Session : “Science for Sustainable Development Goals: Key Lessons and Gaps”
on February 17, 2018, at AAAS 2018, in Austin

How the Science and Technology Capacity of a Developed Country is Addressing the SDGs from Japanese perspective

- from discussion to implementation -

February 17 , 2018

Tateo Arimoto
Professor, National Graduate Institute for Policy Studies(GRIPS）&
Principal Fellow, Japan Science & Technology Agency(JST)

Conclusion of the 2nd STI for SDGs forum, in June 2017

1. **crosscutting potential of STI;**
2. **importance of capacity building;**
3. **importance of stakeholder engagement;**
4. **need to make the business case for private sector investment in innovation for the SDGs;**
5. **importance of roadmaps for tracking progress;**
6. **centrality of ICT infrastructure expansion to current development and STI efforts;**
7. **need to focus on match-making between existing problems and existing solutions; and**
8. **necessity for the STI Forum to conduct a "horizon-scanning" exercise on the changes happening in the STI field.**

Identified by Bill Colglazier, Co-Chair of the TFM 10-Member Group and was reported to High Level Political Forum in July 2017.

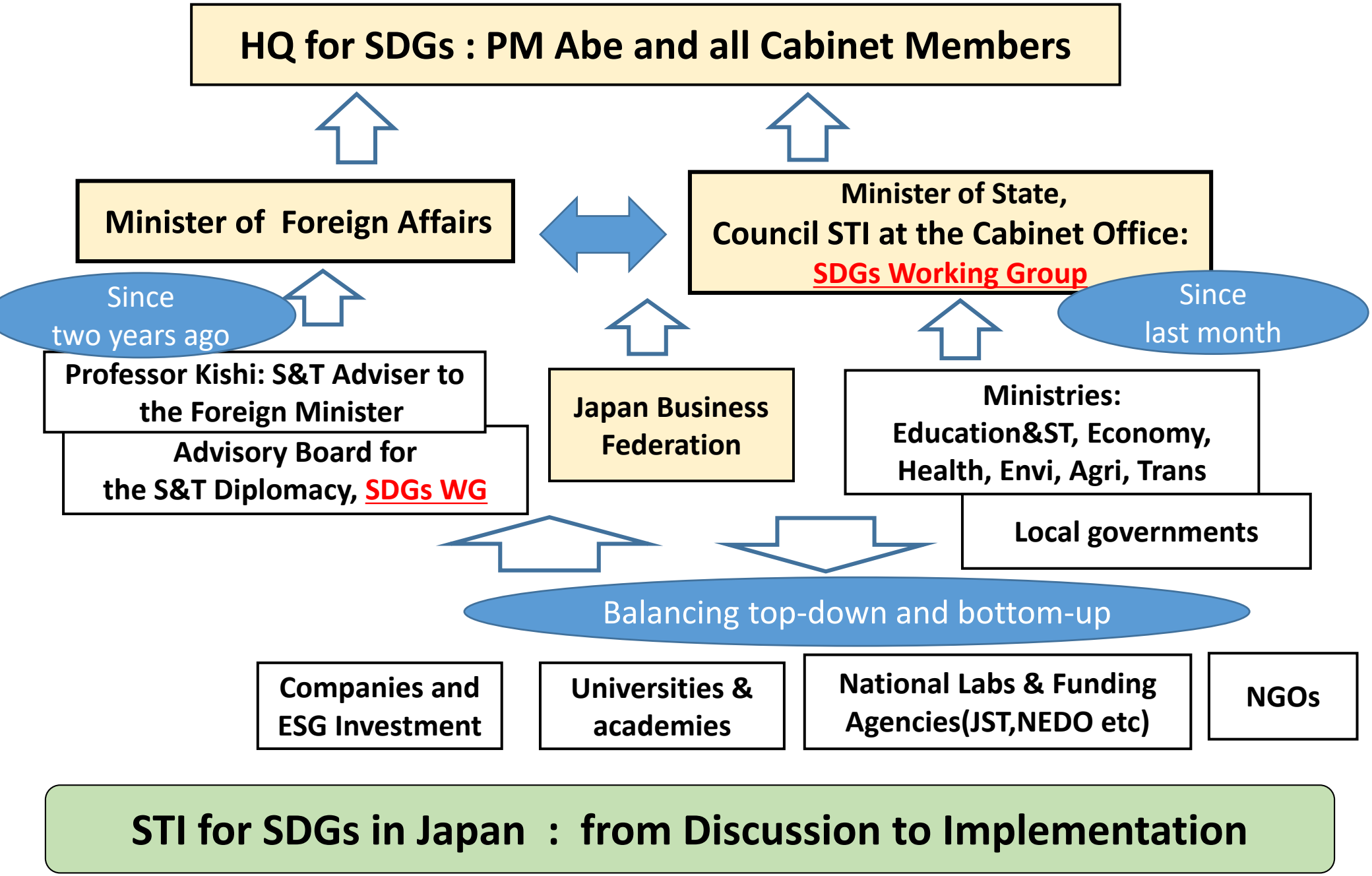
Some Points of the Discussions and Suggestions at the STI for SDGs Workshop, on 29 Nov- 1 Dec 2017, in Incheon

1. Policy and Strategy
   * redefine the science policy agenda. *robust science advice system.
   * whole of government, society and economy approach.
   * strengthen the policy coherence between sectors.
   * increased horizontal coordination and integration of sectoral policies,
   * economically sustainable and shared value.

2. Road map and knowledge platform
   * STI road maps with combining political, social, economic, academic and technological aspects.
   * knowledge infrastructure in place and TFM online platform.
   * stakeholder engagement, foresight and horizon scanning.

3. STI and methodology; transforming STI eco-system
   * holistic, multidisciplinary & integrated approaches including indigenous & traditional knowledge. Inter-linkage.
   * Emerging and exponential technologies and their impacts.

