

IV. PUBLIC SECTOR ENTERPRISES

IV - A. NATIONAL RESEARCH DEVELOPMENT CORPORATION

1. INTRODUCTION

The National Research Development Corporation (NRDC) is a premier organization engaged in the development, promotion and commercialization of the R&D results/ technologies emanating from Research Institutes/ Universities/ Industries, etc. The Corporation provides comprehensive technology transfer services and acts as a catalyst for transforming innovative research into marketable industrial products. It is the only public enterprise wholly dedicated to transfer of technologies from R&D laboratories to industry. During the past five decades of its existence, the Corporation has developed strong links and network with various R&D organizations in the country as well as abroad for transfer of technologies. Its operations cover the entire spectrum of industrial technologies ranging from chemicals to metallurgy, mechanical engineering, electrical engineering, electronics, biotechnology and so on.

The Corporation continued to maintain its good overall performance in all areas of its operations during the year 2004-2005. During the year, the Corporation's income from its principal source of revenue i.e. Lumpsum Premia and Royalty on the licensing of technologies to industry was Rs. 326.24 lakhs, as compared to Rs. 339.94 lakhs in the previous year.

2. PROFIT

Due to the sustained, hard and dedicated work of its executives and the staff, the Corporation continued to earn profits. During the year the Corporation earned a gross profit of Rs. 12.60 lakhs against Rs. 19.35 lakhs in the previous

year. The Gross income of the Corporation from all sources, including premia and royalties, but excluding Grants-in-Aid, was Rs. 413.27 lakhs as compared to Rs. 439.93 lakhs in the previous year. The Government Loan, which was at the end of the previous year Rs.58.19 lakhs, has been fully repaid during the year 2004-05.

3. PROCESSES ASSIGNED AND LICENCE AGREEMENTS CONCLUDED

The Corporation with its objective of building up of a large depository of technologies and to compete in the global environment with new technologies, continued its efforts to widen its resource base so as to increase the inflow of the processes not only from various R&D laboratories but also from Universities, IITs, Individual Inventors etc. During the year 2004-05, the Corporation entered into Memorandum of Understanding/Agreement with the following organisations for assignment of technologies developed by them:

- G.B. Pant University of Agriculture & Technology, Pantnagar
- Marathwada Agricultural University, Parbhani
- Punjab Agricultural University (PAU), Ludhiana
- Electrical Research and Development Association (ERDA), Vadodara
- Dr. I. J. Babbar, Delhi
- National Institute of Rock Mechanics, Kolar Gold Fields, Karnataka

- Karnataka State Sericulture Research & Dev. Institute, Bangalore
- Process cum product Development Centre, Sports Goods Complex, Meerut
- Kolkata University, Kolkata
- Central Glass & Ceramic Research Institute, Kolkata
- Barkatullah University, Bhopal
- MP Council for Science & Technology, Bhopal

42 new projects were assigned to the Corporation for commercialization, some of which are:

- Preparation of Salmonella Toxoid Vaccine
- Intermediate Moisture Paneer
- Ray Analysis Software Package
- Synthesis of Higher Order Diffractive Optical Elements by Micro Surface Relief Patterns
- Slow and Controlled Release Fertilizer
- Diagnostic BT Kit (Dot – Blot ELISA Kit for BT Protein)
- Microprocessor Based Solid-State Control System (for Mine Haulers)

4. MAJOR TECHNOLOGIES LICENSED

The Corporation signed 48 licence agreements in the following areas:

- Green Roof Strong Prop
- Biopesticide based on Bascillus Thuringensis Var Israelensis - VCRV B17

- Test Kit for Microbiological Quality of Drinking Water
- Crystoscope for Determination of Optimum time of Fertile Oestrus in Cows and Buffaloes
- Area Specific Mineral Mixture to increase the Productivity of Bovines for Tarai and Hills of Uttaranchal and for the State of U.P.
- Ultra fine and nearly Mono dispersed inorganic Nano Particles as Novel Non-viral Vectors for efficient Gene Delivery
- Vaccine for Viral Disease caused by Pests Des Petits Ruminants (PPR) incorporating vaccine Strain
- Casia Tora Gum from Caisa Tora and Additive from Casia Tora Gum and Tamarind Kernel Powder for Oil Well Drilling Industry and Textile Industry
- Microprocessor Based Solid State Control System (For 40 HP Mine Haulers)

