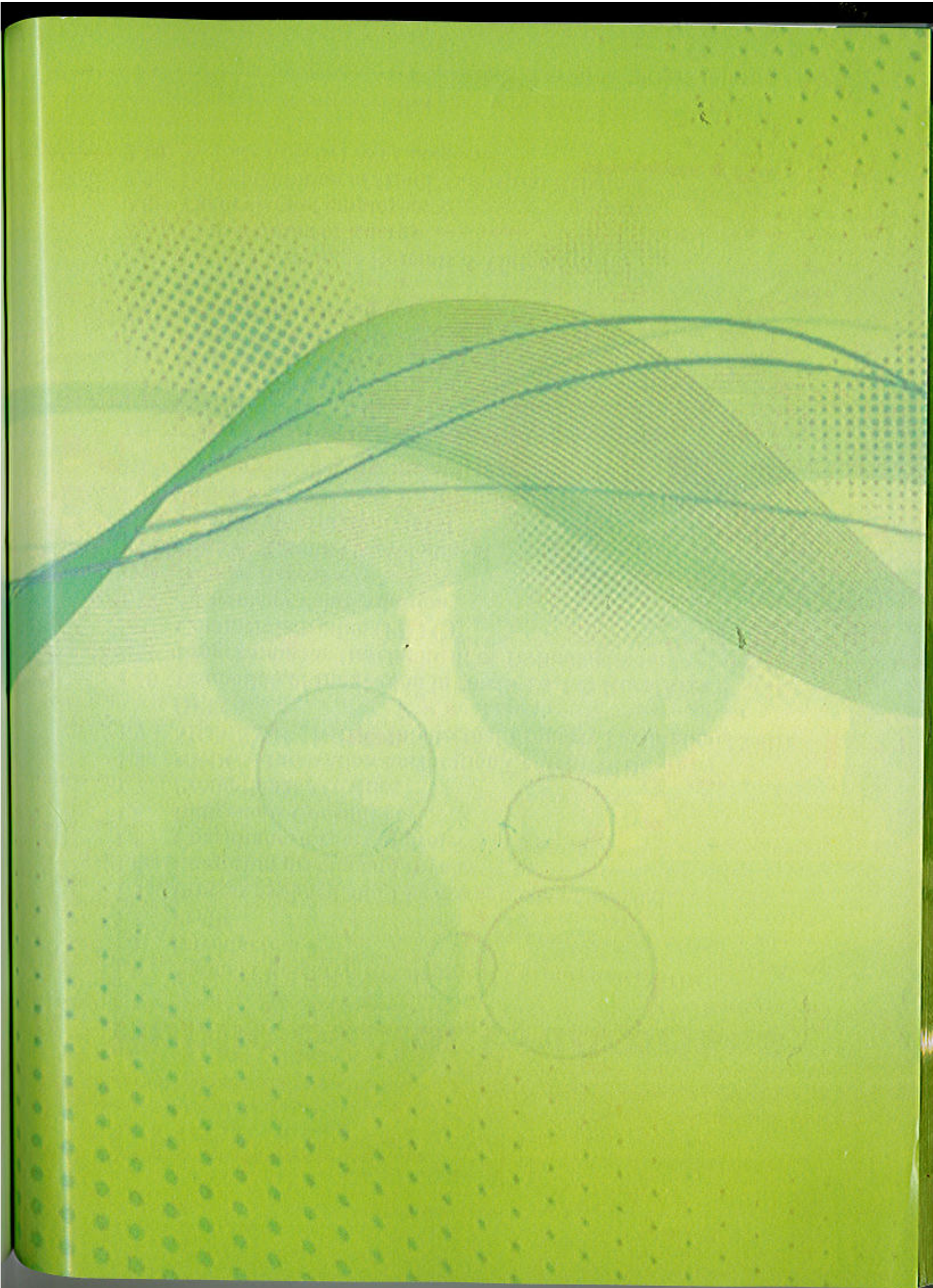


CHAPTER-7

Public Sector Enterprises

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PUBLIC SECTOR ENTERPRISES

1.0 NATIONAL RESEARCH DEVELOPMENT CORPORATION

1.1 Introduction

National Research Development Corporation (NRDC) is a Government of India enterprise, under the Administrative control of Department of Scientific & Industrial Research (DSIR), established in 1953 under section 25 now section 8, of the companies act. The main objective is to promote, develop and commercialize technologies/know how/inventions/patents/processes emanating from various national R&D institutions. The Corporation offers its services through-out the country in improving the Nation's manufacturing base with innovative technologies specially suitable for our entrepreneurs and conditions. It acts as an effective Interface for translating R&D results into marketable products. Over the last more than six decades of its existence, the Corporation has forged strong links with various R&D organizations both within the country and abroad and pursued bringing inventions and innovations to commercial fruition. The Corporation is recognized as a repository of a wide range of technologies and has licensed technologies to over 5000 entrepreneurs



Fig. 1 NRDC Awarded with 'Best PSU Award' by Governance Now

spread over almost all areas of industry and has provided assistance for filing of 1800 patents.

1.2. Profit

The highlights of the performance and the financial result for the financial year ended 31st March 2017 are given below:

Performance Parameters	2016-17* (Rs. in lakhs)	2017-18 (Rs. in lakhs)
Gross Income	1133.03	1471.17
Revenue from Operations	1074.24	1372.61
Other Income	58.79	98.56
Profit Before tax	62.29	134.24
Paid up Share Capital	441.81	441.81
Reserves & Surplus	501.38	469.64
Net Worth	943.19	911.45

* Figures for the year 2016-17 were regrouped wherever necessary for the purpose of comparison.

As per the pre-revised Accounting Policy of the Corporation, the Gross Income for the financial year under report is ₹ 2683.51 lakhs as compared to Previous Year's Gross Income of ₹ 2627.64 lakhs, resulting in real increase in Gross income to the tune of ₹ 55.87 lakhs. This increased gross income is on account of increase in royalty from PATSER/TDDP projects compared to previous year.

