

Financing the development and commercialization of indigenous technology in India

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Extramural funds to R&D institutions, tax-incentives to industry for carrying out in-house R&D activities, and technology financing schemes by the Government and financial institutions are enacted for sponsoring technology development in R&D laboratories and their commercialization by industry, to aid the overall process of development of indigenous technology in India.

SCIENCE and technology (S&T) are vital to a nation's economic development, providing the basis for innovation, productivity, growth and maintaining the international competitiveness of the industry. And, research and development (R&D) constitutes an essential component of the strategy needs for advancing the frontiers of fundamental sciences.

India, since independence, has made a considerable investment in scientific and technological research, and has built up an extensive infrastructure, besides creating a creditable potential¹. Extramural funds are provided to the various scientific departments, agencies, academic sector and other socio-economic ministries for sponsoring the R&D projects in R&D laboratories and the academic sector. The Government plays a dominant role in the development of S&T, accounting for about 80% of the national R&D expenditure. Industry spent 0.60% of their sales turn over on R&D activities in 1994-95.

The nature of government subsidies for R&D covers tax incentives for in-house R&D activities, legal and promotional measures for the import of technology and technological products including chemicals and spares; joint venture participation, payment of royalty, honours and awards, etc. Recently, preferential treatment in licensing, delicensing of industrial set-ups and commercialization of indigenous technologies by MRTP (Monopolies and Restricted Trade Practices) companies have been further liberalized and absorbed in the new Industrial Policy. The Union Budget for 1996-97 has introduced a set of new incentives to encourage investments in R&D by the industry².

Tax incentives on R&D expenditure

The Department of Scientific and Industrial Research (DSIR), (Ministry of Science and Technology), Govt of India, New Delhi is the prescribed authority to provide

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fiscal incentives and support measures, for carrying out R&D activities, such as:

Income tax relief

Under Section 35(I)(i) of the Income Tax Act 1961, the revenue expenditure laid out or expended on scientific research, by the in-house R&D units on activities related to the business of the company is allowed as full deduction. Under Section 35(2) of the Income Tax Act 1961, expenditure of capital nature on scientific research related to business carried on could be deducted totally from the income of the year in which this expenditure is incurred. Also, contributions and donations made to Scientific and Industrial Research Organizations (SIROs) approved by DSIR and notified u/s 35(1)(ii)/(iii) of the Income Tax Act 1961 qualify for exemption from income tax.

Weighted tax deduction

Under Section 35(2AA) of Income Tax Act 1961, a weighted tax deduction of 125% will be provided for sponsored research programmes in approved National Laboratories.

Custom duty exemption

The Pass Book Scheme would provide rationalization of customs duty exemption on import of equipment, spares and accessories and consumables for research purposes by public-funded research institutions, universities, IITs, IISc, Regional Engineering Colleges, etc. The SIROs recognized by DSIR are eligible for customs duty exemption for import of essential items relating to capital equipment, spares, accessories, raw materials and consumables for their R&D work. There is a provision of customs duty exemption on specific goods imported for use in R&D projects funded partly by any Department of the Central Government and undertaken by a company in their in-house R&D unit recognized by DSIR.

Tax holiday

There is a provision of a 5-year tax holiday under Sec. 80-IA of Income Tax Act 1961, to approved companies engaged in scientific and industrial research and development activities on commercial lines. The 100% deduction for a 5-year period shall commence from the assessment year relevant to the previous year in which the approval by the prescribed authority is accorded to such a company. This provision has taken effect from 1 April 1997 and will, accordingly, apply in relation to the assessment year 1997-98 and subsequent years.

Excise duty waiver

There is a provision of exemption of all goods falling under the Schedule to the Central Excise Tariff 1985 (5 of 1986) from the whole of the duty of excise leviable thereon provided such goods are manufactured by a wholly Indian owned company, such goods are designed and developed by such Indian company, the goods so designed and developed are patented by such Indian company in India and in any one or more of the countries of the European Union and in United States of America or Japan or in both, for a period of three years from the date of commencement of commercial production.

Accelerated depreciation allowance

Under Rule 35(2) of the Income Tax Rules, Third Amendment vide Notification No. 133/342/86-TPL dated 01 April 1987, depreciation allowance at a higher rate of 40% is available in respect of plant and machinery installed in the accounting years relevant to the assessment year for manufacture/production of goods based on indigenous technology developed in recognized in-house R&D units, SIROs, Government R&D Institutions and National Laboratories.

Price control exemption

As per the guidelines issued by the Department of Chemicals and Petrochemicals in June 1995, following the Drugs (Prices Control) Order 1995, bulk drugs produced from the basic stage by a process of manufacture developed by the unit through its own research and development efforts, duly certified by DSIR, are eligible for exemption from price control for a specified period not exceeding five years. Further, new bulk drugs, which have not been produced elsewhere, if developed and produced through indigenous Research and Development and duly certified by DSIR, are also eligible to be put outside price control for a period of 10 years

from the date of commercial production in favour of the company which undertook the R&D activity.

