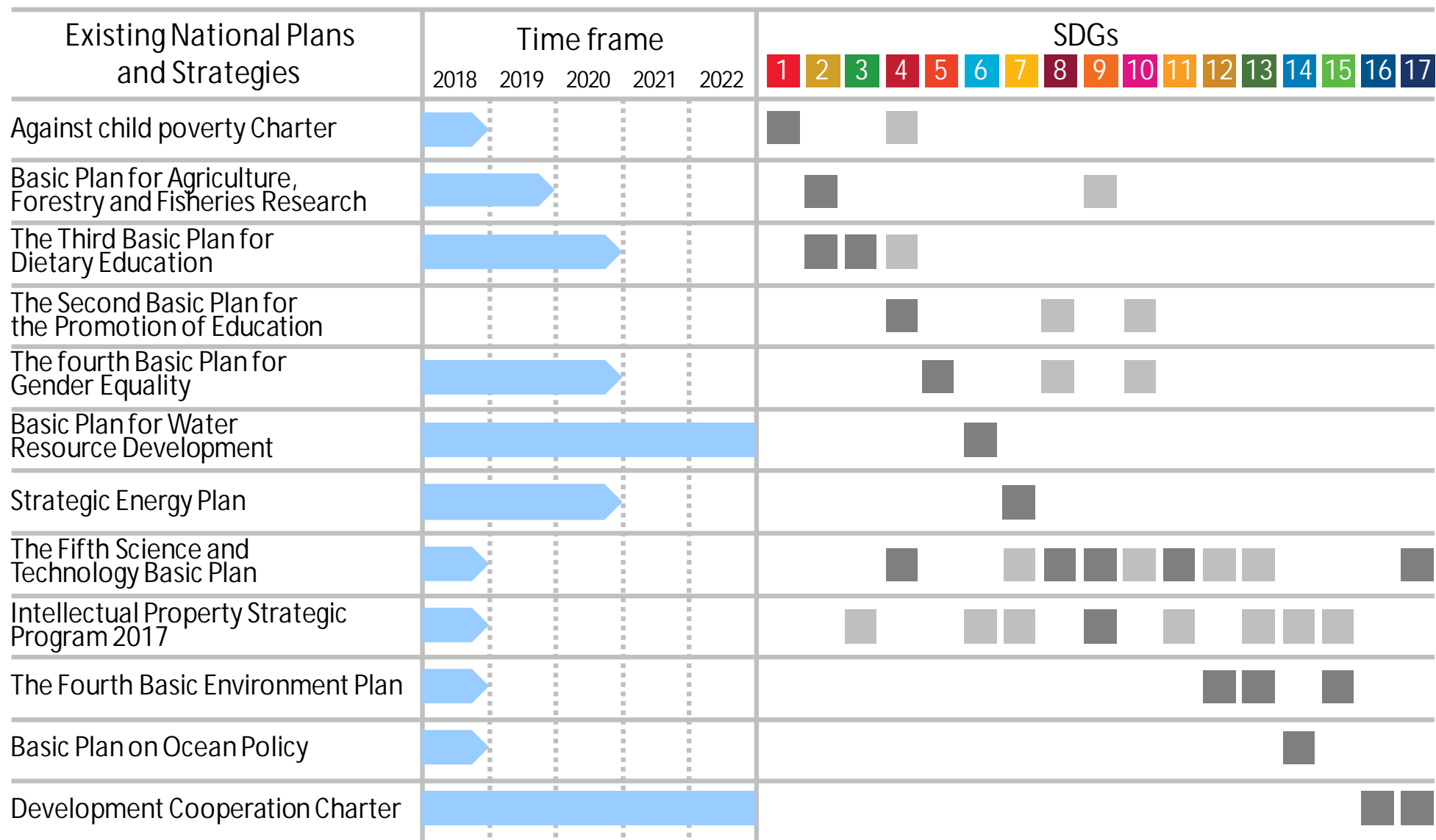
Local SDGs Task Force

Formulating STI for SDGs Roadmap

▌ Analyzing national policies and plans related to 17 SDGs based upon concrete roadmap for realization of the "Society 5.0"

▌ Integrating the elements into STI for SDGs Roadmap

▌ Disruptive innovation for realization "Society 5.0"; AI most important component targeting human resources development