4. Capacity building and awareness of STI for SDGs


HQ for SDGs : PM Abe and all Cabinet Members
Minister of Foreign Affairs
Minister of State,
Council STI at the Cabinet Office:
SDGs Working Group
Since
two years ago
Since
last month
Professor Kishi: S&T Adviser to
the Foreign Minister
Advisory Board for
the S&T Diplomacy, SDGs WG
Japan Business
Federation
Ministries:
Education&ST, Economy,
Health, Envi, Agri, Trans
Local governments
Balancing top-down and bottom-up
Companies and
ESG Investment
Universities &
academies
National Labs & Funding
Agencies(JST,NEDO etc)
NGOs
STI for SDGs in Japan : from Discussion to Implementation

GOJ SDGs Promotion Headquarters (4th meeting, Dec.2017)

Japan is committed to make every effort both domestically and internationally to achieve SDGs. Japan has established the "SDGs Promotion Headquarters" led by Prime Minister Abe and consists of all Ministers, as well as the "SDGs Promotion Roundtable Meeting" as a multi-stakeholder framework in May 2016. The Headquarters formulated the "SDGs Implementation Guiding Principles" and held 4th meeting on Dec. 26, 2017

1. Core message of the meeting: Realize a rich and vibrant future through promoting the SDGs

- Japan intends to lead the promotion of the SDGs in the international community, building upon its strength in traditional wisdom, cutting-edge technologies and information as well as its conviction not to leave anyone behind. Japan will take initiative to demonstrate how to realize a rich and vibrant future amid of globalization and population aging as Japan's SDGs Model.
- The GoJ aims to communicate and outreach such SDGs Model to the world, taking the opportunities of hosting the G20 and Tokyo International Conference on African Development (TICAD) in 2019, the Tokyo Olympic and Paralympic Games in 2020 ~~where Japan is expected to lead global agenda~~.
- At the Meeting, the Headquarters decided "SDGs Action Plan 2018" that includes the basic directions of Japan's SDGs Model and its major efforts. Prime Minister Abe instructed all Ministers to steadily implement the Action Plan and to strengthen and expand their efforts by mid-2018.

2. Decide the three basic directions of Japan's SDGs Model

(1) Promotion of Society 5.0 that corresponds to SDGs

Fully support the implementation of the revised Charter of Corporate Behaviors by the Japan Business Federation (Keidanren) that commits to the SDGs through promoting the Society 5.0.

e.g.

- Promote Society 5.0 and "Productivity Revolution" (that tries to materialize Society 5.0 with IoT, Big Data and AI) in order to respond to the SDGs.
- By mid-2018, will come up with concrete measures to support private companies who engage in the SDGs not only as a part of its CSR activities but also as its core business strategy.
  (launching an initiative to promote the SDGs management and drafting international roadmaps to promote "STI for the SDGs")

(2) Regional vitalization driven by the SDGs

Promote the SDGs in local areas making the most of their unique needs and strengths, and thereby vitalize local areas and create resilient, environmental-friendly and attractive communities.

e.g.

- **Newly create a project "SDGs Models of Local Governments" through which the entire central government will intensively support selected local governments in their SDGs implementation**, and expand success and lessons learnt to other local governments.
- Raise awareness towards the SDGs and promote its implementation through preparing **for the Tokyo Olympic and Paralympic Games and bidding for 2025 Expo in Kansai**.

(3) Empower next generations and women

Empower next generations who have rich creative and communication skills and women who are the SDGs goal.

e.g.

- Promote steadily the "work-style reform," women's active role and "a revolution in human resources development," all of which are the priority agenda for the Abe Administration.
- Foster next-generation leaders for implementing the SDGs through education.
- Based on the concept of Human Security, promote international cooperation in the major areas of the SDGs such as health (including Universal Health Coverage (UHC)) as well as gender, education and disaster risk reduction.

3. Implement and expand major efforts by the GoJ to crystalize the Japan's SDGs Model

- Based on the three basic directions of Japan's SDGs Model, the GoJ will implement and expand major efforts that are incorporated in Action Plan mostly with their respective draft budgets and categorized by the following eight priority areas of the SDGs Guiding Principles (decided at the 2nd meeting held in Dec. 2016):
  (i) Empowerment of All People, (ii) Achievement of Good Health and Longevity, (iii) Creating Growth Market, Revitalization of Rural Areas, and Promoting Technological Innovation, (iv) Sustainable and Resilient Land Use, Promoting Quality Infrastructure, (v) Energy Conservation, Renewable Energy, Climate Change Countermeasures, and Sound Material-Cycle Society, (vi) Conservation of Environment, including Biodiversity, Forests and Oceans, (vii) Achieving Peaceful, Safe and Secure Societies, and (viii) Strengthening the Means and Frameworks of the Implementation of the SDGs.
- The GoJ will proactively disseminate and deploy the best practices of both public and private sectors, including Japan's SDGs Award.

Japan's SDGs Award (1st 2017)

Outline

- Companies, local governments and CSOs making outstanding efforts, either domestically or internationally, to achieve SDGs are eligible for the Award.
- The SDGs Promotion Headquarters decided award winners based on the opinions of a wide-range of stakeholders in the SDGs.
- Selection criteria are **universality, inclusiveness, participation, integration, and transparency and accountability**, which are the main principles of the "SDGs Implementation Guidelines" stipulated by the Headquarters.
- The Award ceremony took place at the Prime Minister's Office on Dec. 26, 2017.

The UN Secretary-General's Message to the Award ceremony

In the message, the UNSG

- commended the Government of Japan for creating this award to raise awareness of the SDGs
- extended his congratulations to the winners of this year's SDG awards, having the initiative to become agents of change in their communities.