5. TECHNOLOGY DEVELOPMENT PROJECTS

The Corporation in collaboration with industry/R&D institutes has been promoting and financing technology development projects for setting up pilot/semi commercial/demonstration plants. The progress on the major technology development projects is given below:

Development of database of technologies developed by R&D organizations

The Corporation has undertaken a joint development project with National Science & Technology Management Information Systems (NSTMIS) under the Department of Science & Technology to develop the database on various technologies developed

by the Research Institutes at a total cost of Rs.20 lakhs, to be shared equally by NSTMIS and the Corporation. The Corporation has developed application software and information on the technologies is being compiled.

6. TECHNOLOGY TRADE FACILITATION CENTRE (TTFC)

The Corporation, with the support of DSIR has been successfully running the TTFC, at the Corporation's registered office, to facilitate the exports of technology intensive products, services and projects. Upto 31st March, 2005 about 30 firms have exhibited their export intensive products/technologies in TTFC.

7. INTELLECTUAL PROPERTY RIGHTS (IPR) CONSULTANCY SERVICES

The Corporation has sold 405 Interactive Multimedia IPR Training Package CDs to Universities/Institutions etc. The updated version of the CD (version 2.0) is in progress.

NRDC has also developed IPR CD in Hindi based on the advise and directions from Parliamentary Committee on Official Language. The CD has been released by the Hon'ble Minister of State for Science & Technology and Ocean Development, Shri Kapil Sibal on Science Day, 2005

Pursuing its efforts to promote proper protection of inventions and technologies, NRDC has provided financial and technical assistance to 36 inventions emanating from Universities, individuals, institutes, DBT, DRDO and others. It has helped many institutes by conducting the novelty search for them. NRDC has conducted 20 to 25 online international patent searches for its clients.

The Corporation conducted four Programmes related to "Patents' Protection, Valuation and commercialisation" in collaboration with Patent Office in New Delhi, Kolkata and at Rai, Distt. Sonapat in collaboration with Small Industries Service Institute, Karnal for the benefit of small-scale units in District of Sonapat in 2004-05

8. PROJECTS SUPPORTED BY DSIR

The Corporation has been identified as the agency to manage all matters connected with the intellectual property rights generated in TDDP projects of DSIR, as also to collect the royalty revenues accruing from the utilisation of the technology by the collaborating Company and also from third party licensing. Some of the projects undertaken were:

- Eco-friendly and efficient edible oil refining technology of twin bleaching system and deacidification cum deodorization system
- Continuous hydrogenation system for fatty acids and oleo chemicals plants
- Embedded internet computing appliance
- AAM ATM Access multiplexer
- Product for control of psychrophilic and psychrotrophic food spoilage microorganisms in cold storages
- Animal data base management system using RFID technology
- High sensitivity photo cathode for 18 mm Supergen image intensifier tubes
- Cylinder head gaskets made from graphite for TATA Indica cars
- Low loss RF cables and other specialty cables

- Membrane technology for natural gas separation

9. MARKET SURVEYS

Market surveys are of considerable significance to the process of technology transfer. In order to make the technology package more attractive to entrepreneurs, a market survey report on 'Post harvest Technology on Poultry launched for Dairy Technology' was conducted through professional market survey agency during the year 2004-05.

10. INVENTION PROMOTION PROGRAMME

To promote and encourage the spirit of inventiveness amongst scientists, workers, students and inventors, the Corporation continued its programme of Awarding Prizes upto Rs.2.00 lakhs for the development of novel processes/products/inventions.

