

Outline of Japanese Bioeconomy Strategy



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Shoji Watanabe (Cabinet Office, Japan)

Topics

- **Science, Technology, and Innovation Basic Plan**
- **Integrated Innovation Strategy 2022**
- **Bioeconomy Strategy**
 - **Bio-community**
 - **Data Platform**
- **Policy for Startup Ecosystem**

Outline of the Science, Technology, and Innovation Basic Plan

Recognition of the Current Situation

Changes in the Situation at Home and Abroad

- Beginning of a reorganization of the world order
- Global agenda threats such as the climate crisis
- Information monopoly and uneven distribution of wealth

Accelerate

Novel Coronavirus Infection

- Changes in the international community
- Rapidly changing life

Review of STI policies

- Non-utilized digitalization and relative decline in research capabilities
- Revision of the Basic Act on S&T

Balancing **response to global issues** with the **reform of social structures in Japan**

Society That Japan Aims for (Society 5.0)

Sustainable & resilient society ensuring **safety & security**

Incorporate **traditional Japanese values** of trust and sharing into this vision for society and transmit it to the world as **Society 5.0**.



Society in which **each individual can realize diverse happiness**

Contribute to the international community and attract global **human resources** and **investment**

What is Necessary to Realize Society 5.0

Transformation into a sustainable and resilient society



Creation of "knowledge" as a source of value creation by designing a new society



Development of human resources

Social transformation and investment looking ahead into the future (knowledge and human resources)

STI Policy for the Realization of Society 5.0

- Draw up policies based on **backcasting** from the future vision and **forecasting** from the current situation
- Aim for a total government R&D investment of **30 trillion yen** and a total public & private R&D investment of **120 trillion yen**.

Transformation into a **sustainable and resilient society** that ensures the safety and security of the people

- (1) Creation of new value through the **fusion of cyber space and physical space**
- (2) Social changes & innovation aimed at **overcoming issues on a global scale**
- (3) Building of a **resilient, safe and secure society**
- (4) **Innovation ecosystem** creating new value-sharing industries
- (5) Urban and regional development (development of **smart cities**)
- (6) **R&D** for **solving various social issues**, **social implementation**, and utilization of **convergence of knowledge**

AI technologies; biotechnologies; quantum technologies; materials; space; ocean; environmental energy; health & medical care; food; agriculture, forestry, and fisheries; etc.

Demand from society

Injection of knowledge and human resources

Development of frontiers of **knowledge** and **research capabilities** as sources of value creation

- (1) Environment to produce **diverse and outstanding research**
- (2) New research systems (**open science** and **data-driven research**, etc.)
- (3) **University reform** and **strategic management**

Education and human resource development to realize diverse happiness for each individual and ability to face challenges

System which enhances people's **ability to explore** and **attitude to continue learning**

Integrated Innovation Strategy 2022 (Summary)

- Science, technology and innovation (STI) are the nation's lifeblood from the viewpoints of **growing the economy, solving social issues, and ensuring safety and security**. The **international competition based on STI** is getting even more fierce.
- In the unpredictable and chaotic times, the public and private sectors must work together with a vision for the future.
- **Strategy 2022, as the second annual strategy** under the Sixth STI Basic Plan, **reviews and implements policies to be more agile**.

Recognition of the current situation

+

Administration's agenda

Changes in the situation at home and abroad

Demand for STI policy

New Form of Capitalism (Transforming social issues into growth engines)

Society 5.0 and a virtuous cycle of growth & distribution through **Convergence Knowledge** and investment in knowledge & people.

Giving a concrete shape to the policy direction and vision for realization is indispensable so that public & private sectors can share **Scenario to Goals** realizing Society 5.0 and mobilize the capacities.

Three pillars of policies

Realization of social transformation led by **startups**, with **intellectual assets** by **university reform** & **STEAM education** and **technology seeds** by **advanced R&D** responding to the economic security, etc. as two wings of the game changer.

