

# World Nanotech Projects

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## United States

In the United States, the first country in the world which started nanotechnology-related national-scale project known as the National Nanotechnology Initiative (NNI), nanotechnology, that is nanoscale science and technology, is recognized to be not simply a field of understanding of materials and phenomena or development of technology but an intersectional, general and fundamental concept concerned with various industrial and social fields such as materials and manufacturing, electronics and computer technology, medicine and health, aeronautics and space exploration, environment and energy, biotechnology and agriculture, and national security. It is regarded as a key driver to have influence on future industrial competitiveness of developed countries. It is also recognized to have a strong character of new field-fusion science. Its implementation content is very general and widely embracing and includes education and training as well as research and development. Funding is allocated to such areas as long-term basic research, Grand Challenges, interdisciplinary nanotechnology research center, research infrastructure and equipment, technology transfer, education and training.

The NNI is managed by the Committee on Technology (CT) of the National Science and Technology Council (NSTC). The Nanoscale Science, Engineering and Technology (NSET), the CT's subcommittee, coordinates many US federal nanoscale R&D programs including the NNI, and plans, drafts and implements the NNI.

The total NNI budget is steadily increasing: US\$464 million (FY2001), US\$604 million (FY2002), US\$774 million (FY2003), US\$847 million (FY2004, request). While ten government departments and agencies participate in the NNI, a large portion of the budget is distributed to the National Science Foundation (NSF), the Department of Defense (DOD), and the Department of Energy (DOE). These three government bodies consume 80% of the total NNI budget.

Recently, the nanotechnology bill was submitted in both the House of Representatives and the Senate. In May, the Nanotechnology Research and Development Act was passed by the House of Representatives, and a total budget of US-2.36 billion\$ has been approved for the three years starting from FY2004.

## Europe

Nanotechnology in Europe includes nanotechnology and product production technology planned from

beginning to end to be environmentally friendly including conservation of resources and energy all the while curbing costs.

European research is divided into Framework Programs implemented by the European Commission, in which joint research is done with several countries and National Programs carried out within each country. The Sixth Framework Program (2002 - 2006) is the latest of the framework programs. This program which includes eight priority areas will support industry and aims at true technological innovation in a wide range of fields from basic research to products. The total budget for the eight priority areas is 11.3 billion euros. Nanotechnology-related area, "Nanotechnologies and Nanosciences, Knowledge-based Multifunctional Materials and New Production Processes and Devices," is one of the eight priority areas, and is funded at 1.3 billion euros (around US\$1.8 billion), or 11.5% of the total budget. It is seen as crucially important technology for a next generation industrial revolution.

In Germany, national nanotechnology-related R&D programs are actively promoted with the support of the federal government centered on the Federal Ministry of Education and Research and the Federal Ministry of Economics and Labor. A total of 18 million euros is being spent on nanocomposites and other new materials; 21 million euros on probes and other physics and chemistry areas; and 4.6 million euros on laser research, including metrology. In Switzerland, a national research plan known as "Top Nano 21" is pursuing biotech, device, materials, and other research jointly with universities and corporations. And in the United Kingdom, nanotechnology research is supported mainly through the Engineering and Physical Sciences Research Council (EPSRC) in partnership with the Department of Trade and Industry.

## Asia

Trends in Korea, Taiwan, and China are attracting interest. In March 2002, Korea's Ministry of Science and Technology (MOST) announced a plan to invest 203 billion won (US\$170 million, FY2002) in the nanotechnology field. In Taiwan, the government's investment in nanotechnology over the six years from 2002 is expected to total TW\$23.1 billion (US\$670 million). And in China, over the five years from 2001 to 2005, the central government will reportedly invest 2 billion yuan (US\$240 million) in the field, while provincial governments will spend 2 - 3 billion yuan (US\$240-360 million) on nanotechnology over the same period.