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The National Science Foundation's Tokyo Regional Office periodically reports on developments in Japan that are related to the Foundation's mission. It also provides occasional reports on developments in other East Asian countries.

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New Japan's Strategy for Technological Innovation

This report, prepared by Kazuko Shinohara (kshinoha@nsf.gov) of NSF Tokyo Regional Office, is to summarize the Japanese Government's new strategy for technological innovation.

On May 19, 2008, the Council for Science and Technology Policy (CSTP) announced the Japanese Government's strategy for technological innovation designed to promote transformative technologies. "Transformative Technologies" are defined as:

- world-class technologies at the leading edge of science; and
- technologies with potential for significant economic and societal benefits.

CSTP has targeted specific technologies for promotion under their strategic plan, which is summarized in the table below. In JFY2009 (Japanese Fiscal Year 2009: April 2009-March 2010) Japanese Government will newly establish "Technological Innovation Funds" to accelerate research on technologies identified in the table. Targeted technologies are categorized based on their expected contributions to the following strategic goals: (1) reinforcement of international competitiveness of the Japanese industry; (2) development of healthy society, and (3) advancement of Japan's and world's

security.

The Government recognizes the need to create an environment that is conducive to technological innovation, and proposes to:

(a) Expand the existing competitive research funds and create a new set aside fund for highly innovative projects that address grand challenge questions or unconventional ideas

(b) Devise a mechanism to provide long-term research support for consistently productive and competitive projects.

(c) Make the competitive research system more efficient by standardizing the administrative procedures to be applied to all the government supported competitive research funds, by the end of JFY2008 (by March 2009).

Recognizing that for technological innovation to occur continuously, it is critical to secure the necessary human resources, the Government proposes to:

(i) Limit the inbreeding of faculty to 50 percent; improve the research and living conditions for foreign researchers; double the number of foreign faculty members by 2011; and expand support for women and young researchers.

(ii) Investigate the feasibility of introducing two new teacher training programs; the Core Science Teacher Training Program (tentative name) and the Super Science High School Core School Development Program (tentative name).

NSF Tokyo Office will continue to follow up and report on the “Technological Innovation Funds” as the plan develops.

Table: Transformative Technologies

Target		Innovative Technologies	
International Industrial Competitiveness		High-speed Large-Volume Communication Network	All-optical communication
		Electronic Device	Spintronics
			3-dimensional semiconductor
			Carbon nanotube (development of capacitor)
			Integrated MEMS (micro-electro-mechanical system)
		Advanced Imaging	3-dimensional imaging
		Embedded Software	Highly reliable and productive software
		Global Warming Mitigation	Highly efficient solar energy generation
			Hydrogen energy system
	Healthy Society	Intelligent Robotics	Daily-life support robots
		Medical Engineering	Brain-machine interface for elderly and disabled people
			Minimally invasive surgical devices (antenna sensor built-in endoscope)
			Heart assist device
		Regenerative Medicine	Regenerative medicine by use of iPS (Pluripotent Stem Cell)
	Japan's and World's Security		Toxicity evaluation by use of iPS
		Drug Discovery	Infectious disease vaccine (malaria)
		Detection	Non-contact visualization (tera heltz)
		Food Production	Environmental-stress resistance and increased yields (wheat, beans, etc.)
			Perfect cultivation of migrating fish (eel, tuna)
		Scarce Resources	Alternative materials for and collection of rare metals
		Green Sustainable Chemistry	Energy production by use of genetically modified microorganisms
			New catalysis (catalysis that work in water)
		New Materials	New super-conductive materials (magnetic elements super-conductivity, etc.)