Enhancement of **Knowledge bases** (research capabilities), **Human Resource Development**

- By strengthening the functions of universities, **promote fundamental and academic research activities** for establishing multi-faceted and multi-dimensional knowledge bases.
 - **Return intellectual assets** created by universities and other academic institutes **to society**.
- 1 Next-generation research bases led by the University Fund and university reform
 - 2 Regional core and distinctive research universities
 - 3 Inquiry-based/STEAM education and recurrent education

Knowledge and human resources
Social needs

Creation of **Innovation Ecosystem**

- As a promotor of innovation, **place a priority on startups to create new businesses** and revitalize the economy and society.
 - **Strengthen the fundamental ecosystem where Deep Tech** and other digital startups are popping up and growing. Make full use of policy tools to **attract private funds**, and expand public and private investment in R&D.
- 1 Support for startups and promotion of fund circulation involving private funds
 - 2 Digital Garden City Nation

Benefits of STI to the People, Society and Local Communities

Technology seeds
Social needs
Knowledge and human resources

Strategic promotion of **Advanced Science and Technology**

- Through the **Strategy for AI and Quantum tech.** and the **think-tank functions**, identify the technologies and accelerate social implementation by the **program to foster critical & emerging technologies** for economic security and the Next SIP program.
 - Public and private sectors respond to **digital, green, semiconductor** technologies, etc.
- 1 Strategies for key technologies and national issues **AI, bio, quantum, materials, health & medicine, space, ocean, food, agriculture, forestry, fisheries**
 - 2 Measures for safety and security
 - 3 R&D for social issues, Convergence Knowledge

Autonomy of the economic structure, superiority & indispensability of technology

Three pillars are integrated together and **mutually cooperate to promote policies effectively and efficiently**

Integrated implementation of policies

Brush up on the policy process, promote **cross-ministerial/sectoral efforts and complementary collaboration of various measures**.

Cooperation among sectoral strategies using new programs

More strategic promotion of R&D directly linked to **Scenario to Goals**

Cooperation among key measures and sectoral strategies

Increase the reliability of **Scenario to Goals** to address critical national challenges

Bioeconomy Strategy (Summary)

- As worldwide attention is paid to biology due to changes in situation such as the pandemic or climate change, **promoting bioeconomy is ever more important**
- Japan's Bioeconomy Strategy has three featuring points to “**realize the most advanced bioeconomy society by 2030**”
 - **Promote market segment measures** in the fields of bio-manufacturing, primary production and health care to achieve **92T yen market size** by 2030
 - **Create outstanding bio-communities** and attract human resources and investment and enable new products and services
 - **Draw up guidelines for data linkage and usage by the end of FY2022** and establish R&D and market introduction platform
- **International collaboration is essential** to promote bioeconomy, and there is **high potential for creating synergies** among states sharing fundamental values

Background and supporting structure for Bioeconomy strategy formulation

- **Bioeconomy** promotion is essential for both “**sustainable economic development**” and “**solving societal challenges**”

Our definition →

“A concept of expanding sustainable, renewable and circular economy and society by utilizing biotechnology and biological resources”

- Japan aims to “**realize the most advanced bioeconomy society by 2030**” as overall target and formulated **Bioeconomy Strategy 2019**
- This strategy is **reviewed every year** to cope with changes (i.e., pandemic, climate change)

KISHIDA Fumio
Prime Minister



The strategy is compiled at **expert panel and task force** and adopted at **committee**

Integrated Innovation Strategy Promotion Committee

Chaired by Chief Cabinet Secretary

Expert panel

Organised by the leaders
of industry/academia

Chair: **NAGAYAMA Osamu**
President
Japan Bioindustry Association



KOBAYASHI Noriaki
Former Senior Executive Officer
Kirin Holdings



FUJITA Tomohiro
CEO, Chitose Group
Professor Kyoto University



NAGAI Ryozo
President
Jichi Medical Univ.



