Biotechnological Transformation(BX) Strategy

～ BX for a Sustainable Future ～

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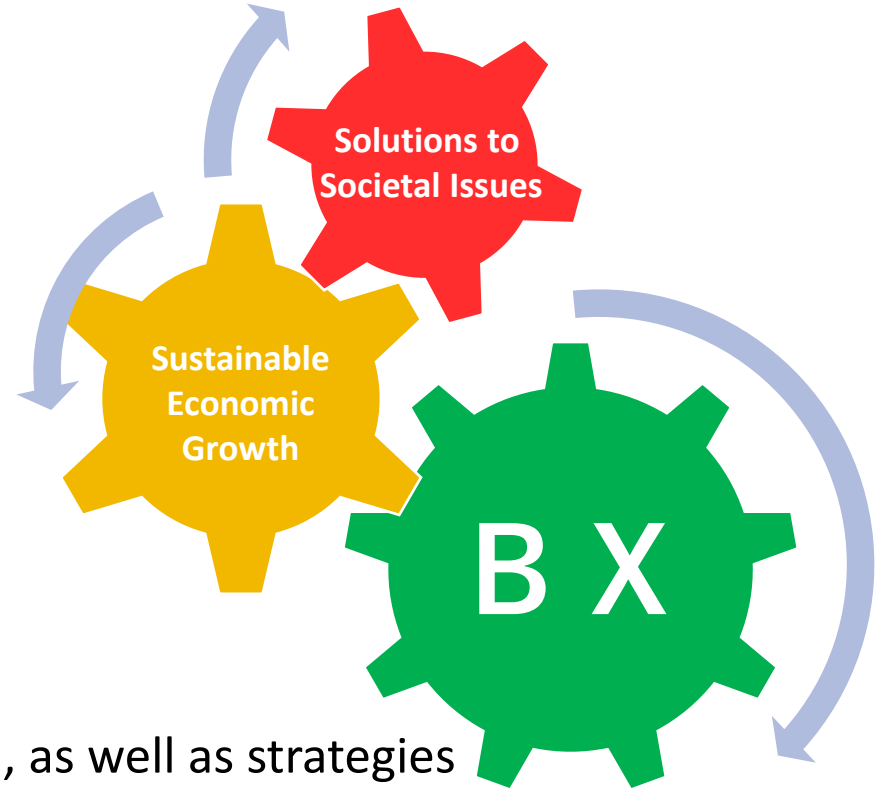
KEIDANREN (Japan Business Federation)

Contents

I. Introduction

- Advances in biotechnology could transform the very nature of society itself by providing solutions to societal issues, while at the same time delivering sustainable economic growth
  ＝**Biotechnological Transformation (BX)**
- Major economies have recognized the importance of BX and drawn up national strategies for BX
- Japan drew up its Bioeconomy Strategy in 2019. In addition, Japan's Basic Policy on Economic and Fiscal Management and Reform 2022 listed critical biotechnology and medical fields



- Keidanren presents its BX vision for Japan, as well as strategies and specific measures to achieve that vision. In addition, we declare our commitment and readiness to take on the BX challenge

II. BX Vision for Japan
<The biotechnologies supporting BX>

- The biotechnologies supporting BX have applications in a diverse array of fields, making them extremely wide-ranging. They can be classified using five different colors according to their fields of application

White Biotech

Manufacturing and Energy

e.g. biodegradable plastics

Green Biotech

Food Production and Plant-Related

e.g. increased crop yields or crops with more nutrition by using gene modification technology

Red Biotech

Medical and Healthcare

e.g. innovative therapeutics such as regenerative/cellular medicine and gene therapies

Blue Biotech

Marine

e.g. algae engineered to absorb higher volumes of CO_2

Gray Biotech

Environment

e.g. recycling of waste and waste water treatment by using microbes

II. BX Vision for Japan

A sustainable circular economy with capacity for renewal: Society 5.0 for SDGs

III. The Five Strategies

- It is vital that Japan be the first country in the world to put BX into practice
- We indicate the issues that are particularly important for Japan to quickly realize BX and declare our commitment to solve them