Winners

Chief's Award (by Prime Minister)

- **Shimokawa-town, Hokkaido (Successfully realizing regional vitalization through the SDGs)**

Deputy-chiefs' Award (by Chief Cabinet Secretary)

- NPO Shinsei (Supporting the employment of those with disabilities in the disaster-affected areas)
- Palsystem Consumers' Co-operative Union (Promoting ethical purchase and consumption)
- **Kanazawa Institute of Technology** (Fostering SDGs young leaders with concrete projects)

Deputy-chiefs' Award (by Foreign Minister)

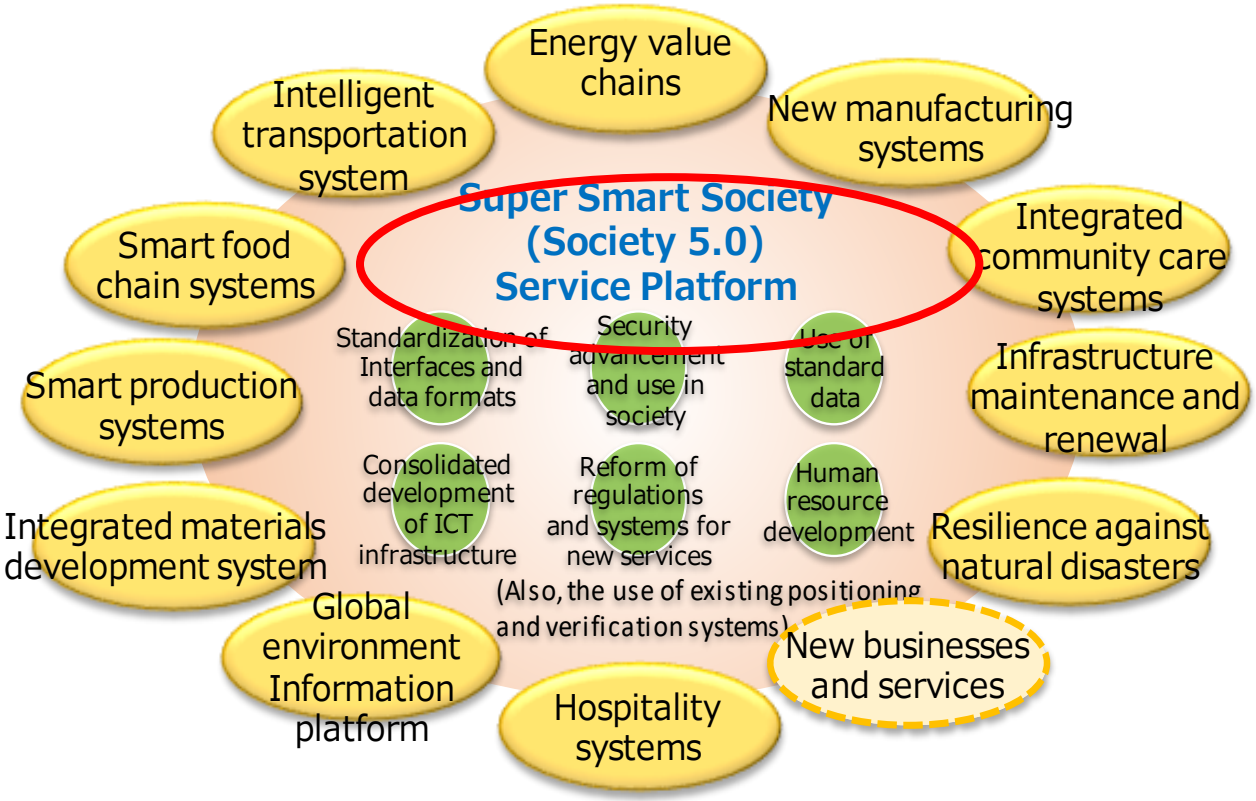
- Saraya.Co.Ltd (Promoting hand-washing campaign to improve health in developing countries)
- **Sumitomo Chemical Co**., Ltd. (Addressing infectious diseases with their cutting-edge mosquito net)

Special Award (SDGs Partnership Award)

- Yoshimoto Kogyo Co.,Ltd. (Raising domestic awareness of the SDGs through entertainment)
- **ITO EN. LTD**. (Making their entire tea-making value chain sustainable)
- Yanagawa Elementary School, Koto-ku, Tokyo (Leading education for sustainable development (ESD))
- **Okayama University (Aligning its entire educational program with the SDGs)**
- JOICFP (Comprehensively supporting maternal and child health in developing countries)
- **Kitakyushu-city, Fukuoka (Supporting cities in developing countries to be more environmental friendly)**

Japan' s new STI policy : "Society 5.0"* : "Super Smart Society"

○**Society 5.0 : A society where the various needs of society are finely differentiated and met by providing the necessary products and services in the required amounts to the people who need them when they need them, and in which all the people can receive high-quality services and live a comfortable, vigorous life that makes allowances for their various differences such as age, gender, society, nation.**



○ **Integration of cyber-physical system will transform socio-economic structure: business & government services, production, healthcare, energy, food, traffic, infrastructure, disaster, finance.**

*① **hunter–gatherer society,**
② **agricultural society,**
③ **industrial society, and**
④ **information society**.

Japan Business Federation

"Bridging new national STI Policy (Society 5.0) and global policy/strategy (SDGs)

from hard-ware to service, from components to system,
from CSR to Creating Shares Values

Using remote sensing and oceanographic data for monitoring and management of water quality, forests, land degradation, biodiversity, etc.

Resolving climate change issues with the simulation based on the analysis of meteorological and other observation data by using High Performance Computing

Creating smart cities where convenience, safety and economi efficiency are made compatible

Building global innovation ecosystems by connecting industries, academic institutions and other related stakeholders

Building resilient infrastructure and promoting sustainable industrialization by using i-Construction

Boosting food production by smart agriculture utilizing IoT, AI and Big Data
Improving nutritional status with smart food by cutting-edge biotechnology

Developing early warning alert system for the prevention of infectious diseases by combining different types of monitoring data

Making high quality education affordable for everyone on the earth with e-learning systems utilizing state-of-the-art technologies

Empowering women with access to education and information through the Internet. Providing women with opportunities for startups by utilizing ICT

Making electric power supply and demand in a sustainable way by constructing smart grid system

“University of Tokyo Future Society Initiative”