1.3. Processes Assigned and Licence Agreements Concluded

The Corporation continued to lay emphasis on broadening and strengthening the technology resource base by nurturing long-term relationships with R&D institutions as well as universities, technical organizations, industries and also individual inventors. This endeavour is reflected in the Corporation's



signing of 40 MOUs/MOAs/Agreements (Annexure 14) with Institutions/Organizations for intellectual property protection, technology commercialization, technology consultation and other value-added services. Some of the major institutions are as under:

1. CSIR-Advanced Materials and Processes Research Institute (AMPRI), Bhopal
2. Orissa University of Agriculture & Technology, Bhubaneswar
3. Jawaharlal Nehru University (JNU), New Delhi
4. CSIR-Central Scientific Instruments Organisation (CSIO), Chandigarh
5. CSIR-National Geophysical Research Institute (NGRI), Hyderabad
6. Indian Institute of Information Technology, Hyderabad
7. International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad
8. The Tribal Cooperative Marketing Development Federation of India (TRIFED), New Delhi
9. Indian Institute of Technology, Roorkee



Fig. 2 NRDC Inks MOA with CSIR-CSIO, for "Commercializing IPs & Technology"

Process Assigned

During the financial year 135 new processes/technologies (Annexure 15) were assigned to the Corporation for licensing, as compared to 108 processes in the previous year. Some of the commercially important processes assigned to the Corporation from various research institutes, universities were:

CSIR-Central Scientific Instruments Organization

- Surgical microscope for eye surgery
- Electronic Knee
- Iodine Value Meter



Fig. 3 NRDC Signed MOA with PROM Society, New Delhi for commercialisation of "PHOSPHATE RICH ORGANIC MANURE (PROM)"

CSIR-Central Mechanical Engineering Research Institute

- Domestic Arsenic Water Filter Unit
- Domestic Arsenic Water Filter Unit
- Solar Park

ARCI, Hyderabad

- Advanced Detonation Spray Coating Technology (DSC) MARK-II
- Detonation Spray Coating (DSC) Technology
- PEM Fuel cell Powered Materials Handling Devices
- Nano silver Impregnated Ceramic Candle Filter
- Exfoliated Graphite and its value added products