▌ Specify concreate milestone to achieve the SDGs in national plans and strategies

▌ Further consideration of national review mechanisms to promote the roadmap

▌ Realization for "Society 5.0" will be contribute to achieve to the SDGs
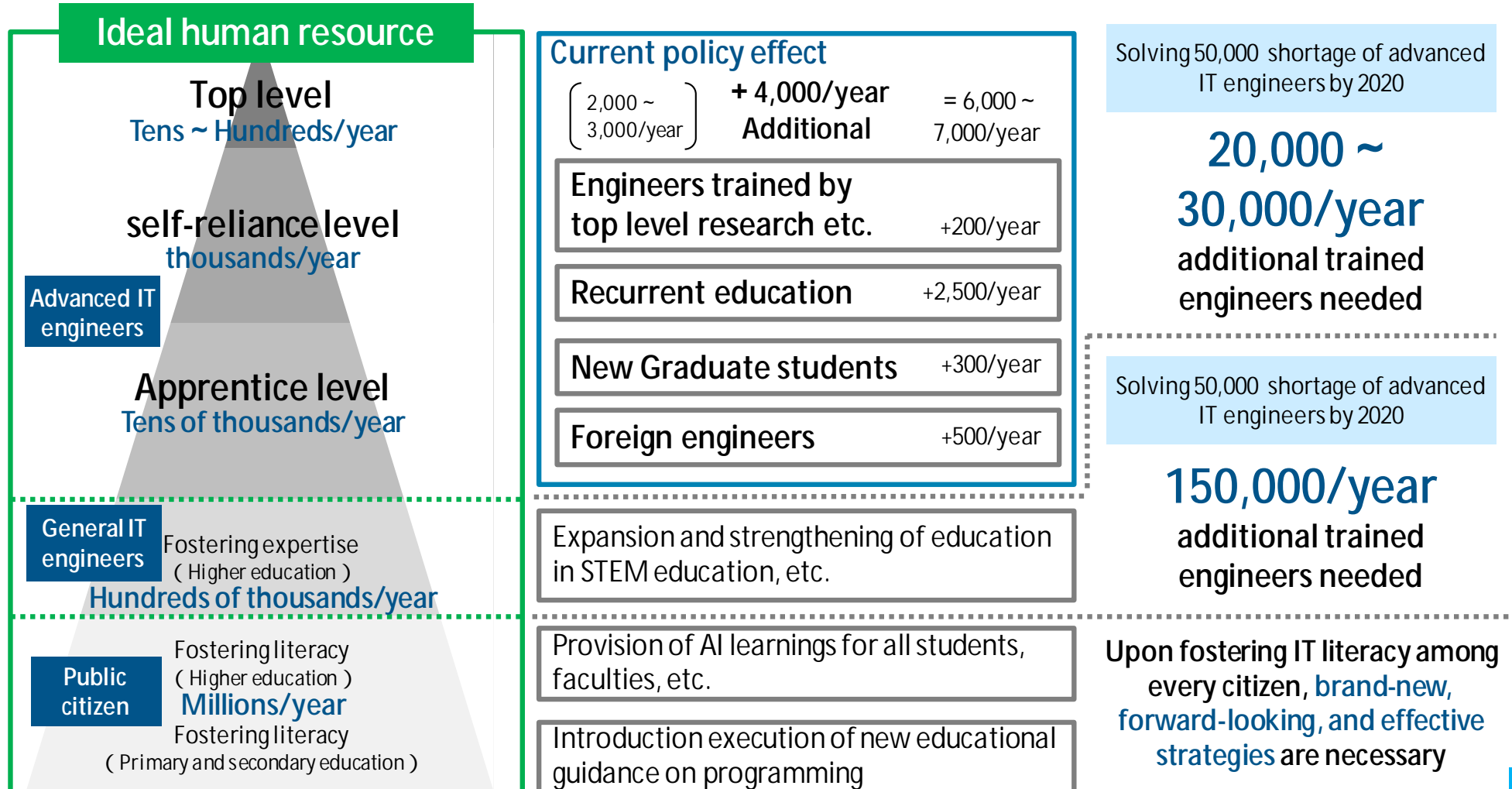
STI for SDGs Roadmap　draft

