

While no new government R&D programmes specifically related to the FTA are reported, the government has recently announced the formation and funding of 14 different research programmes under its new Networks of Centres of Excellence, in the fields of health care, space and ocean research, construction, robotics, and telecommunications.

In the corporate sector, R&D spending continues to lag behind other countries, with one or two notable exceptions. In the high-technology telecommunications and aerospace industries several companies are consistently high spenders, and, perhaps as a result, are globally competitive. The **Connaught-Mérieux** merger is expected to contribute to an increase in R&D in the pharmaceutical industry, where spending has increased marginally since patent protection was increased. The government has also recently committed some funds to the establishment of a Canadian Institute of Bio-technology to assist the Canadian industry.

However, the fact that R&D spending of the various subsidiaries of **BCE**¹⁰⁴ together account for nearly 20 per cent of corporate R&D spending in Canada, with the top ten firms accounting for over half, indicates that the vast majority of companies are not significant spenders.

While some portion of this lower R&D spending level may be accounted for by the structure of Canadian industry -- a large percentage of Canadian GDP is derived from branch plant assembly operations¹⁰⁵ -- nevertheless some foreign firms are among the top spenders.

- **IBM**, which spends over \$5 billion worldwide, spent about \$180 million in Canada in 1989¹⁰⁶ and has its second largest software development programme located in Canada.
- **Pratt & Whitney Canada** spent \$247 million.

However, other branch operations spent very little.

- **Xerox** spent only \$15.2 million.
- **Johnson & Johnson** spent only \$3.5 million.

Low R&D spending by subsidiary companies remains a serious problem.

¹⁰⁴ Primarily Bell-Northern Research (BNR) and Northern Telecom (Nortel).

¹⁰⁵ For instance, the biggest players in the largest manufacturing industry in Canada, the automotive industry, do virtually no R&D work in Canada. It is reported that General Motors has begun to do some industrial process engineering research as part of the massive expansion of its Oshawa Autoplex, but this would still represent only a very small portion of the substantial R&D work done by GM.

¹⁰⁶ This represents about 6.9% of IBMs Canadian sales of \$2.6 billion, approaching the world-wide R&D figure of 7.75% of sales.