CSIR-CSMCRI

- Preparation and applications of non-hazardous brominating reagent
- Preparation of industrially important organo-bromo compounds using brominating reagent
- Processes for the production of seaweed liquid fertilizer from brown seaweed



Fig. 4 Licencing 10HP Krishi Shakti Tractortechonlogy developed by CSIR-CMERI to Mrs. P. Sudhareddy, Managing Director, M/s K N Biosciences Private Limited, Hyderabad



Fig. 5 NRDC and M/s RidhiSidhi Medicare, New Delhi entered into License Agreements for commercialization of AYUSH-82, in presence of Hon'ble Minister of Science and Technology & Earth Sciences, Dr Harsh Vardhan

Mahatma Gandhi Institute for Rural Industrialization

- A neutraceutical supplement for acidity
- A neutraceutical supplement for asthma
- A novel aphrodisiac neutraceutical supplement
- A novel galactagoguenutraceutical supplement

National Thermal Power Corporation Ltd.

- Nano-lubricant VGIS 68 Grade oil

PROM Society

- PROM: Phosphate Rich Organic Manure

Major Technologies Licensed

As a result of Value addition, the Corporation managed to sign 35 license agreements (Annexure 16) during the year compared to 36 license agreements executed in the previous year. Some of the major processes/ technologies licensed by the Corporation in the financial year were:

National Institute of Communicable Diseases, Delhi

- Evaporative Cooling Apparatus Resistance to Vector Breeding.

CSIR-NEIST, Jorhat

- Anti Arthritis –Herbal Formulation for Arthritis

CSIR-CMERI, Durgapur

- Solar Power Tree (3KWP)
- 10HPKrishi Shakti Tractor

CCRAS, New Delhi

- AT-yush-SG (For Rheumatoid Arthritis)
- Ayush-82 (Anti –Diabetic Formulation)

CSIR –Structural Engineering Research Centre, Chennai

- Technology for Construction of Toilet Unit with Precast Thin Segmental Elements (TUTIP)

Central Sericultural Research & Training Institute, Mysuru

- Ankush (Silkworm Bed Disinfectant)
- ROT-Fix-A Broad Spectrum Environment Friendly Formulation for Control of Root Rot Disease in Mulberry

University of Agricultural Sciences, Bengaluru

- Nata –De-Coco production from Microbial Fermentation of Coconut Water Through Enrichment Techniques
- Eco Friendly Drought Tolerant Aerobic Rice Variety –ARB6
- Ready to Eat Honey Paan Beeda



Indian Institute of Spices Research, Kozhikoda

- A Micronutrient Composition for Cardamom and a process for its Preparation
- A Micronutrient Composition for Black Pepper and a process for its Preparation

1.4 Lumpsum Premia and Royalty

The consolidated Lump sum Premia & Royalty income is ₹ 893.27 lakhs as compared to ₹ 992.54 lakhs in the previous year.

1.5. Consultancy/Export of Projects and Services

The Corporation has been offering consultancy services in the following fields:

- Technological upgradation for the SMEs – identify technological gaps, scouting for appropriate technology and partnering with R&D institute for developing the solution
- IP Consultancy services – Patent Datamining, Search and Analysis, Patent drafting, filing and prosecution, Patent landscaping, FTO analysis, IPR policy, Audit, Training.
- Project consultancy – undertaking and executing projects in India and abroad particularly in developing countries.



Fig. 6 Cultivation in Polyhouse at Ghana

Export of Technologies and Services

National Research Development Corporation (NRDC) has been giving special thrust in projecting itself as a source of appropriate, reliable and affordable technologies. NRDC's continued efforts to export

Indian technologies and services in this year also and several leads generated for signing of MoUs like TIRDO, Tanzania, Yunnan Provincial Academy of Science and Technology, Kunming, Yunnan Province, People's Republic of China, The Hong Kong Trade Development Council of The Hong Kong Special Administrative Region of The People's Republic Of China, Innovation and Prosperity Fund, Govt. of Iran, Tehran, University of Sciences, Techniques and Technologies of Bamako, Mali, etc. A number of delegations from Uganda, Cameroun, Tanzania and Iran visited the Corporation for Technological Co-operations.