YOSHIZAWA Nao
Attorney at law / Patent Attorney
GRiT Law Offices

Guide,
advice

Team meeting

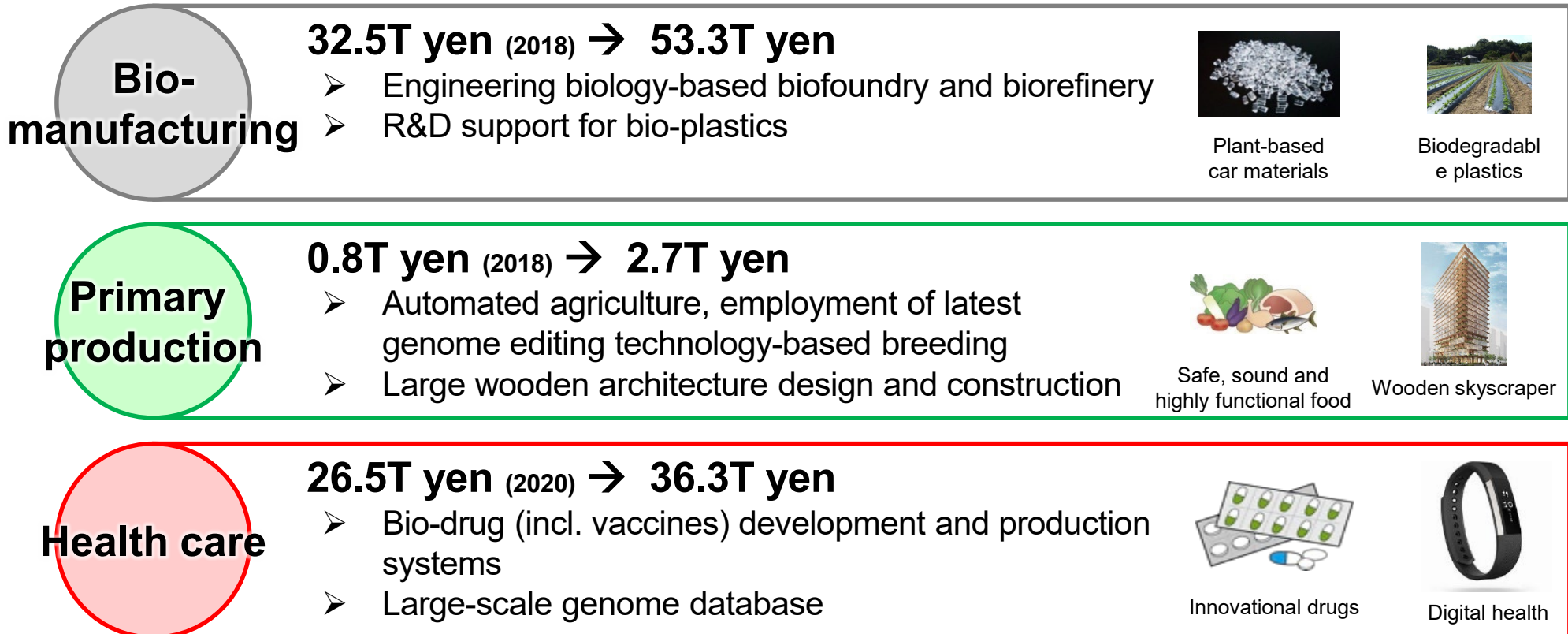
Report ↑ ↓ Order

Task force

CAO, METI, MAFF, MHLW, MEXT,
MOE, MLIT and other relevant
ministries

Featuring point (1) Bio-based market expansion

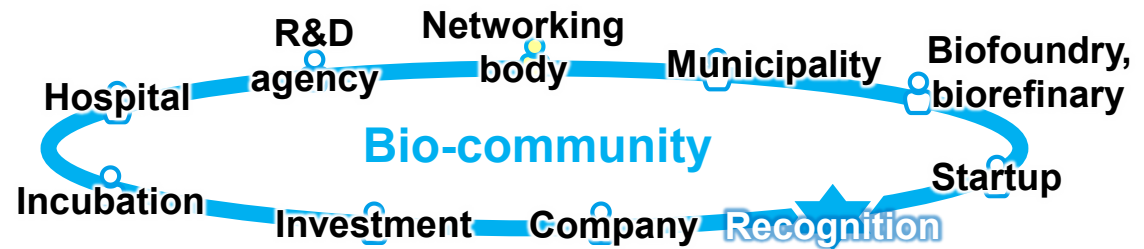
- Identified **market segments** with **significant expected growth** leveraged by Japan's strengths with **2030 target**
- **Promotion measures** will be made for segments below



Aim for approx. 50% increase of current market size by 2030, **total 92T yen**

Featuring point (2) Bio-community formation

- **Speedy R&D to market introduction with investment** by gathering large companies, startups and investors **under one roof**
- Established **recognition system to virtually create under one roof bio-community** and attract human resources and investment to provide new products and services



