

3.0 WESTERN EUROPE

3.1 FRANCE



With a GDP of about \$700 billion (US) and a population of 56 million, France is a major force in Europe. Its major exports are machinery and transportation equipment, chemicals, food stuffs, agricultural products, iron and steel products, textiles and clothing. Because it has to import a large part of its energy, France has opted for nuclear energy and has the largest civilian nuclear program in Europe. ● ●

Expenditures on R&D amount to about 2.3% of GDP. Industry finances about 41% of the country's R&D expenditures.

TECHNOLOGY TRENDS

France has placed a priority on industrial technology development and rapid transfer of results to industry. To this end, France uses major national programs, involving industry, in the following areas: biotechnology for pharmaceutical production, electronics, transportation, natural resources, new materials and chemistry.

More than 80 per cent of France's research personnel and budget is tied up in four areas: aerospace, telecommunications, nuclear energy and defence. Recent budgetary allocations have increased government support of industrial R&D in:

- European Community programs (JESSI, HDTV)
- EUREKA
- agriculture and food, TGV third generation, cleaner automobiles
- innovation assistance to small and medium sized enterprises
- European space program (Ariane V, Hermès, Columbus, SPOT)
- Aeronautic programs (Airbus, A330 and A340)

TECHNOLOGY STRENGTHS

Through major programs, France has developed particular strengths in space technology (Ariane), aircraft (Airbus), railway technology (TGV), digital telephone networks and nuclear power. Key firms in these areas include Aérospatiale, Airbus Industries, Alathcom, CIT Alcatel and Cie Générale d'Electricité respectively.

KEY ORGANIZATIONS

Lead organizations in technology development are:

- *CNRS (Centre national de la recherche scientifique)*
This major research facility, which is the largest basic research organization in Europe, interacts with industry through:
 - a) joint research projects
 - b) the issue of licenses for developments produced within CNRS
 - c) the creation of small businesses to develop particular projects
 - d) secondment of researchers to private companies
 - e) consultancy to industry