(i) Pilot Research Project for Tomato Production in Ghana

National Research Development Corporation (NRDC) has been giving special thrust in projecting India as a source of technology. NRDC's continued efforts to export Indian technologies and services have enabled it to export the technologies to entrepreneurs both in the developed as well as the developing countries. The extensive expertise within the NRDC along with the extensive network of national and international contacts in scientific bodies, technology transfer agencies, industrial and engineering concerns ensures the entrepreneurs in receiving the very best in technology and other services.

NRDC in its efforts for transfer of technology to the developing countries mainly in Africa, had undertaken a project for setting up a "Pilot Research Project for Tomato Production in Ghana" in three regions in collaboration with CSIR, Ghana, Ministry of Science, Technology and Environment, Govt. of Ghana with a financial support from MEA, Govt. of India.

The objective of the project is to conduct the problem oriented applied research in three agro-climatic regions of Ghana in a 5 acre region with a view to evolve effective cultivation techniques and measures to achieve higher yield of good quality tomato having long shelf life under Ghana conditions as Ghana imports about 60% of their requirement from neighbouring countries.

In a glittering ceremony on 5th June 2017 at CSIR – Science & Technology Policy Research Institute

(STEPRI), Ghana, the Pilot Research Project for Tomato Production was declared successfully completed, by DG CSIR, India. The ceremony was attended by Ms. Mavis Hawa Koomson, Hon'ble Minister for Special Development Initiatives, Mr. George Aduro, Hon'ble Deputy Minister of Food and Agriculture, Mr. Papa Ekow Bateerls, Representative of Minister of Trade & Industry Mr. B.S. Yadav, High Commissioner of India,, Dr. Girish Sahni, DG CSIR and Secretary, DSIR, Govt. of India, Dr. Victor K. Agyeman, DG, CSIR, Ghana Dr. H. Purushotham, CMD, NRDC, Dr. A Chakraborty, Chief Scientist and Head DGTC and Dr. Sudeep Kumar, Head PPD, CSIR, Dignitaries and eminent scientists from India and Ghana. The Project Completion document highlighting the Research findings was handed over to Dr. Victor, DG, CSIR, Ghana by Dr. H. Purushotham, CMD, NRDC in presence of the dignitaries.

The dignitaries present on the occasion stressed the need of replicating of the project based on the success of Tomato Research Project implemented by National Research Development Corporation, India for the benefit of Ghanaian farmer



Fig. 7 DG CSIR with other eminent scientists from India and Ghana

(ii) MoA signed with M/s Goodearth Global Ltd., Ghana

The objective of this MOA is the identification of technologies and good practices for cultivation of crops, providing training in good cultivation practices in the following areas:



Fig. 8 CMD, NRDC Dr. H. Purushotham meeting with a 10 member delegation from Uganda

Cultivation, storage and processing of Rice, Mango, Cashew, Aromatic and Medicinal plants, and any other crop based on the recommendation of the survey

Foreign Delegations:

- Tanzania delegation visited NRDC office on 31st August, 2017 through High Commission of Tanzania
- Iran delegation through APCTT visited NRDC on 12th September, 2017.
- Uganda delegation through Zaheer Science Foundation visited NRDC on 13th September, 2017.
- Delegation from Nepal Visited NRDC on 3rd July 2017
- Delegation from Netherland consisting of Vice Minister of Agriculture Mr.MorjolijnSonnema and Ambassador of Netherlands to India visited NRDC office on 2nd November 2017

1.6 Indigenous Consultancy

- Preparing a "Technology Foresight Report on Nanotechnology Applications in the Oil & Gas Exploration" for ONGC-Energy Centre, New Delhi
- Drafted Policy Intellectual Property Rights Management & Technology Commercialization of National Institute of Ocean Technology (NIOT), Chennai

(i) ITEC-Capacity Building Programme on "Intellectual Property Rights, Technology Commercialisation and Cooperation and India-Africa Development Partnership"