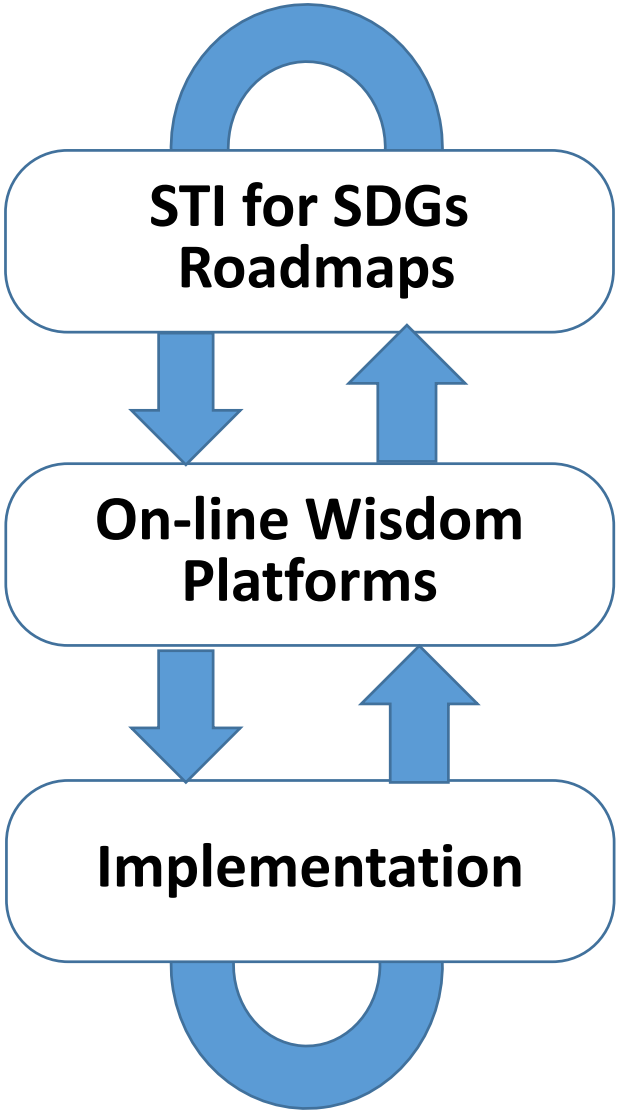
UTokyo FSI
The University of Tokyo Future Society Initiative

The University of Tokyo shall utilize to the maximum extent possible the Sustainable Development Goals (SDGs), which are congruent with the University’s mission, to set into motion collaborative projects which will contribute to the future of humanity and the planet.

http://www.u-tokyo.ac.jp/adm/fsi/ja/projects.html

http://www
http://www

Facilitation Cycle of “STI for SDGs”



Bridging STI and policy
Monitoring progresses
Back-casting approaches

Services and systems
Technologies
Data
Social implementation functions

Performance indices
Finance
Coordination
Capacity Building

by Dr. M.Nakamura at the Incheon Workshop

Draft : the 3-layered roadmaps (a-b-c)

Facilitation

Bridging policy & implementation :funding,tax, regulation, finance, people

Implementation

Layer (a)
Roadmap for executive facilitation on STI for SDGs

- Bridging national and global policy agenda

Layer (b)
Roadmaps for strategic Implementation of selected themes & goals

- Theme/Goals -oriented roadmaps

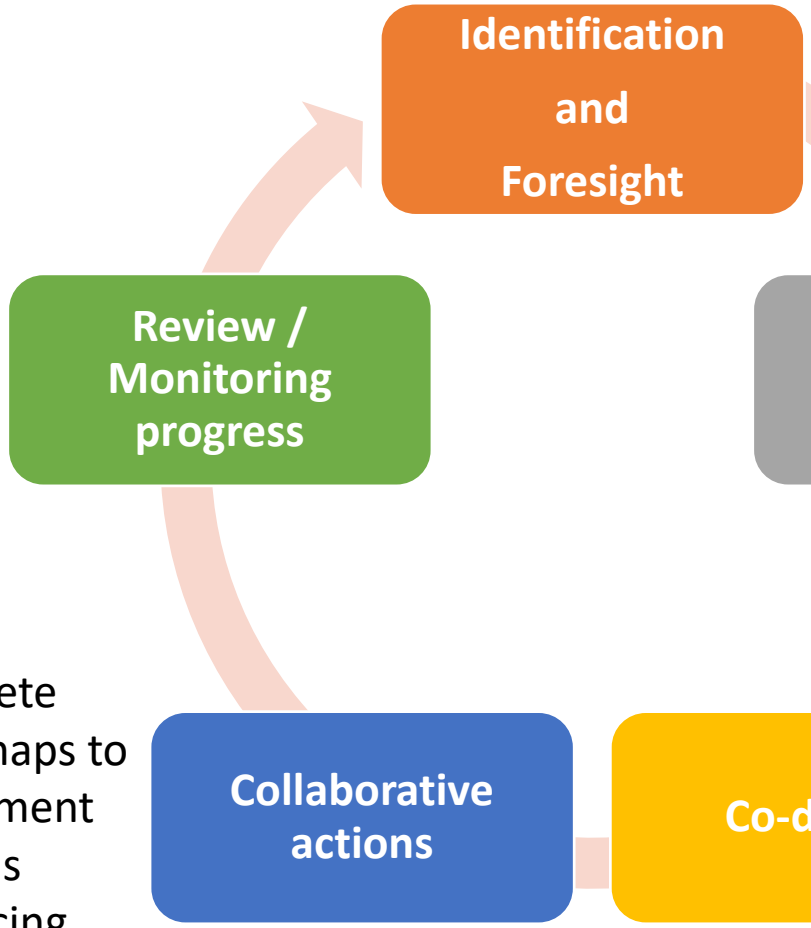
e.g. cities & habitat, infrastructure, renewable energy, food and agriculture, ITS et.
*Interlinkage of theme/goals

- Interlinkage of knowledge
- Pre-competitive R&D roadmaps
- Actual practices → "Book of Japan's Practices for implementing the SDGs"
- Business strategy & model

Layer (c)
Roadmaps for knowledge & business base

by Dr. Nakamura and JST SDGs task force

DRAFT : How to develop and manage STI for SDGs roadmaps



- ✓ Common challenges / issues to tackle among multi-stakeholders
- ✓ Existing roadmaps/ strategies/ instruments
- ✓ Common visions to achieve in relation to the SDGs

- ✓ Gaps between current status and goals
- ✓ Pre-competitive research areas
- ✓ Any socio-economical factors to be taken account

