

Summary of Analytical Findings

Japanese national (public and private sector combined) investments in research and development (R&D) were \$90.3 billion in 1997. The prolonged economic recession that has plagued the Japanese economy for most of the 1990s has significantly reduced the scale of the Japanese R&D effort compared to what it would have been had the economy been more robust. The recession has seriously disrupted the private sector's ability to fund a robust program of R&D activities. Private sector R&D spending was flat or in real decline throughout most of the 1990s. Because the Japanese private sector accounts for over 75% of national investments in R&D, the decrease in private sector support for R&D was responsible for the first-ever post World War II decline in the national (public + private sectors) R&D spending. The Japanese government has reacted to the impact the prolonged recession is having on private sector R&D spending by declaring its intent to "double" (from 1992 levels) public investments in science and technology (S&T) by the year 2000. The government will likely be able to fulfill this pledge one or two years after the year 2000 target date. It is important to note the increased role played by Japan's public sector in supporting the overall national R&D effort, which appears to be an anomaly among large, industrialized countries.

The Japanese government has declared that it will refocus its R&D portfolio to increase the portion of R&D funds allocated by merit review and to decrease the portion that is allocated via block grants to universities and laboratories. This is being done to further the stated policy of the government to increase Japan's ability to produce world-class basic research. The government is moving away from its previous policies of trying to adopt and improve upon foreign technologies and basic science insights. These policies had served the country well since World War II, but the Japanese government now believes that its future prosperity and wellbeing lies in a robust, domestic, basic science capability.

Japanese energy policy continues to focus on energy security as its top priority. Yet industrial competitiveness concerns are motivating the push for energy sector deregulation in Japan. It is also apparent that the government is struggling to find ways to reduce carbon dioxide emissions in line with its commitments under the Kyoto Protocol. The government has noted that Japan might be required to make some "painful energy choices" in the coming years to meet these emission reduction goals.

As recently as 1989, the Japanese government was devoting over 20% of all public R&D funds to energy R&D. In 1998, the government devoted only 13.7% of its R&D investments to energy R&D. Even with this decline, Japan's emphasis on energy R&D is significantly greater than that of any other industrialized nation and is a reflection of the fact that Japan remains very dependent upon imports to meet its energy needs. The Japanese energy R&D program, which was funded at \$2.5 billion in 1997, is overwhelmingly focused on nuclear energy R&D. Nuclear energy R&D (fission and fusion) accounts for 75% of the total national energy R&D budget. The fission energy R&D effort has decreased nearly 24% since 1996 as the government attempts to refocus this program in the face of growing public opposition to the Japanese government's efforts to expand the nuclear power program. Energy efficiency R&D (8% of the total national energy R&D budget) and renewable energy R&D (3%) receive relatively modest support from the Japanese government.