The Indian Technical and Economic Cooperation Programme (ITEC) of Ministry of External Affairs



(MEA), Government of India sanctioned an ITEC programme to NRDC. It was a fifteen days Indo-African international training programme with the objective to provide in-depth knowledge of IPR, Technology Commercialization, setting up of start-ups, innovations etc. for the benefit of technology transfer professionals and academicians of African countries. The programme was inaugurated by Sh. Dinkar Asthana, Joint Secretary, MEA, Govt of India; Sh. Baraka Luvanda, His Excellency High Commissioner, Tanzania; Dr. H. Purushotham, CMD, NRDC and Sh. B.N. Sarkar, Scientist, F, Director NRDC Board, DSIR. Dr. H. Purushotham, CMD, NRDC interacted with all the delegates and enquired about technology transfer possibilities and opportunities for NRDC in their respective countries and the African continent in general. Also, in his inaugural address Sh. Dinkar Asthana, Joint Secretary, MEA emphasized the role of ITEC programme in Indo-African cooperation in technology transfer and attainment of the Sustainable Development Goals (SDGs). The delegates from different African countries attended the programme for 15 days which was conducted in an interactive mode and was highly informative. Representative from Africa Like Uganda, Mozambique, Egypt, Ivory Coast, Nigeria and other African Countries attended the programme.

(ii) Start-up India Initiative of DIPP

"Start-up-India" is an initiative of Department of Industrial Policy and Promotion (DIPP), Government of India, designed for fostering innovations, create jobs and facilitate investments. Start-up India receives applications from all over India for getting recognition (as Start-ups) for further availing proposed benefits under this scheme including the three year tax benefits.

DIPP has given the responsibility to NRDC for technically assessing these applications for recognizing start-ups and recommending the eligible start-ups for tax exemption and other benefits. Till date total 10277 start-ups have been successfully received the recognition certificates. As notified, for further availing tax benefits, the eligible applications are further reviewed by an Inter-Ministerial Board

(IMB) chaired by JS, DIPP. NRDC evaluates the application on the basis of norms given by Start-Up India initiative and submit the reports regarding the same to Inter Ministerial Board (IMB) for final decision. NRDC has submitted report for more than 3000 cases so far of which 1595 reports were submitted in 2017-18. Based on the recommendation on assessment by NRDC, the IMB grants approval to start-ups for availing tax benefits.

(iii) Partnering with IOCL for monitoring their Start Up

Indian Oil Corporation, India's flagship National oil major, has launched a start-up scheme with a revolving corpus fund of ₹ 30 crore to promote promising start-ups and nurture an eco-system conducive for innovations in the domestic hydrocarbons sector.

Based on our experience in working in start-up eco system, IOCL requested our corporation for short listing and fixing of milestone from the proposals received from the start-ups for funding.

NRDC has collaborated with IOCL for mentoring and monitoring the 11 start-ups. The role of NRDC is to mentor, incubate, monitor, evaluate and review the Start-up project selected under the scheme and to provide inputs and assistance to validate the Idea/project till proof of concept stage

(a) Filing of Patent and Trademark application under SIPP Scheme

Indian Patent Office, Government of India recognized NRDC as a facilitator for filing patents, design and trademarks of start-ups under the Start-up Intellectual Property Protection (SIPP) scheme (CG/Misc./Facilitator/2016/506 dated 27 May 2016).

In the year 2017-18, 4 patent and 2 trademark applications were filed under the SIPP scheme.