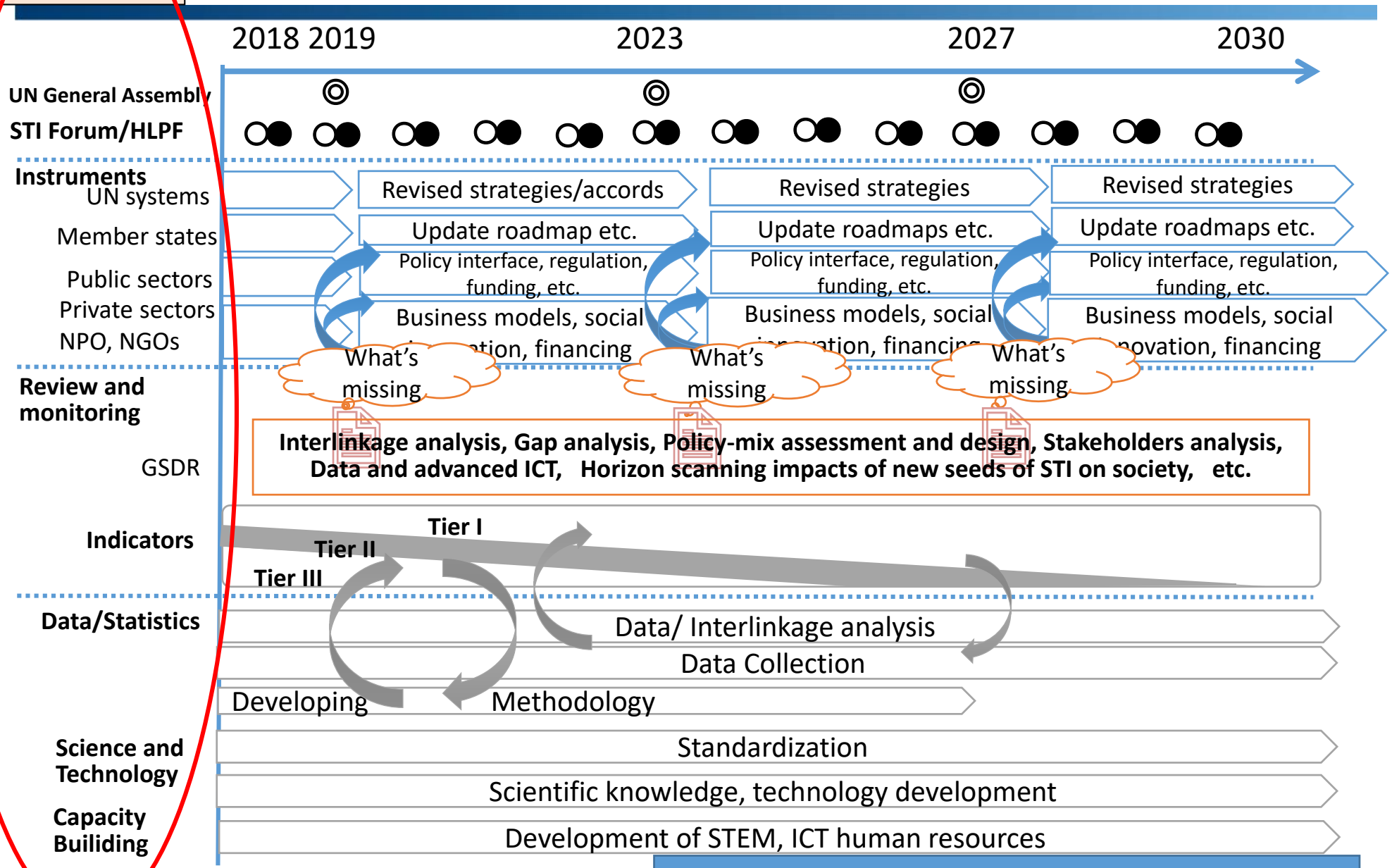
- ✓ Dialogue among various stakeholders
- ✓ Prioritize the goals and targets
- ✓ Finding collaborators

- ✓ Concrete roadmaps to implement actions
- ✓ Financing
- ✓ Standardization

by Dr. Nakamura and JST SDGs task force

DRAFT: Scheme of an Executive Roadmap

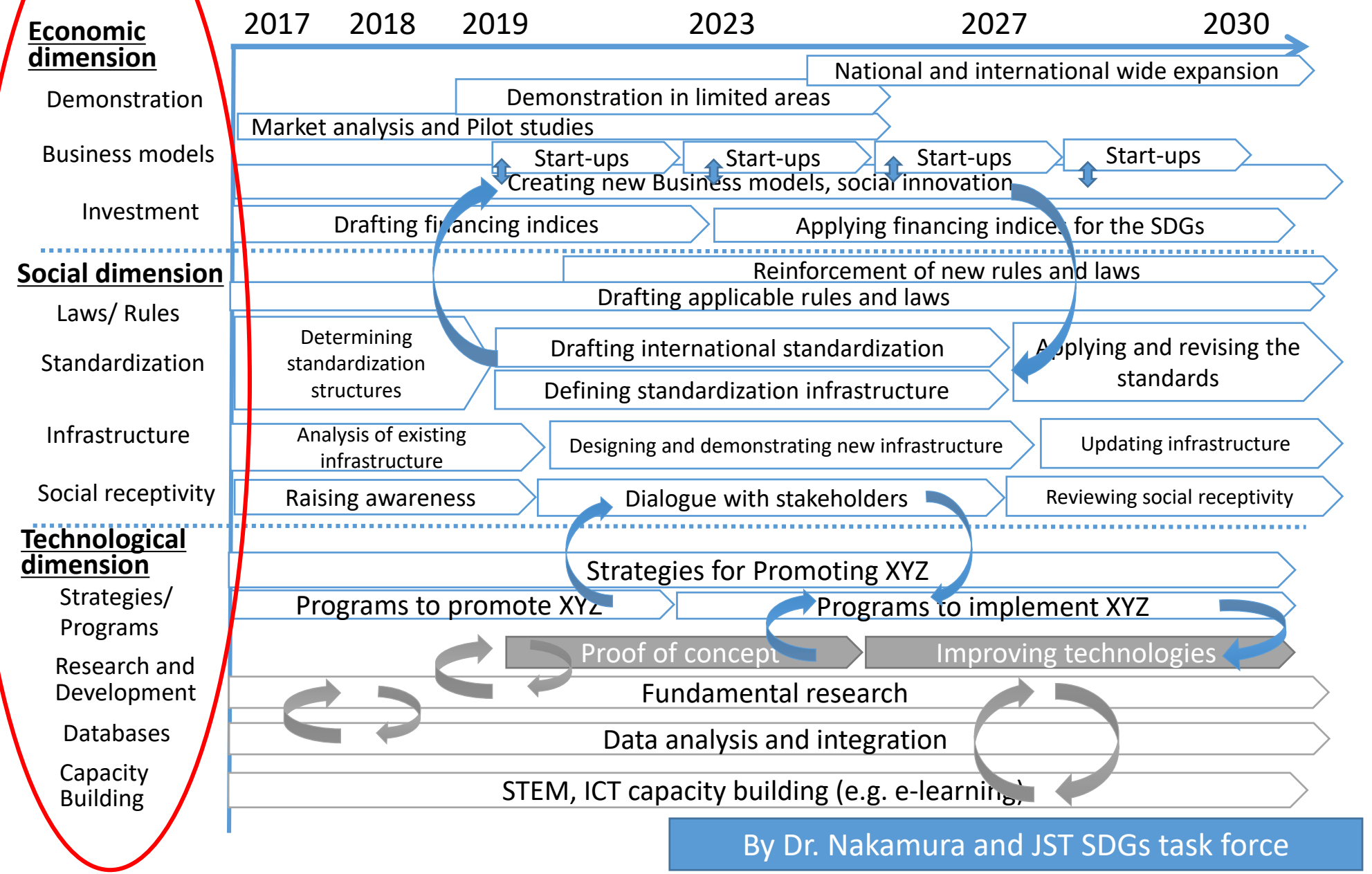
Layer (a)



