Summary of Bioeconomy Strategy

- The **bioeconomy** uses biotechnology and biomass. With its potential to **resolve environmental, food, health, and other issues** and to **achieve a circular economy and sustainable economic growth**, the bioeconomy is facing increasingly varied global policies and intensifying market competition in terms of investment, rulemaking, etc.
- In Japan too, expectations are growing for the bioeconomy, as seen in the allocation of a large budget in the order of one trillion yen in total to bio-manufacturing and others, amid the progress of discussions on GX, circular economy, economic security, food security, and enhancement of drug discovery abilities, etc.
- Promote efforts based on the **Bioeconomy Strategy* and expand the bioeconomy market by taking advantage of Japan's advantages**, leading to **a balance between resolution of various issues and sustainable economic growth**. (*Amended and renamed from Bio-Strategy [established in 2019, last updated in June 2021])

Promotion of efforts aiming to expand the bioeconomy market **100 trillion-yen market size in Japan and abroad in 2030**

	Bio-manufacturing/bio-derived products	Primary production, etc. (agriculture, forestry and fisheries)	Bio-pharmaceuticals, regenerative medicine, etc. and healthcare
Aim	**Promote the incorporation of bioprocess in each industry, reduce environmental burden by utilizing unused resources, and increase the strength of supply chains.**	**Vitalize sustainable food supply industries, and contribute to CO_2 emission reduction and hay fever countermeasures by spreading large-scale buildings utilizing wood.**	**Globally roll out bio-pharmaceuticals from Japan, and increase healthy life expectancy through cooperation between medical and healthcare industries.**
Technology development	・**Cultivate microorganism/cell design platformers** and **develop infrastructure for biofoundries** by fusing together biotechnology and digital technologies such as AI. ・Focus on **hydrogen-oxidizing bacteria, cultivation and fermetation processes, etc.** that may become Japan's advantages. ・**Direct use of unused biomass and CO_2**, reduction of production and collection costs, pretreatment technologies, etc. to resolve restrictions on raw materials.	・R&D, etc. to **balance between increasing productivity and sustainability**, such as development of cultivars and conversion of cultivating systems those are fit for **smart agriculture**, development of generative AI for supporting farmers and development of new cultivars by utilizing genome information, etc. ・Develop and demonstrate technologies for wood building materials (CLT, etc.) and forestry machinery and develop **pollen-free ceders by genome editing**, among other things.	・Enhance **basic research and bridging functions** to create innovative seeds that will lead to next-generation medical technologies and drug discovery.
Market environment	・Focus first on commercialization of **high value-added products**, toward commercialization of **bio-derived products**. Discuss appropriate regulations and markets toward cost reduction, mass production, etc. Commercialize general-purpose products in a staged manner. **Increase the size of public-private investment to 3 trillion yen/year.** ・Make rules for **LCA (life cycle assessment) and other assessments, product labeling, international standardization**, etc. and discuss **demand stimulation measures** by using examples from the Act on Promoting Green Purchasing, etc.	・Promote efforts to reduce environmental burden based on the MIDORI Strategy. ・**Promote public understanding** of advanced technologies including **FoodTech**. **Expand** advanced technologies **to overseas markets**. **International standards**, etc. ・Raise public awareness of the significance and effects of use of wood.	・Consider **appropriate evaluation of innovations in the drug pricing system, etc.** to promote development of innovative drugs, medical devices, etc. ・Support the development of authorization systems through cooperation between the medical and industrial communities to **secure the reliability of healthcare services**.
Business environment	・Develop **hubs for biofoundries.** ・**Develop and secure human resources** needed in value chains and build **supply chains involving surrounding industries**. ・Coordinate regulations and rules by cooperation between government agencies, deal with international discussions, and promote utilization of biomass based on the Basic Plan for Promoting Biomass Utilization.	・Improvement and enhancement of **infrastructure that can be utilized jointly** by the industry, academia and government by NARO, etc. Promote efforts by **breeders' rights management organizations** to prevent cultivars from flowing abroad. ・**Grow start-ups in the fields of agriculture, forestry, fisheries, and food** through large-scale technology demonstration projects, etc. ・Cultivate designers and contractors for large-scale buildings utilizing wood.	・**Develop domestic manufacturing bases**, such as CDMOs, and **secure manufacturing human resources in the field**, including from security viewpoints. ・**Support pharmaceutical startups** by **enhancing the connectivity between ecosystems** in Japan and abroad. ・**Support start-ups** based on the uniqueness of the healthcare industry market.

Basic measures

- Develop **environments that allow**, and increase **competitive research grants to allow, young researchers to concentrate on their research**.
- **Fuse biotechnology and digital technologies together**, **build databases** to further accelerate **digital transformation of research**, develop **integrated search technologies**, etc. **using AI**, and develop **bio-informatics human resources**.
- Develop infrastructure to support **coordination and utilization of data** in individual fields and across fields.
- Promote basic research, such as **research focusing on the "life course"** spanning from the birth and regeneration of life to aging. Promote utilization of knowledge in different fields, such as **AI** and **quantum**.
- Reliably collect, maintain, and provide **bio-resources** and improve core centers for these activities
- Promote programs in which **industry, government, academia, and banking institutions** cooperate with each other, such as **bio-communities** and start-up ecosystem hub cities that are intended to invite human resources and investment and to supply products and services to markets.