The list of SIPP applications filed is as follows:

Establishment of Pilot Incubation Centre at NRDC

As proposed in 241st meeting of the Board of Directors of NRDC held at New Delhi on 15th December 2017, National Research Development Corporation (NRDC) New Delhi,

Public Sector Enterprises

S.NO.	NAME OF THE START-UP	TYPE OF APPLICATION (PATENT/TRADEMARK/DESIGN)	STATUS OF THE APPLICATION
1.	M/s Nanotrics Innovations Pvt. Ltd.	Trademark (Class 9 and 42) "Nanotrics"	Registration under process
	M/s Nanotrics Innovations Pvt. Ltd.	Trademark (Class 9 and 42) "Nanotrics"	Filed
2.	M/s Nanotrics Innovations Pvt. Ltd.	Patent (Hospitality Services Management)	Filed Complete Specification
3.	M/s Nanotrics Innovations Pvt. Ltd.	Patent (Intelligent Surveillance Method and System for ensuring Transparency and Accountability during Patient Care)	Filed Complete Specification
4.	M/s Adamy Herbal care Pvt. Ltd.	Patent (An herbal Anti-Viral composition and the process of preparation thereof)	Filed Provisional Specification *
5.	M/s SecureFire Safety Industries Pvt. Ltd	Patent (Thermal Insulating and Fire protecting materials and their development)	Filed Provisional Specification

Established a Pilot Incubation Centre at NRDC in order to leverage the Start-up Innovation Ecosystem by utilizing the vacant space of erstwhile TTFC into a new Incubation Centre, which can accommodate/Incubate about 9-10 Start-ups. NRDC Incubation Centre got inaugurated on 10-01-2018 by Dr. Girish Sahni, Secretary DSIR and DG, CSIR. A total number of 81 (eighty one) applications were received from across the nation.

After examining the proposal NRDC is incubating five Startups:

A. The Corporation has physically incubated two start-ups:

1. M/s Realsaber Technologies Pvt. Ltd., New Delhi

2. M/s Pratyaksha Agrotech Pvt Ltd, New Delhi

B. The Corporation has virtually incubated three start-ups:

1. M/s Ephiphany Innovations Pvt. Ltd., Bhopal

2. M/s Adamy Herbal Care Pvt. Ltd., Lucknow

3. M/s Klassical Biomechanics International LLP, Gurgaon

1.7 PROMOTIONAL ACTIVITIES

During the 12th five year Plan the Corporation has taken up two new schemes viz.

1. Programme for Inspiring Inventors and Innovators (PIII)

2. Programme for Development of Technologies for Commercialization (PDTC)

The Corporation has received ₹ 375 lakhs grants-in-Aid for implementing the above two promotional programmes for DSIR.

(i) Programme For Inspiring Inventors And Innovators (Piii)

The programme is planned to encourage the innovators/inventors in developing new innovative technologies and products and tap these



Fig. 9 NRDC Incubation Centre for Start-ups inaugurated by Dr. Girish Sahni, Director General, CSIR and Secretary, DSIR



technologies for Corporation's business activities. To achieve this Corporation carries out various activities like awarding meritorious inventions, protection of IP's, evaluation of technologies, knowledge management and providing techno-commercial support to the new innovations/technologies etc. The activities carried out under this programme are summarized below:

(ii) NRDC Awards for Meritorious Inventions

The Corporation under its Programme for Inspiring Inventors and Innovators (PIII), with the support of DSIR, gives tax free awards annually for meritorious inventions. These awards are given to those, working in India in scientific and industrial fields with an objective to encourage inventive talent in the Country.

Appreciation and recognition are major factors that motivate people to work harder and aim higher. NRDC awards recognise the efforts and creative talent of inventors thus making them more competitive and innovative in their field.

A total of nine awards have been announced for NRDC National Meritorious Invention Awards of the Year 2017 by the Prize Award Committee, chaired by Prof. Deepak Pental, Professor of Genetics & Director CGMCP, Delhi University, New Delhi.

The Cash Awards amounting to ₹ 23 Lakh were transferred in the Bank Accounts of the 28 Awardees. The Shields and Certificates were conferred on the Awardees of the year 2017 by Dr. Harsh Vardhan, the Hon'ble Union Minister for Science & Technology, Earth Sciences, Environment, Forests and Climate Change,



Fig. 10 NRDC Award Distribution Ceremony

Government of India, in the field of agriculture, environment, medical, health and engineering science during the TDB National Technology Day Awards Function on Technology Day, 11th May, 2018 along with TDB National Awards at VigyanBhawan, New Delhi.

