

of Statistics Canada. About 86% of the expenditures on RSA are performed intramurally. In R&D, 42% of the expenditures are intramural with 31% being spent in the university sector, primarily as a result of the activities of the Social Sciences and Humanities Research Council.

Expenditures on social sciences and humanities show a much slower growth than those in natural sciences and engineering. Since 1979-80 expenditures in social sciences and humanities have grown by only 56%, RSA having had a growth rate of 86% and R&D 53%.

Human resources devoted to S&T were 8,701 person-years for RSA and 693 for R&D.

Further details for the five largest participants are provided in section 12.3.

12.2 Major participants in natural sciences and engineering

Five federal departments and agencies fund 58% of the total activities in natural sciences and engineering. The scientific and technological endeavours of these departments and agencies cover a broad range of activities including in-house facilities for industry research, support for industrial development, support for basic research and training of scientific personnel, and performing of research in support of departmental missions.

12.2.1 National Research Council

Created in 1917, the National Research Council (NRC) has an objective to create, acquire and promote the application of scientific and engineering knowledge to meet Canadian needs for economic, regional and social development. With estimated expenditures of \$525 million in 1984-85 it is the largest federal spender on S&T activities. The total overall growth of NRC expenditures has been about 160% since 1979-80 with a 20% increase in 1984-85 over 1983-84. NRC was spending about 67% of its 1984-85 budget intramurally, 25% in the industrial sector, 6% in the university sector and the balance among other performers.

NRC covers a wide range of scientific and technological activities in two programs: scientific and industrial research and scientific and technical information.

Scientific and industrial research. This program includes five activities: national competence in the natural sciences and engineering, research on problems of economic and social importance, research in direct support of industrial innovation and development, national facilities, and research and services related to physical standards. The research laboratories are contained in the divisions of biological sciences, building research, chemistry, electrical engineering, energy, mechanical engineering and physics, and in the Canada Centre for Space

Science, the Herzberg Institute of Astrophysics and the National Aeronautical Establishment.

NRC also operates a series of regional laboratories:

- The Arctic Vessel and Marine Research Institute at St. John's, Nfld.,

- The Atlantic Research Laboratory at Halifax, NS.,

- The Industrial Materials Research Institute in Boucherville, Que.,

- The Plant Biotechnology Institute (formerly the Prairie Regional Laboratory) in Saskatoon, Sask.,

- The Western Laboratory in Vancouver, BC,

- The Biotechnology Institute in Montréal, Que.

In addition to its laboratory facilities which are used to perform research in support of NRC's mission, and under contract to the private sector, NRC operates an industry and development office. This office was expected to provide an estimated \$81 million in 1984-85 in grants and contributions to industry through two industrial support programs: an industrial research assistance program (IRAP) and a program of industry/laboratory projects (PILP).

IRAP provides a wide range of support by paying salaries for researchers for specific projects in small and medium-sized businesses, and by providing technical advice to firms. These services are delivered to industry by a series of regional offices across the country, some of them operated under contract by the provincial research organizations (see section 12.5). PILP is designed to assist companies in technology transfer from both government and university laboratories.

Under the scientific and technical information program, NRC operates the Canada Institute for Scientific and Technical Information (CISTI).

12.2.2 Environment Canada

The federal department of the environment (Environment Canada) is second to NRC with estimated spending of \$398 million for S&T in the natural sciences and engineering. Over 90% was being spent in its own laboratories with about one-third on R&D and two-thirds on RSA, primarily for data collection.

Environment Canada's activities occur in its five services: atmospheric environment, Canadian forestry, environmental conservation, environmental protection and Parks Canada. Environment Canada operates a series of laboratories across the country to cope with both regional and national environmental concerns. The forestry service operates eight regional laboratories. The inland waters directorate and the National Water Research Institute are in Burlington, Ont. and the National Hydrology Institute in Saskatoon, Sask.

The atmospheric environment service was responsible for about 50% of the department's S&T expenditures. It provides historical, current and predictive meteorological, sea-state and ice information for all areas of Canada and contiguous waters.