

Biosolutions could help Japan become global bioeconomy powerhouse, new report finds

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A new report, The Value of Biosolutions: Growth and Prosperity to 2035 – Japan Edition, highlights how biosolutions could strengthen Japan's position as a global biomanufacturing hub and support its ambition to realize the world's most advanced bioeconomy by 2030. However, realizing this potential will require enabling policies and faster regulatory approvals, according to the report



Japan's biosolutions industry could nearly triple in value to JPY 4.748 trillion by 2035, according to a new report commissioned by Novonesis that examines the economic contribution and future potential of biosolutions in Japan and across global markets. The findings come as Japan steps up its push to build a stronger bioeconomy, with biosolutions increasingly being used across sectors ranging from food and agriculture to energy, industrial manufacturing and biofuels.

The report, titled The Value of Biosolutions: Growth and Prosperity to 2035 – Japan Edition, was launched during a visit by a Japanese delegation to Novonesis' headquarters in Lyngby, Denmark. Discussions during the visit covered biosolutions, including market access for food enzymes and policy support for bioenergy.

The scale of the opportunity identified in the report is significant. Reaching JPY 4.748 trillion by 2035 would represent almost a threefold increase in the sector's value in Japan, but the report argues that this growth will not happen automatically. Policy conditions, regulatory processes, investment and the ability to commercialise biological technologies will all influence how much of that potential can be realised.

The report also highlights the wider economic effect of the sector. In Japan, every job created directly in biosolutions generates an additional 2.1 jobs across other industries. That multiplier is below the global average of 2.4, suggesting that Japan could potentially capture a larger economic benefit if adoption of biosolutions expands and the supporting ecosystem develops further.

Biosolutions are already used across more than 30 industries worldwide. Their applications range from enzymes used in food production and biological solutions in agriculture to bioenergy, biofuels and industrial manufacturing. The growing range of applications is changing the way biological technologies are viewed in economic policy. They are no longer confined to specialist biotechnology markets. Their use increasingly cuts across sectors that are central to food security, energy supply, industrial competitiveness and resource efficiency.

Hirokazu Sano, Representative Director and President of Novonesis Japan Ltd., said Japan's ambition to build one of the world's most advanced bioeconomies would require broader use of bio-based inputs and a more diverse range of resources. "Biosolutions can play a central role in this transition by improving resource efficiency, strengthening energy resilience, and enabling more sustainable food and industrial systems," Sano said. He also pointed to regulation and policy as areas where delays could have a direct economic cost. According to Sano, slow regulatory processes, insufficiently developed biofuel mandates and approval timelines that do not align with the pace of innovation can limit the ability of biosolutions to reach the market.

The report calls for several policy changes to help Japan capture more of the potential identified in the study. One priority is continued political and policy leadership around Japan's Bioeconomy Strategy and its Synthetic Biology and Biotechnology Growth Strategy. Maintaining momentum in these programmes will be important if the country wants to move from policy ambition to commercial deployment. The report also recommends stronger financial incentives and a more integrated network to accelerate development of the bioeconomy. For companies developing biological technologies, access to capital becomes particularly important as promising technologies move from research and pilot projects towards commercial production.

Regulatory reform is another central recommendation. The report calls for a fast-track regulatory pathway specifically designed for biosolutions, reflecting the argument that biological products and processes can require different approval approaches from conventional technologies. The report also identifies manufacturing capacity as a constraint. Technologies that work at laboratory or pilot scale need processes capable of being expanded to commercial production. Building that capacity can determine whether a promising biological innovation remains a research achievement or becomes a commercially viable product.

Japan's broader industrial strategy will also matter. The report recommends an integrated approach that sharpens the country's focus on areas where it has technological advantages rather than spreading investment too thinly across multiple opportunities. Public understanding is another part of the equation. Wider awareness of biological technologies and their potential applications will be needed to build social acceptance and support for innovation, particularly as biosolutions increasingly become part of food, energy and industrial systems.

The report's recommendations come at a time when Japan is looking to strengthen the resilience of its economy and supply chains. Biological technologies can potentially reduce reliance on finite resources, make better use of available feedstocks and provide alternatives to conventional industrial processes.

That gives the sector significance beyond its direct economic value.

In agriculture and food production, biosolutions can support resource efficiency and production systems. In energy, biological technologies can contribute to biofuels and other renewable pathways. In manufacturing, enzymes and biological processes can provide alternatives to traditional production methods. The common thread is the ability to use biological processes to produce goods or services with potentially lower resource requirements or reduced dependence on conventional inputs.

For Japan, the economic opportunity will depend on how effectively those technologies move from research and development into widespread commercial use. The JPY 4.748 trillion projection therefore represents more than a market forecast. It is an indication of the economic activity that could emerge if Japan creates conditions that allow biosolutions companies and their industrial customers to scale.

The report was developed by Amsterdam Data Collective (ADC) and commissioned by Novonesis. ADC conducted the analysis with contributions from partners including Jarl Frijs-Madsen, Ambassador of the Royal Danish Embassy in Japan.

The report comes as governments and companies around the world compete to build industries around biotechnology, synthetic biology and other biological technologies. Japan already has a policy framework aimed at developing its bioeconomy, but the report argues that implementation will be critical.