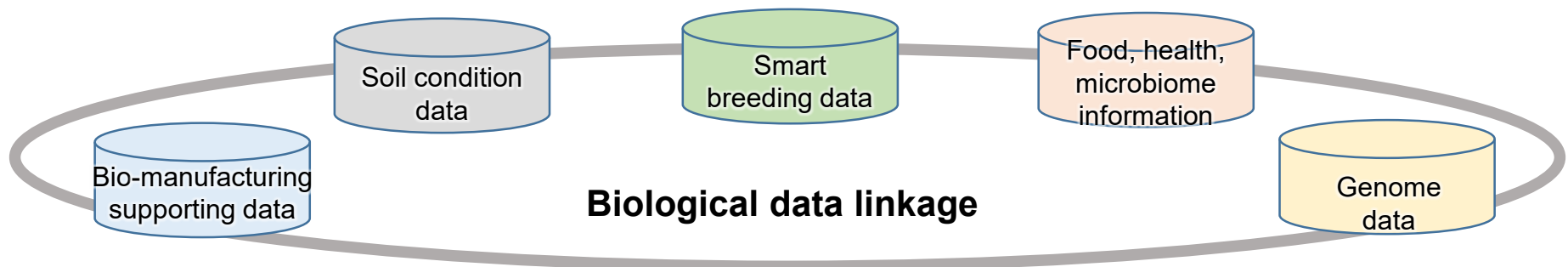
- Created “**Global Bio-communities**” in April 2022 in Tokyo and Kansai (Kyoto, Osaka and Hyogo)
- Created “**Regional Bio-communities**” in June 2021 in four unique regions (Hokkaido, Tsuruoka, Nagaoka and Fukuoka)



Form bio-clusters nationwide and **build unique value chains** in respective areas

Featuring point (3) Data platform establishment

- **Importance of data collection and analysis** is increasing with **bioinformatics progress** (recognized worldwide due to the pandemic)
- As **biological data varies** among fields such as food, health care, agriculture, biomass and biotechnology, large number of data sets is available but **difficult to standardise**
- **Provide guidelines for biological data linkage and usage** and create common platform for accelerating R&D and market introduction by the end of FY2022



Development and enrichment of data platform for R&D projects

+ Provision of guidelines for data linkage and usage



Create environment that enables **practical and applicable data linkage** covering diverse fields

Creating a Globally Competitive Startup Ecosystem

Expert Committee on Innovation Ecosystem, Council for Science, Technology and Innovation

【Importance of Startups & Opportunities】

- **Importance:** Economic growth, solving social issues, New Capitalism.
- **Domestic ecosystem:** Developed steadily past 10 years.

【Challenges】

- **Global competition:** Foreign ecosystems grow faster, outflowing talents and techs.
- **Small & domestic focus:** Majority of Japanese startups.

【Policy Directions】

- Five pillars to unlock the Japanese potential of deep-tech and digital technologies to create a globally competitive startup ecosystem:
 - (1) **Growth capital** (2) **Venture Capital investment** (3) **Entrepreneurship**
 - (4) **City and university functions** (5) **Public procurement**

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Items	Challenges	Policy Directions
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**Growth
Capital
(LPs)**

- **Extremely small volume of VC investment** when compared to other countries.
- **Limited VC investment through all stages** -particularly at growth and late stages.
- **Small amount of LP investment from asset owners.**

- **Improve VC investment environment to foster asset owners' investment in VCs.**
- **Increase public risk money (LP investment) to develop VC market, especially later stage investment.**
- **Consider a mechanism to promote investment from individuals to VCs.**

**VCs
(GPs)**

- **VC's lack of experience on creating startups that can go global market and expertise in deep-tech field.**
- **Small ticket size and small amount of later stage VC investment.**

- **Promote a framework for public LP investment in foreign VCs** to introduce foreign VC's know-how and networks to Japanese startups.
- **Design an incentive to develop VC's capability through public LP investment to VCs.**

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Items	Challenges	Policy Directions
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Entrepreneur Mindset	<ul style="list-style-type: none">▪ Insufficient incentives for entrepreneurs compared to other countries.▪ Absence of secondary market: entrepreneurs' only choice is to go IPO.▪ Entrepreneurship education is limited.	<ul style="list-style-type: none">▪ Consider a positive cycle of entrepreneurs-angel investors.▪ Review stock option system to attract high-skilled talents.▪ Create an environment to establish secondary market.▪ Strengthen entrepreneurship/STEM education from primary and secondary education levels.
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City & University	<ul style="list-style-type: none">▪ Inadequate capacity of Japanese city's/university's competitiveness for startup ecosystem.▪ Absence of world-class startup campus.	<ul style="list-style-type: none">▪ Strengthen city's capability to create global startups clusters.▪ Promote university's center of excellence, attracting top researchers from abroad through the University Endowment Fund.▪ Global startup campus plan collaborating with foreign universities.
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Items	Challenges	Policy Directions
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Government Procurement	<ul style="list-style-type: none">▪ Extremely low ratio of contracts for young SMEs over total government procurement.▪ Limited amount of SBIR, a R&D support program toward procurement.	<ul style="list-style-type: none">▪ Drastically expand SBIR program.▪ Promote public procurement from startups at national/local government level.▪ Review requirements for startup and simplify procedures.
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