1. **Use biotechnology to create value: Build ecosystems**
2. **Use biotechnology to protect the Japanese public's way of life: Ensure economic security**
3. **Use biotechnology to take a proactive role internationally: Global rulemaking**
4. **Position biotechnology as a priority for the nation: Integrate policymaking from a command center**
5. **Support biotechnology as an entire society: Cultivate understanding among the public**

1. Use biotechnology to create value: Build ecosystems

Seek to build ecosystems in which different fields merge, and both large companies and startups play active roles, in an environment where personnel, technologies, funding, and information from around the world accumulate, and individual players connect organically

Current situation (Challenges)

- Still in the process of building ecosystems in which a variety of players connect
- Further development of startups, which will provide the driving force for innovation within such ecosystems through revolutionary technologies, is needed

Future (Action)

- Strengthen biocommunities through continued supports by governments
- Implement the startup promotion measures set out in Keidanren's policy proposal entitled Vision for Startup Breakthrough
- Make resources of large companies, including personnel, technologies, and information, available to startups

2. Use biotechnology to protect the Japanese public's way of life: Ensure economic security

Alongside striving to develop cutting-edge science and technology, collaborate with allies and friendly nations to bolster efforts to reliably procure biotech raw materials, to expand the capacity of factories manufacturing bioproducts, and to train skilled personnel and facilitate their active contribution

Current situation (Challenges)

- Difficult to obtain investment in the early stages for the deep tech sector
- Japan is dependent on imports from overseas for many of the raw materials for production of bioproducts
- Lack of domestic capacity of factories producing bioproducts

Future (Action)

- Learn from DARPA*'s funding methods and allocate budget funds to development of state-of-the-art technologies
- Reliably procure biotech raw materials and expand the capacity of factories producing bioproducts
- Support the development and promotion of biotechnology specialists who are familiar with increasingly advanced biotechnologies

※ Defense Advanced Research Projects Agency

3. Use biotechnology to take a proactive role internationally: Global rulemaking

Push for the creation of a level playing field and global rulemaking to enable effective use of biotechnology to generate and implement innovation within Japanese society, as well as deploy such innovation internationally

Current situation (Challenges)

- Regulations and institutions that have not kept up with scientific and technological progress hinder the effective use of biotechnology
- Lack of involvement in international rulemaking based on the strengths of Japan and its industry, resulting in failure to capture global markets

Future (Action)

- Review domestic regulations and institutions that lag behind those of other countries and inhibit social implementation
- Take a strategic approach toward developments in rulemaking and global standardization from the technology development stages

4. Position biotechnology as a priority for the nation: Integrate policymaking from a command center

Stakeholders should align their efforts: together with a government command center responsible for formulating national strategy and pursuing integrated measures to promote biotechnology, Japanese industry should take on the challenge of BX, which will transform business models across a broad array of industrial sectors, causing industrial restructuring

Current situation (Challenges)

- The government as a whole has taken no steps to monitor, check, or review progress in implementing the strategy with efforts undertaken by the relevant ministries and agencies according to their own priorities

Future (Action)

- Establish an organization inside the government that can function as a command center to pursue integrated measures to promote biotechnology
- Business community will join the government in engaging actively with discussion among stakeholders for smooth implementation of change

5. Support biotechnology as an entire society: Cultivate understanding among the public

Proactively offer clear explanations and facilitate understanding so that the Japanese public recognizes the true value of biotechnology and are receptive to it

Current situation (Challenges)

- Lack of understanding of biotech products and inadequate market formation

Future (Action)

- Present concrete examples of solving societal issues through biotechnology
- Clearly explain the added value, effectiveness, safety, and benefits that outweigh the costs to the public in order to facilitate their understanding

IV. Conclusions

- **BX** has the potential to establish a great balance between solving societal issues and enhancing economic growth, thereby **realizing Society 5.0 for SDGs**
- The real-world implementation of BX **presents a great many challenges**. The BX process will force some industries to transition away from their existing business models
- The tidal wave of global BX has already reached Japan's shores. We should take advantage of it to find solutions to the societal issues. That is **the course of action Japan must choose**
- Keidanren focuses on driving BX forward by confronting the issues hindering its implementation and liaising with stakeholders including the relevant industries, the national government, and local authorities to **urgently seek solutions to these issues**