By Dr. Nakamura and JST SDGs task force

DRAFT: Scheme of Theme/Goals-oriented Roadmaps

Layer (b)

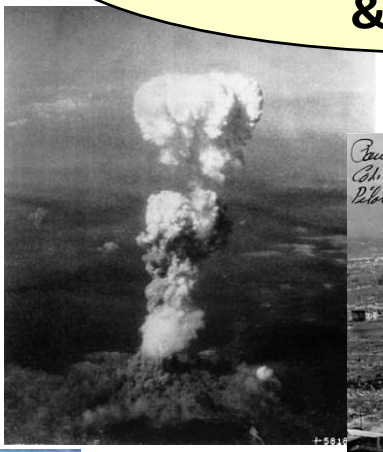


By Dr. Nakamura and JST SDGs task force

Japan's modernization based upon S&T and education: How to recover, rebuild broken society & economy and making it more sustainable

***Case 1*: 150 years ago; The Meiji Restoration, 1868**

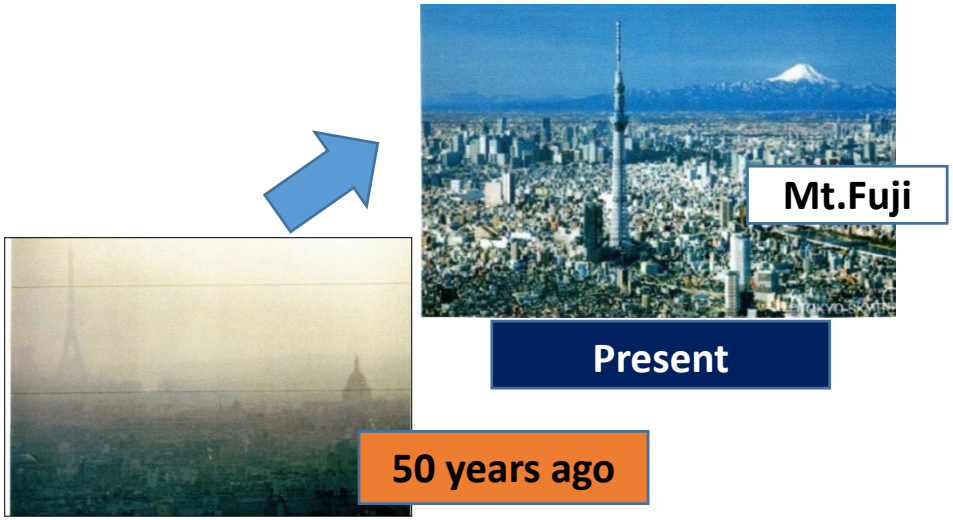
***Case 2* : 70 years ago: World War II and Hiroshima & Nagasaki**



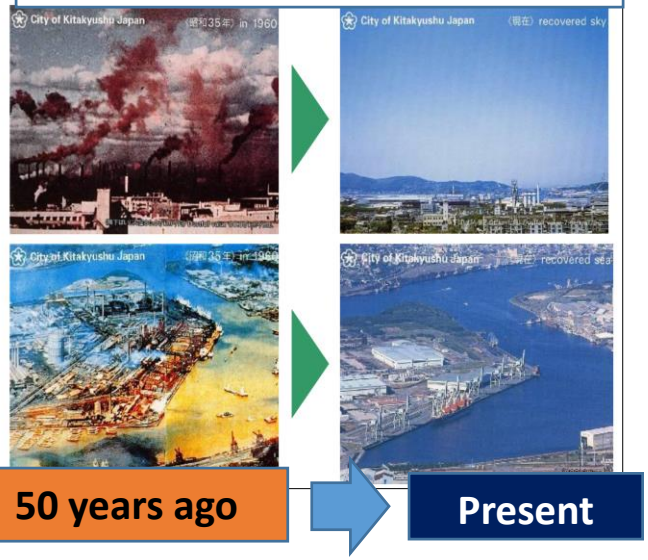
***Case 3* : 7 years ago, March 11 2011; Massive Earthquake, Tsunami and Fukushima Nuclear Disasters**

"STI for SDGs"

