

A revealing indicator of the extraordinary performance of biotechnological applications is health-care. As the GDP of a country increases so does the proportion of the national budget allocated to health-care. Furthermore, these new products tend to be classified as advanced medical technology. An area where traditionally European and North American firms have made a good return.

Brisk biotechnological development is by no means confined to the medical and pharmaceutical sectors. Biofuels, specifically biodiesels are being tested in European and North American commercial bus and taxi fleets<sup>2</sup>. These fuels are derived from esterified vegetable oils extracted from rapeseed and sunflower seed in Europe, and from soybeans in North America. Since they do not contain sulphur, they are less toxic and therefore environmentally preferable to petroleum-based diesel fuels. Large scale production of biodiesels could have major economic, political and strategic implications. The current world trading patterns for petroleum fuels could be altered; relieving some countries of their crippling dependence on oil imports, at the same time bolstering agricultural economies. Government incentives and tax breaks are needed to off-set the currently high cost of biofuels. Another commercial application of biotechnology is the utilization of microbes to break down the cancer-causing industrial solvent methylene chloride. This process is being implemented by General Electric in the USA. Also, in the USA, rot-resistant tomatoes, with a market potential of over \$150 million, is expected to be approved sometime in 1992<sup>3</sup>.

Commercial successes have been associated to an unprecedented funding of Research & Development by both Government and the private sector. On January 31, 1992, the United States government announced a plan to increase annual federal support for basic biotechnology development by 7% to \$4.03 billion.

We have noted that the application of the term "biotechnology" is often imprecise. One reason for this is the frequent overlap of product sector classifications between conventional chemical and biochemical processes, and (recently defined) *biotechnological* processes. Inevitably, many reported trade figures are quoted with insufficient identification of what is being measured. In 1984, eleven different institutes<sup>4</sup> involved in biotechnology, made global market forecasts offering an extremely wide range of predictions for the year 1990. Also predictions made in 1991 for the year 2 000 on worldwide markets for biotech products have been reported as \$ 70 billion by M.D. Dibner of North Carolina Biotechnology Centre, \$ 50 billion by Business Week magazine, Cdn \$ 100 billion by Ernst & Young, and Cdn \$ 60 billion by R. Miller<sup>c</sup>. A 100 % discrepancy in forecasts is hardly favourable to astute business decision making.

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<sup>c</sup> Business Week, March 2, 1992, P 67. Bio/Technology Vol. 9, Dec. 1991, P. 1337, Canadian Biotech '89: On the Threshold, NRC, 1989