STI for SDGs Roadmap draft

AI / IT-Human Resource Development, corresponding to the disruptive innovation
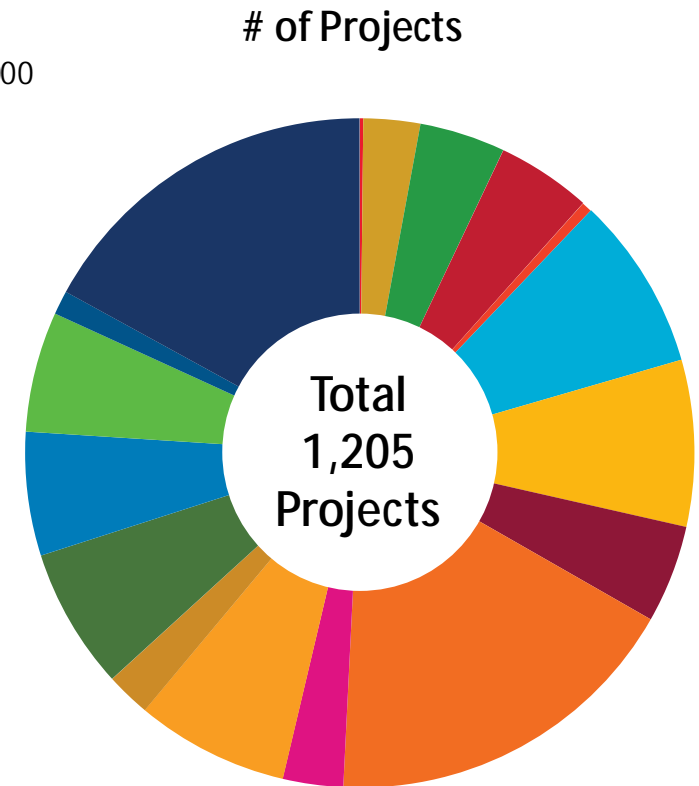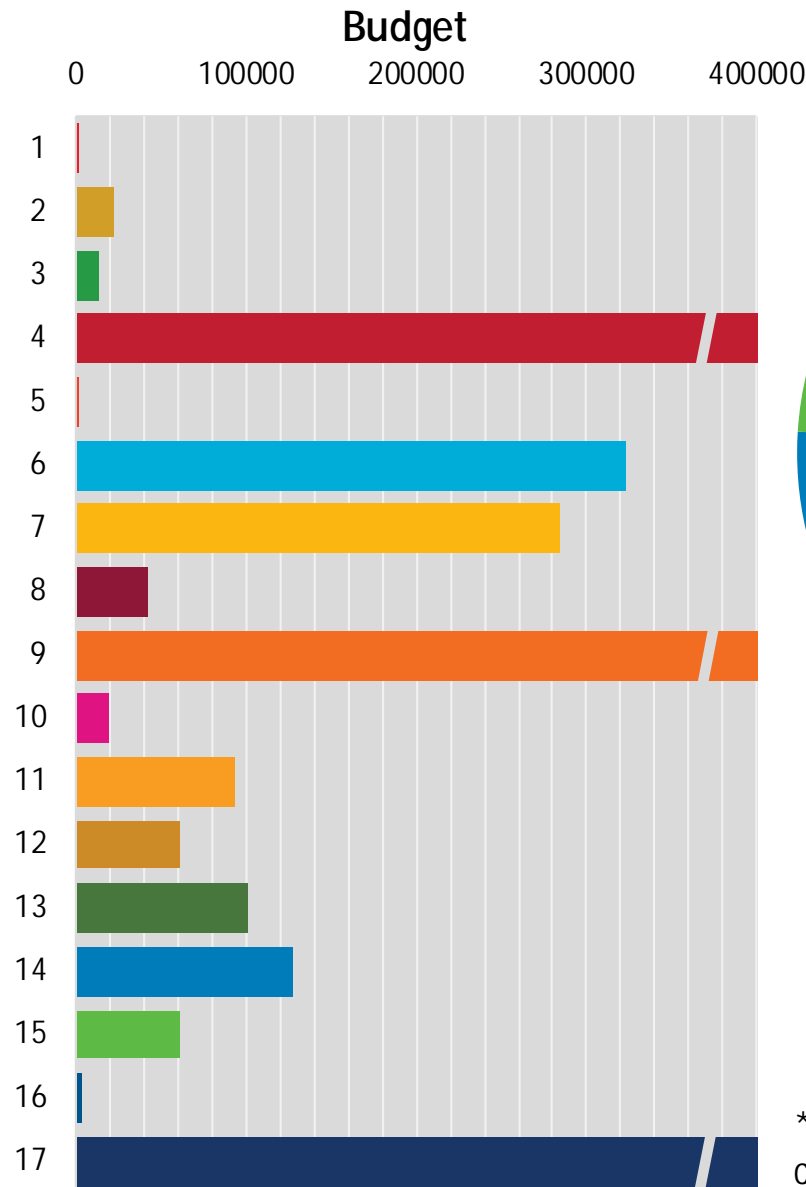
In AI era, training of advanced/general IT human resources and IT users is crucially important. In Japan, it is expected that approximately shortage of 50,000 advanced IT engineers and 300,000 general IT engineers in 2020. It is urgent necessity to train about 2~30,000 additional advanced IT engineers and about 150,000 general IT engineers annually.