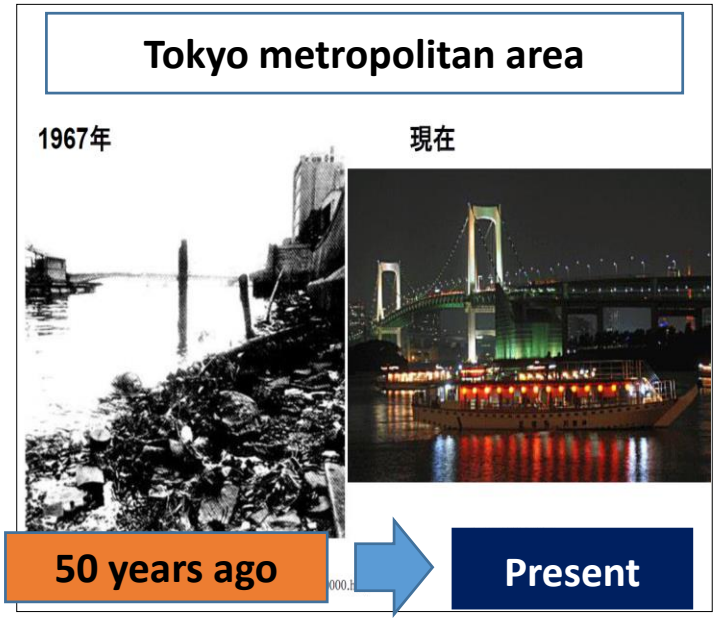
Here are examples of STI for SDGs by Japan' efforts in the past decades; decoupling of economic growth from negative environmental impact. We can transform our society by combination of technological innovation and social innovation.



Industrial area in Kyushu



Tokyo metropolitan area



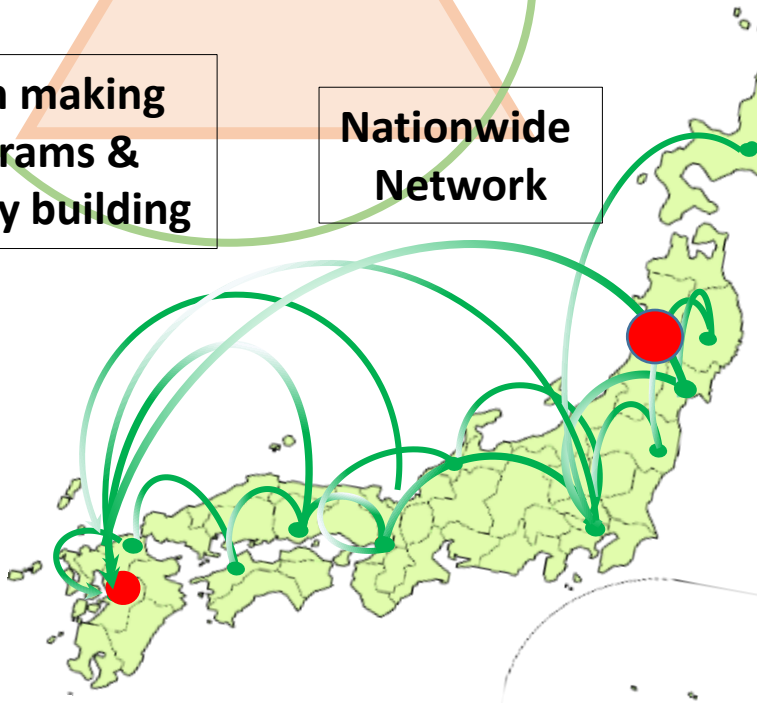
"OECD Environmental Performance Reviews JAPAN" ; "Japan has made steady progress in addressing a range of traditional environmental problems, notably air emissions, water pollution, and waste management."

Recovery and Reconstruction using STI for quality of life and economies in impacted areas with <u>different conditions</u>

Sharing experiences of recovery and reconstruction

Match making programs & capacity building

Nationwide Network

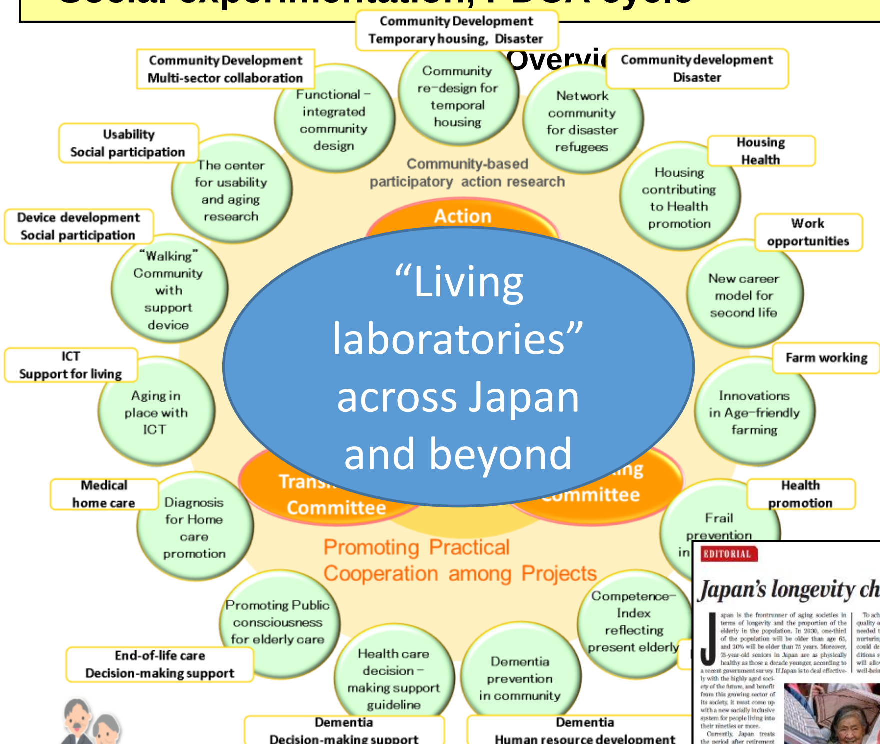


Redesigning Communities for Aged Society

Director: Hiroko Akiyama
Professor, Institute of Gerontology,
The University of Tokyo

・The Japanese population aged 65+ is expected to reach one in three of the total population in 2030. ・RISTEX is situated to witness the advent of this aging society that is without any precedent in the world. Our aim is to sift through and identify specific social issues, and to <u>implement practical R&D in communities</u>.

