



### 3.3 WEST GERMANY



*With a population of approximately 61 million, and a GDP of about DM 1,915 billion (C\$1,320 billion) West Germany invests 2.9 percent of its GDP in research and development making it Europe's biggest investor in R&D. Some 64 percent of R&D is funded by industry. Only about 22 percent 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 percent of the federal government's total expenditures on R&D were 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 DM 50 million);

*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 components, renewable energy sources and efficient energy utilization, biotechnology, materials research, technical communications, aeronautic R&D (eg. completion of Airbus family), information processing, production engineering, application of micro-electronics; micro-peripherals physical technologies (eg. 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 DM 1.45 billion in 1990 from the federal government. Industry expenditures on air and space sectors were some DM 2.78 billion 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.