The details of Award winners for the Year 2017 are as follows:

National Innovation Award Of The Year 2017

National Innovation Award 1: Waterless Chrome Tanning Technology (An Improved Chrome Tanning Process)

Dr. J. Raghava Rao, Dr. R. Aravindhan, Dr. G.C. Jayakumar, Dr. P. Thanikaivelan, Dr. B. Madhan and Dr. P. Saravanan of CSIR- Central Leather Research Institute, Sardar Patel Road, Adyar, Chennai, have been jointly awarded ₹ 5.0 Lakh (Rupees Five Lakhs only) for the development of, "Waterless Chrome Tanning Technology (An Improved Chrome Tanning Process)".

National Innovation Award 2: Low Cost Production of Autologous Cultured Skin for Grafting in Life Threatening Burns

ShriLakshmana Kumar Yerneni and Shri Rishi Man Chugh of Cell Biology Lab, National Institute of Pathology (ICMR), Safdarjung Hospital Campus, New Delhi, have been jointly awarded ₹ 5 Lakh (Rupees Five Lakhs only) for the development of, "Low Cost Production of Autologous Cultured Skin for Grafting in Life Threatening Burns".

National Societal Innovation Award of The Year 2017

National Societal Innovation Award 1: Low Cost Compostable Jute Sanitary Napkin with Natural Jute based Absorbent

Dr. Uma Sankar Sarma, Dr. Syamal Kanti Chakrabarti, Dr. Sandip Bose, Mr. Amal Chandra Deka, Mr. Sakshi Gopal Saha and Mr. A. R. Dewan of Indian Jute Industries Research Association, 17, Taratala Road, Kolkata and Dr. Subrata Gupta of Water Investigation and Development Department, Khadya Bhawan, Block-A, 5th Floor 11A, Mirza Ghalib Street, Kolkata, have been jointly awarded ₹ 3 Lakh (Rupees

Three Lakhs only) for the development of, "Low Cost Compostable Jute Sanitary Napkin with Natural Jute based Absorbent".

National Societal Innovation Award 2: Advanced Electrostatic Spraying Technology for Efficient Spraying of Agricultural Agrochemicals

Dr. Manoj K. Patel of Agrionics, CSIR-Central Scientific Instruments Organization, Sector 30 C, Chandigarh and Dr. C. Ghanshyam of Sanketika Institute of Technology and Management, PM Palem, Visakhapatnam, have been jointly awarded ₹ 3 Lakh (Rupees Three Lakhs only) for the development of, "Advanced Electrostatic Spraying Technology for Efficient Spraying of Agricultural Agrochemicals".

National Societal Innovation Award 3: Pole Climber & Tree Climbers

Shri N. Thirupatirao of Nannam Industries, 7-32-4 Vaddesangham, Kothapeta, Vetapalem, Prakasam, Andhra Pradesh has been awarded ₹ 3 Lakh (Rupees Three Lakhs only) for the development of, "Pole Climber & Tree Climbers".

National Budding Innovators Award of The Year 2017

National Budding Innovators Award 1: Eyerinator

Shri Jyoti Ranjan Sahoo, Student of College of Engineering and Technology, Bhubaneswar, Ghatikia Road, Kalinga Nagar, Bhubaneswar, Odisha, has been awarded ₹ 1 Lakh (Rupees One Lakh only) for the development of, "Eyerinator".

National Budding Innovators Award 2: ANIDERS (Animal Intrusion Detection and Repellent System)

Shri Abhay Sharma, Student of Amity University, Sector-125, Noida, Uttar Pradesh, has been awarded ₹ 1 Lakh (Rupees One Lakh only) for the development of, "ANIDERS (Animal Intrusion Detection and Repellent System)".

National Budding Innovators Award 3: Drushti

Shri Abhishek Sawant, Shri Abhijeet Prakash, Ms. Aishwarya S, Shri Shreyas Burde, Shri Rajat Bammigatti and Shri Sai kumar Dani, Students of KLE Technological University, BVB Campus, Idyanagar,

Hubballi, Karnataka, have been jointly awarded ₹1 Lakh (Rupees One Lakh only) for the development of, "Drushti".