・Collaboration of social and natural sciences, with multidisciplinary approach
・Collaboration between practitioners / researchers
・Social experimentation, PDCA cycle


Community Development
Temporary housing, Disaster
Community Development
Multi-sector collaboration
Community development
Disaster
Functional－integrated community design
Community re−design for temporal housing
Network community for disaster refugees
Usability
Social participation
The center for usability and aging research
Housing
Health
Housing contributing to Health promotion
Community-based participatory action research
Action
Device development
Social participation
Work opportunities
"Walking" Community with support device
New career model for second life
"Living laboratories" across Japan and beyond
ICT
Support for living
Farm working
Aging in place with ICT
Innovations in Age−friendly farming
Medical
home care
Health promotion
Diagnosis for Home care promotion
Committee
Committee
Frail prevention
Promoting Practical Cooperation among Projects
Promoting Public consciousness for elderly care
Competence−Index reflecting present elderly
End-of-life care
Decision-making support
Health care decision－making support guideline
Dementia prevention in community
Dementia
Decision-making support
Dementia
Human resource development

Science, Dec.4.2015

Goals

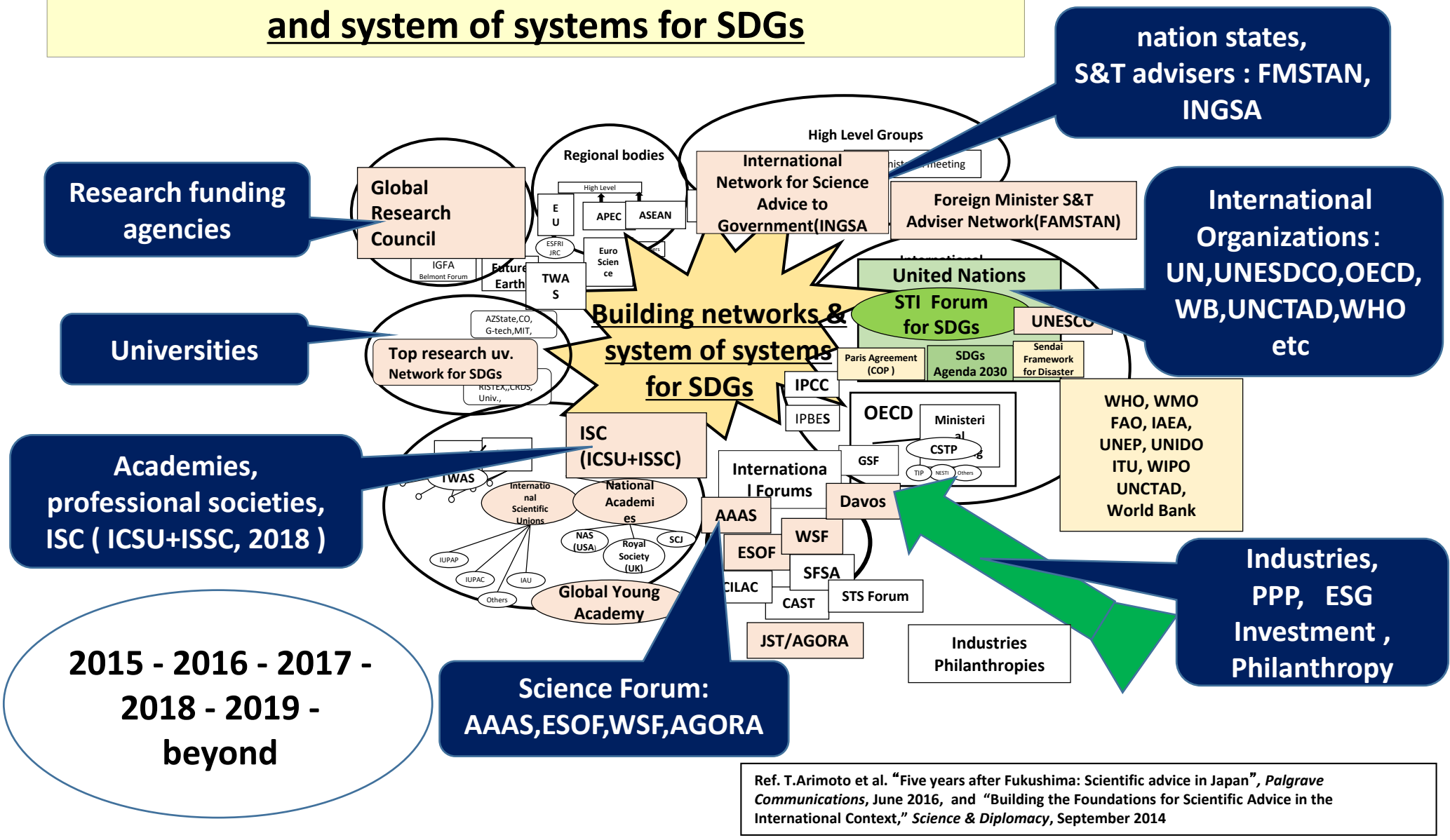
A)<u>To develop innovative community-based programs seeking solutions to critical problems arising in the aged society, which involve relevant multi-stakeholders such as scientific disciplines, government agencies, industries and citizens.</u>

B)To introduce methodological innovations in research solving problems of the aged society.

C)<u>To create a network of R&D & resource centers for redesigning communities for the aged society. "Living laboratory".</u>

1. To extend years of being independent
2. To create an environment for aging in place

The International Landscape of Science-Policy Interface for SDGs : Building networks and system of systems for SDGs



Ref. T.Arimoto et al. "Five years after Fukushima: Scientific advice in Japan", *Palgrave Communications*, June 2016, and "Building the Foundations for Scientific Advice in the International Context," *Science & Diplomacy*, September 2014

" Urban Nexus; Harnessing Science, Technology and Innovation for Sustainable Urban Cities "

Synopsis

Growing population and urbanization in this century may offer various opportunities for socioeconomic development but also raise issues like land-use and waste management, water-energy-food securities, transportation, sanitation, health care services, education and other social services. These issues are interconnected like the interlinkages of the 17 SDGs and need to be resolved in comprehensive and holistic manners for the sustainable development. This workshop aims to deeper understanding of the interlinkages of the 17 SDGs and to discuss how transdisciplinary approach could be shaped among a vast range of stakeholders by sharing knowledge and practices of urban development from Europe, U.S.A. and Japan.

Saturday, February 17, 2018, 04:00 PM - 05:00 PM,
Austin Convention Center, Room 16B

Tateo Arimoto
t-arimoto@grips.ac.jp
arimoto@jst.go.jp
http://www.jst.go.jp
http://www.grips.ac.jp