



3.2 WEST GERMANY

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ith a population of approximately 61 million, and a GDP of about (US) \$1,130 billion, Germany invests 2.9% of its GNP in research and development making it Europe's biggest investor in R&D. In 1989, Germany spent \$33.2 billion (US) on R&D, some 64% of which was funded by industry. Only about 22% of the federal R&D budget is spent on defence related R&D. ● ●

West Germany is among the world's largest producers of vehicles, machine tools, machinery, chemicals, ships, iron, steel, coal and cement. It is also important in the areas of mechanical engineering, electrical engineering, synthetic material processing, plastics, office and data processing equipment, pulp and paper machinery, non-ferrous metals, foodstuffs, environmental technology, biotechnology and beverages.

TECHNOLOGY TRENDS

Germany, like Japan, has noted the closer integration of basic research with technology and is moving to strengthen its applied basic research base both in government funded research institutes and in industrial laboratories. In 1988, 20% of the Federal Government's total expenditures on R&D was in basic research.

In the 1988 Report of the Federal Government on Research, the following technical areas were identified as major recipients of funds from the Federal Ministry for Research and Technology in 1987 (in excess of 50 million DM);

Living Conditions - Preventative Research; R&D in the service of health, R&D for humanization of industrial life, environmental conserving and protection technologies and ecological research.

Market-Oriented Technology Promotion; Nuclear energy research (including reactor safety), coal and other fossil fuels, research and technology for land-bound transport and communications (including traffic safety), electronic compo-

nents, renewable energy sources and efficient energy utilization, biotechnology, materials research, technical communications, aeronautic R&D (e.g. completion of Airbus family), information processing, production engineering, application of micro-electronics; micro-peripherals physical technologies (e.g. laser and thin-film) and marine technology

Primary long term R&D programs are nuclear fusion, marine and polar research, and space research. Space research received 1.45 billion DM in 1990 from the federal government. Industry expenditures on air and space sectors were some 2.78 billion DM in 1989.

TECHNOLOGY STRENGTHS

West Germany has technological strengths across a broad spectrum of industrial sectors. Key technological strengths include: automotive technologies, control and instrumentation, electrical products, optical instruments, organic primary products (including pharmaceuticals), nuclear reactors and pesticides.

KEY ORGANIZATIONS

Lead organizations in technology development are:

- *Federal Ministry for Research and Technology (BMFT)*

This is the main government department concerned with the promotion of market-oriented technologies. It supports both "strategic basic" research and development.