Ideal human resource

Top level
Tens   Hundreds/year

self-reliance level
thousands/year

Advanced IT engineers

Apprentice level
Tens of thousands/year

General IT engineers   Fostering expertise
Higher education
Hundreds of thousands/year

Public citizen   Fostering literacy
Higher education
Millions/year
Fostering literacy
Primary and secondary education

Current policy effect

$\left\{\begin{array}{c}2,000\\3,000/year\end{array}\right.$ **4,000/year**   6,000
Additional   7,000/year

Engineers trained by top level research etc.	+200/year
Recurrent education	+2,500/year
New Graduate students	+300/year
Foreign engineers	+500/year

| Expansion and strengthening of education in STEM education, etc. |

| Provision of AI learnings for all students, faculties, etc. |

| Introduction execution of new educational guidance on programming |

Solving 50,000 shortage of advanced IT engineers by 2020

20,000
30,000/year
additional trained engineers needed

Solving 50,000 shortage of advanced IT engineers by 2020

150,000/year
additional trained engineers needed

Upon fostering IT literacy among every citizen, brand-new, forward-looking, and effective strategies are necessary

STI Projects, categorized by 17 Goals (under investigation)

	# of Projects	Budget (million yen)
1	2	106
2	33	21,433
3	50	13,379
4	55	1,118,534
5	6	789
6	101	322,473
7	97	284,327
8	57	41,603
9	211	633,823
10	35	19,243
11	89	93,172
12	26	60,305
13	82	100,418
14	72	127,183
15	70	60,890
16	14	3,413
17	205	832,403
total	1,205	3,733,490

1JPY = 110 US$

Budget

# of Projects

Total 1,205 Projects

*These charts are based on the tentative categorization.

International Contribution as of Japan

▮ **Contribution on Roadmap**
Extracting principal elements and co-developing 'Guideline' on how to formulate STI for SDGs Roadmap at country and international levels, taking into account various experiences including Japan

▮ **Contribution on Seeds-Needs matching**
Essential characteristic of international contributions from Japan i.e., Win-Win approach through nourishing burgeoning business
  one time ODA, unsustainable infrastructure, etc...

International Collaboration (draft)

		UN-related occasions	Int'l occasions in Japan
2018	**MAY**		**EGM** Experience sharing on formulation of STI Roadmap including that of Japan
	JUN	**STI Forum 2018** Shaping general consensus on common elements/guiding principles, possible frameworks/methodologies for country level STI Roadmaps	

Peer learning on STI Roadmap

		UN-related occasions	Int'l occasions in Japan
2019	**JUN**	**STI Forum 2019** Addressing Int'l STI Roadmaps and country-specific action plans	**G20 Summit 2019** Proposal for joint action plans on 'STI for SDGs' Among G20 economies
	JUL	**HLPF (High Level Review)** Review on progress on 'STI for SDGs' at country and international levels	
	AUG		**TICAD7** Strengthening collaboration among African countries and Japan on 'STI for SDGs'
2020			**Tokyo Olympic/Paralympic** (Showcase for Japan's 'STI for SDGs')
2024		**HLPF (High Level Review)** Review on progress on 'STI for SDGs' at country and international levels	**Osaka Expo 2025 (TBD)** (Showcase for Japan's 'STI for SDGs')