

technology for detection and treatment of cancer (this project is the result of one of Canada's largest-ever biotech R & D ventures)⁵⁵, tissue repair proteins, drug delivery systems, gene synthesis, protein biochemistry, etc.

The Canadian drug approval process is presently under review as the government is moving ahead with approaches to speed up the process⁵⁴.

3. ENVIRONMENT

The legal framework for Canada's environmental program is the Canadian Environmental Protection Act; one of the toughest pieces of environmental legislation in the world. Current estimates regarding the environmental costs of complying with these and new regulations controlling only pulp mill effluent in Canada are estimated to be \$4 billion. Gross expenditure by government agencies in the construction and maintenance of sewage and waterworks systems is estimated at \$2.5 billion. The North American market for water supply and waste water treatment facilities, products and services now exceeds \$30 billion per year. These figures are eloquent enough to explain the potential of biotech waste water treatment.

To address these needs, municipalities and companies seeking technologies to enhance the operation of existing treatment facilities normally engage the services of a consulting engineering firm. About a dozen consulting engineering companies specialize in the design of waste water treatment facilities. Of these, only three have active in-house research programs. Canada has recognized strengths in fields like: biological waste treatment, bioremediation of contaminated sites, and pulp and paper industrial effluent treatment. A view of this area and companies involved in biotech environmental applications is given in reference⁵⁶.

4. FORESTRY

The forestry and forest products sector is one of Canada's most important industries. More than 5,000 companies work in this sector generating over \$40 billion in sales annually. Canada is the world's second largest producer of pulp, and the largest producer of newsprint. About 1 million hectares are cut each year in Canada. Reforestation, the protection of existing forests, and the creation of new forest resources is a major concern for this industry. Efficient procedures for embryogenetic micropropagation and development of transgenic trees is in this sense a very much developed area. Also, Canada is the world leader in somatic embryogenesis, a new type of tissue culture for trees. This technology could drastically reduce the time it takes to deliver improved trees to the forest.