During the year 2004-05, the Corporation has awarded various innovations in the key areas in the field of Agriculture, Biotechnology, Chemical & Allied, Electrical, Electronics and Mechanical. The Corporation announced cash awards amounting to Rs.7.70 lakhs for the following inventions on the occasion of Technology Day i.e. 11th May 2004:

- On-Line Property Prediction System For Hot Rolled Coil
- Cotton Stripper Machine
- Normal Cure Composite Tape Seal (NCCS) for Cable Joint
- Development of Corrosion Inhibitors/Metal Passivator additive for Lubricant, Grease and fuel application from waste refinery streams

- Novel Method for In-situ Balancing of Rotors
- On Line Fault Sensor for Transformer
- An Improved Mild Steel Handloom for Weaving Matting
- Multi purpose Design Cutting / Sizing / Embossing Machine

The Corporation also announced two WIPO Gold Medals, one for the invention "A Whole-Blood Agglutination Assay for On-Site Detection of Human Immunodeficiency Virus Infection (HIV)" to Prof. V.K. Chaudhary and Dr. (Mrs.) Anita Gupta of Deptt. of Biochemistry, University of Delhi, South Campus, New Delhi and the other award for the "best woman inventor of the year 2004" to Dr. (Ms) Kanika Trivedy of Central Sericultural Research and Training Institute, Mysore (A constituent Laboratory of Central Silk Board) for her invention "Process for the Extraction of Ecdysteroid (Sampoorna) from Caryophyllaceae family of Plants".

11. DEVELOPMENT & PROMOTION OF RURAL & HOUSEHOLD TECHNOLOGY

To demonstrate the utility of the rural technologies and ensure their faster dissemination, the Corporation has set up a network of RTDT Centers in association with NGO's and other developmental agencies in various parts of the country. The Corporation continued to pursue the demonstration of appropriate technologies in rural areas with the help of these counterpart agencies and through participation in rural exhibitions. Corporation is also setting up a Rural Technology Business Incubator to identify, develop and demonstrate these rural technologies.

12. TECHNOLOGY AND PROJECT EXPORT

Indian technologies are appropriate to the needs of many other developing countries. During the year several delegations from other developing countries were received and the Corporation signed the following major agreements for services / technology transfer :

- Technology Offer to M/s Energy Chemical Company, Senman, Iran for setting up of Plant for Distilled Zinc Dust on Turnkey basis
- License Agreement with M/s American Biosciences Inc., USA for transfer of know how on a Process for the preparation of Ultra fine and nearly Mono dispersed inorganic Nano Particles as Novel Non-viral Vectors for efficient Gene Delivery
- Testing of salt sample for M/s Gajanan Services International, representative of M/s Arab Potash Company of Jordan and M/s Cable word Incorporated, Philippines
- Demonstration Centre of Small & Micro Machineries in Senegal - The Corporation has signed Memorandum of Agreement with Ministry of External Affairs for setting up a demonstration centre for exhibiting and demonstrating agro based machineries. MEA has released the fund of Rs. 2.5 crores in advance to the Corporation to meet the expenditure towards the cost of the machines, infrastructure and manpower. The Corporation has already initiated the work in selection, identification of machines suitable for the demonstration centre.

13. FOREIGN EXCHANGE EARNINGS

The foreign exchange earnings of the Corporation amounted to Rs. 28.24 lakhs in

2004-2005 as compared to Rs. 10.20 lakhs during the previous year.

14. PUBLICATIONS

An important activity of the Corporation is to disseminate information on new processes to industry, entrepreneurs and the general public for the promotion and commercialisation of technologies. One of the means of doing so is through publications of various types. During the year, the Corporation continued to bring out its regular magazines and publications viz Awishkar – (Monthly in Hindi) & Invention Intelligence – (Bi-monthly in English). The Corporation has also brought out the publications i) NRDC at your service and ii) Catalogue of NRDC technologies for export in French, Spanish

15. EXHIBITIONS AND PUBLICITY

Participation in exhibitions, seminars, workshops, entrepreneurship development programmes etc. are of vital importance for the creation of awareness about the role of the Corporation in technology transfer. With this end in view, the Corporation participated in exhibitions, seminars and get-togethers in India and abroad organised by various agencies as detailed below:

