World-Leading Innovation for Sustainable Economic Growth

Kazuo Kyuma

Executive Member, Council for Science, Technology and Innovation, Cabinet Office

Building a sustainable economy is one of Japan's most pressing issues today, and the only path forward is through innovations in science and technology. In answer to this call, the Cross-ministerial Strategic Innovation Promotion Program (SIP) has selected 10 major programs for innovation to contribute to Japan's economic growth, tasked with solving the truly important issues facing our nation's citizens. Here, Dr. Kazuo Kyuma, chair of the SIP Governing Board, discusses how the SIP program will deliver winning results under the guidance of experienced and talented program directors.

Under the leadership of the Prime Minister and the Minister of State for Science and Technology Policy, the Council for Science, Technology and Innovation has taken a high-altitude look across Japan's ministries, proposing a comprehensive policy for science, technology, and innovation. As part of this policy, the SIP program has been designed as a fast-track research and development project, encompassing basic research, practical adoption, and commercialization. This nationally sponsored program for science and technology innovation crosses the traditional framework of Japan's ministries and agencies, as well as the traditional boundaries of scientific disciplines.

I have always maintained that there are two types of innovation: continuous innovation and disruptive innovation. Continuous innovation is innovation that makes businesses stronger and improves product value. On the other hand, disruptive innovation is an entire paradigm shift, replacing a traditional standard. Think of how email replaced letters and postcards, how car navigation replaced paper maps, or how optical fiber replaced coaxial cable in telecommunications.

In this sense, the SIP program is more focused on projects engaged in continuous innovation, focusing on 10 major issues in which we believe Japan must take the global lead. We cannot allow for even one failure among the individual SIP programs if we want to drive sustainable growth in our country. I hope to see a 10 win, zero loss final record at the conclusion of this program.

One key to success is to have a central command center coordinating among all of the government departments and agencies involved. The SIP program has been given an annual budget of ¥50 billion for the unprecedented effort to clearly define roles and coordinate among Japan's different governing bodies. The SIP program is also working to integrate the various policies required when these programs lead to marketable results—policies addressing deregulation, intellectual property, patents, and international standardization.

Perhaps the number one defining element of the SIP program is the selection of program directors, under whose strong leadership each individual program is guided. Program directors work closely with government ministries, agencies, and industry-academy-government experts. Among the 10 programs selected for the SIP, the five expected to most quickly produce concrete results are led by program directors with industry experience. The remaining five programs are led by top experts from academia.

Another notable feature of the SIP program is the top-down style of R&D management employed. Individual programs focus on a clearly stated roadmap of three- or five-year objectives with defined exit strategies. Under this innovative (for a nationally sponsored project) approach, the Governing Board makes annual progress assessments in light of quantitative targets. Then, based on progress and other circumstances, program deadlines can be changed, target performance can be modified, and budgets can be revised. In 2015, we have started Cyber-Security for Critical Infrastructure as a new research program candidate.

The motivation behind this new policy is the desire to make SIP a model for R&D projects that are coordinated among different government ministries and agencies. The 1964 Tokyo Olympics were a milestone that pushed Japan to develop and roll out the famous shinkansen bullet trains and to introduce the world to the Olympics via live satellite broadcast. In the same way, we look forward with high expectations to the 2020 Tokyo Olympic and Paralympic Games as a driving force to introduce science and technology innovation as a gift from Japan to the world.

Profile

Dr. Kazuo Kyuma received his Ph.D. in electronics engineering from the Tokyo Institute of Technology in 1977. That same year, he joined the Central Research Laboratory of Mitsubishi Electric Corporation. In 1998, Dr. Kyuma was named artificial retina LSI business project manager in the Semiconductor & Device Business Group. After that, Dr. Kyuma was promoted to other posts, including general manager of the Advanced Technology R&D Center (2003), executive officer (Corporate R&D 2006), senior vice president (Semiconductors & Devices 2010), executive vice president (2011), and senior corporate advisor (2012). In 2013, Dr. Kyuma was named to serve full time on the Council for Science and Technology Policy. He assumed his current duties with the Council for Science, Technology and Innovation in 2014.

Yuko Harayama

Executive Member, Council for Science, Technology and Innovation, Cabinet Office

The SIP program is designed to address the entire range of R&D related activities, covering basic research, application, practical adoption and commercialization. The program operates under the strong leadership of program directors, who work across existing borders of academic disciplines and ministries to encourage innovation. I fully expect this new policy approach—mobilizing the entire nation's ability to innovate—to take root in Japan.

Takeshi Uchiyamada

Chairman of the board, Toyota Motor Corporation
Vice Chairman, Keidanren (Japan Business Federation)
Executive Member, Council for Science, Technology and Innovation, Cabinet Office

In the SIP, Japan has created a wholly Japanese research program bringing together the expertise of experts from industry, academy, and government. From basic research to practical application, this fast-track program is guided by a number of program directors, charged with the mission of taking the successes of their team's work to a concrete exit strategy that leads to major leaps forward for Japan's industry.

Motoko Kotani

Director, Advanced Institute for Materials Research
Professor, Mathematics Institute, Graduate School of Science Tohoku University
Executive Member, Council for Science, Technology and Innovation, Cabinet Office

The SIP is a new framework for Japan. Program directors exercise strong leadership in bringing together the talents and expertise of Japan's top scientists and technologies, working toward a clear exit strategy. I hope we see these programs run under an efficient management system, and I look forward to SIP project successes playing a central role in Japan's revitalization.

Hiroaki Nakanishi

Chairman & CEO, Hitachi, Ltd.
Vice Chairman, Keidanren (Japan Business Federation)
Executive Member, Council for Science, Technology and Innovation, Cabinet Office

The goal of the SIP program is to innovate our way to answers for today's important social issues. This program is wholly contained within Japan, designed to help our industries become more competitive on the global stage. At the same time, we hope that the results of this program will help revitalize our rural regions. I look forward to seeing the successes from SIP that will contribute Japan's resurgence.

Kazuhito Hashimoto

Professor, Department Applied Chemistry, Faculty of Engineering, University of Tokyo
Executive Member, Council for Science, Technology and Innovation, Cabinet Office

The vision of the SIP spans from basic research to practical adoption to social implementation. I think this program will serve as the forerunner of many future cross-ministerial research projects in Japan. I know that our research community and our society as a whole are keeping a close eye on the progress of the SIP program, and we all look forward to some wonderful successes.

Toshio Hirano

Professor Emeritus, Osaka University
Executive Member, Council for Science, Technology and Innovation, Cabinet Office

The key to success for the SIP program is to keep our eyes on the summit, while never forgetting that progress is made step by step. We all have great expectations for the SIP program. It's our race to the highest peak, driven by our nation's experts working in cooperation with Japan's various ministries and agencies.

Takashi Onishi

President, Science Council of Japan
President, Toyohashi University of Technology
Executive Member, Council for Science, Technology and Innovation, Cabinet Office

Japan's ministries and agencies were likely to conduct their own research programs independent of each other. I'm truly encouraged to see the SIP program guided by program directors in a cross-disciplinary organization. I think we will see a surprising level of accomplishment and success, as each program coordinates and shares information with others.

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Cross-ministerial Strategic Innovation Promotion Program