International collaboration

Clearances are accorded to proposals for R&D collaborations between companies/institutions in India and those in other countries for promoting international R&D collaborations at the enterprise/institutional levels. Recognized in-house R&D units and SIROs are eligible to apply for permission for such international R&D collaborations³.

Technology financing

According to Technology Policy Statement of 1983:

Suitable financial mechanisms will be established to facilitate investment of pilot plants, process demonstration units and prototype development in order to enable rapid commercial exploitation of technologies developed in laboratories. Linkages between scientific and technological institutions and development banks will be strengthened. Gaps in technology will be identified and suitable corrective measures taken with adequate allocation of resources. Fiscal incentives will be provided in particular to: promote inventions; increase the use of indigenously developed technology; and efforts directed to absorb and adapt imported technology.

Technology financing acts as a catalyst for stimulating economic development through technology innovation, upgradation, adaptation and commercialization in the country⁴. Various technology financing schemes, operated by the Government of India (Table 1) cover funds for technology development and commercialization, plant and machinery, adaptation and upgrading indigenization, marketability, patenting, etc. by providing promotional support measures in the form of loan, equity, grants and tax subsidies, etc. Realizing the difficulties encountered by enterprises in financing technology upgradation or setting up of production units based on new and emerging technologies, various financial institutions operate specific venture capital schemes to aid the process of technology development in India. These are:

- a) The Sponsored Research and Development (SPREAD) Programme of the Industrial Credit and Investment Corporation of India (ICICI) Limited, Bombay.
- b) Venture Capital Fund Scheme of the Industrial Development Bank of India, Bombay.
- c) Venture Capital Fund through Technology Development and Information Company of India Limited (TIDCI), Bombay.

Table 1. Technology financing schemes in India

Government schemes

- i) A fund for technology development and application, known as Technology Development Fund, is offered by the Technology Development Board, set up under the Department of Science & Technology, Ministry of Science & Technology, Govt of India, New Delhi.
- ii) *Fund for sectoral projects*: The Department of Science & Technology (DST), Govt of India, New Delhi has evolved new schemes for accelerating the growth of indigenous technological capability and supports the mission-oriented activities, such as:
 - Promoting R&D in drugs and pharmaceuticals
 - Instrument development programme
 - Advanced materials programme
 - Critical technology programme
 - Sugar technology development
 - Utilization of fly-ash
 - Advanced composites and materials.
- iii) *Technology development assistance for home grown technologies*, of the TIFAC (Technology Information, Forecasting and Assessment Council), Department of Science & Technology, Govt of India, Ministry of Science & Technology, New Delhi.
- iv) *PATSER* (Programme aimed at technological self-reliance), a scheme of the Department of Scientific and Industrial Research (DSIR), Govt of India, Ministry of Science & Technology, New Delhi.
- v) *Funding of R&D in electronics to industry* (FRIEND), Scheme of the Department of Electronics, Govt of India, New Delhi.
- vi) IREDA (Indian Renewable Energy Development Agency) funds for developing new energy sources.
- vii) HUDCO for habitat development.

- d) Risk Capital and Technology Finance by the Risk Capital and Technology Finance Corporation (RCTC), New Delhi.
- e) Small Industries Development Bank of India (SIDBI) for small and medium enterprises.

Conclusion

The aim of the Government in providing funds and policy measures for the development of indigenous technology, focuses on protecting and promoting the technology base, as well as to eliminate the fear of the small and medium-scale industries that the import of technology would not hamper the progress of local

industry. While analysing the current R&D scene in India, it is further noticed that:

- a) R&D institutions have been advised to earn 30–50% or even more of their R&D expenditure by way of technology transfer and rendering consultancy services to industry.
- b) Industry being aware of the availability of latest technology/technological products in the field abroad, should sponsor R&D projects only in these new and emerging fields with the R&D institutions, which should equip industry not to go for the further import of technology/technology products. The establishment of in-house R&D units in the private sector has in most cases, been triggered by tax concessions (and corporate image) offered by the Government rather than by an intrinsic need of R&D for innovation.

India is now committed to develop indigenous technology by nurturing the capacities and capabilities built over the past 50 years. There are legal and taxation measures/incentives promoted by the Government of India, coupled with R&D laboratories and technical institutions and the qualified S&T manpower in the country. Supporting R&D and technology financing should make it possible for Indian industry to move towards attaining technological strength and industrial development and advancements in many fields, and enable it to respond to the global competition.

The Indian system is trying to adjust quickly to the new international regime that will come soon into force in the sensitive areas of patents and IPRs. The challenge of GATT/WTO and its effect on the Indian economy is going to be a great one, in all aspects of her socio-economic growth.

1. Pawan Sikka, *Forty Years of Indian Science*, Jr. Sc. & Pub. Pol., 1990, 17, 45–53.
2. R&D Statistics (1994–95), Govt of India, Department of Science and Technology, New Delhi, 1996.
3. *Research and Development in Industry – An Overview*, Department of Scientific and Industrial Research, Government of India, New Delhi, Dec. 1996.
4. Pawan Sikka, *Technovation*, 1996, 16, 85–90.