- Vietnam Expo-2004, Vietnam 7-11 April, 2004
- Infra R&D India – 2004, New Delhi 15-17 April, 2004
- Infra-structure Engineering & Technology India-2004, Bangalore 10-13 June, 2004
- Rural India Trade Expo 2004-05, Sirsa, Haryana 23-25 July, 2004
- Imec-2004 (International Microwave Electronics), Bangalore 1-3 Sept, 2004
- Industrial Exhibition Jaipur 17-19 Sept, 2004

- Knowledge Infrastructure, New Delhi 11-13 Oct, 2004
- Technology Platform, New Delhi 19-20 Oct, 2004
- India International Trade Fair, New Delhi 14-27 Nov, 2004
- Science Congress, Ahmedabad 3-7 Jan., 2005
- 10th Agricultural Industry, Tourism, Science and Technology Festival, West Bengal 23-30 Jan., 2005

16. HUMAN RESOURCES DEVELOPMENT

Training and development of all levels of employees was given due priority by the Corporation to increase effectiveness. Special emphasis was given to organisation building and shaping right attitudes, team building and work culture besides preparing employees to understand the trends in fast changing technology/switching over to latest technology for achieving higher results in productivity and profitability. During the year 23 executives and 9 staff of the Corporation were deputed to various training programmes to further develop their skill in various areas of management, communication, vigilance and advancement of technology.

17. TECHNOLOGY ABSORPTION, ADAPTATION AND INNOVATION

While a major objective of the corporation is the development and commercialisation of indigenous technology, the Corporation itself does not carry out any R&D. However, it promotes and finances R&D on a selective basis in both laboratories and industry. The details of the major development projects financed by the corporation during the year are given in the section of this report entitled "Technology Development Projects".

18. IMPLEMENTATION OF OFFICIAL LANGUAGE

The Corporation continued to make efforts to fulfil the targets prescribed by Govt. of India in the Official Language Act and Rules framed therein with regard to increase the use of Hindi Rajbhasha in office during the year 2004-05. The Corporation has developed the first IPR CD in Hindi which has been released by the Hon' ble Minister of State for Science & Technology and Ocean Development, Shri Kapil Sibal on Science Day 2005. The Corporation also launched its website in Hindi making the same in diglot form. Employees were motivated to use their working knowledge of Hindi in day-to-day official work. Significant progress has been made in the field of correspondence, noting and drafting in Hindi. The Annual Report of the Corporation is being published in diglot form in both Hindi & English since 1986-87. The Corporation also publishes a popular Science & Technology monthly magazine in Hindi, entitled 'Awishkar'. To promote Rajbhasha "The Comprehensive Glossary of Administrative Terms (Eng.-Hindi)" was distributed among the employees. Hindi-English Dictionaries were also distributed among the officers and staff in this regard. To popularize the use of Hindi, the Corporation celebrated the "Rajbhasha Pakhwara" (14-29 September, 2004). During the "Pakhwara" different types of competitions like Hindi essay writing, Hindi drafting & noting, Hindi typing, Short Speech and Hindi poetry were organized. Certificate, cash award and mementoes were given to the winners. The employees of the Corporation have also participated in many Hindi Competitions organized by other Undertakings and won prizes too. To enrich Hindi vocabulary of the employees of the Corporation as well as visitors, an English word with its Hindi meaning is written daily on a writing board as "Today's word" at the reception of the Corporation.



H.E. Mr. Christian Baeta, High Commissioner, Ghana, enquiring about products / technologies of TTFC Participants



Ing. A.J. Montilla, Advisor to the Minister of Industry & Commerce, Venezuela enquiring about technologies of TTFC Participants



Multipurpose Design Cutting / Sizing / Embossing Machine (An Awarded Invention)



An Improved Mild Steel Handloom for Weaving Matting (An Awarded Invention)

Technology Transfer (An Area Specific Mineral Mixture to Increase Productivity of Bovines of Uttaranchal and Uttar Pradesh);
Licencee: M/s. Lyka Exports Pvt. Ltd. Mumbai