National Budding Innovators Award 4: Development of FRP Repair Methodologies for Corroded and Leaking Steel Pipelines

Shri P. Nitheesh Kumar and Shri Vikas Sharma, Students of Indian Institute of Technology Bhubaneswar, P.O. Argul, Near Jatni, District Khordha, Odisha, have been jointly awarded ₹ 1 Lakh (Rupees One Lakh only) for the, "Development of FRP Repair Methodologies for Corroded and Leaking Steel Pipelines".

(iii) Intellectual Property Facilitation and Management and IPR Consultancy

In a knowledge driven economy, creation, acquisition, accumulation and application of Intellectual Property Rights are the most effective ways for any industry to enhance growth and competitiveness. The Intellectual Property Rights (IPR's) are now considered among the most valuable assets for the socio-economic growth of any country throughout the world. Our national IPR policy has also emphasized the importance of IPRs as a marketable financial asset and an important economic tool to aid the economic growth and development of our nation. Thus, it has become necessary to protect and commercialize our intellectual property in this competitive world.

The Corporation continued to provide financial, technical and legal support to protect inventions and technologies developed by various Universities, R&D Institutes and individual inventors etc. by filing patent applications in India and abroad during the year 2017-18.

The Corporation has been prosecuting a number of patent applications filed in India and abroad. The efforts of the Corporation have resulted in the grant of 30 patents in diverse fields like food, pharmaceuticals, mechanical, nanotechnology, agricultural sciences, sericulture, etc.

The various services provided and activities undertaken under this scheme are:

(a) **IP Protection:** During the year 2017-18, the Corporation in its pursuit of protection of inventions and technologies developed by scientists, researchers



and individual inventors has provided financial and technical assistance for filing of 25 patent applications received from various Universities, R&D Institutes individual inventors, etc. and commercialized 12 patented technologies.

The Corporation has been prosecuting a number of patent applications filed in India and abroad. The efforts of the Corporation have resulted in the grant of 30 patents in diverse fields like food, pharmaceuticals, mechanical, nanotechnology, agricultural sciences, sericulture, etc.

(b) Patent Search Facility: The Corporation has been catering to the requests received from various Universities, R&D Institutes and individual inventors etc for conducting the state of the art searches, the results of which are utilized for submitting research projects at university level so that the invention related to the R&D project should be novel and not a mere repetition of the R&D work already done. During the year 2017-18, 60 Prior Art Searches have been conducted by the Corporation.

(c) IPR Seminar/Workshop/Training: The Corporation has reached out to various institutions for creating awareness about the importance of protection of IP assets in the knowledge era by organizing four number of awareness programmes on Intellectual Property Rights and technology transfer across India. These programmes have been widely appreciated by all the delegates hailing from different sections of the society.

1.8 NRDC – Innovation Facilitation Centre (NRDC-IFC)

The Corporation under PIII DSIR Grants-in-Aid Programme has set up six NRDC – Innovation Facilitation Centres in the R&D Institutions, All India Institute of Medical Sciences (AIIMS), Ansari Nagar, New Delhi; Amity University Uttar Pradesh (AUUP), Sector-125, Noida, Uttar Pradesh; National Institute of Technology Silchar (NITS), Cachar, Assam; Indian Institute of Engineering Science & Technology, Shibpur (IIEST), Howrah, West Bengal; Gujarat Technological University, Ahmadabad, and at Indian Institute of Technology, Kanpur, Uttar Pradesh, across the country.

These centres are promoting innovations by carrying out various activities in the Universities,

NIT's, Autonomous Institutions & Academic Institutions and have organized 25 Seminars and Workshops on Innovation, Intellectual Property Rights and Technology Transfer in these Institutions and sensitized more than 800 students, research scientists and faculty members about the effective management of Intellectual Property and technology transfer related issues to fulfil the objectives of the NRDC-IFC Programme and guided the researchers, faculty and students to file about 40 IPs (Patent applications, Designs, Trademark and Copyrights).

1.9 MoMSME-NRDC Intellectual Property Facilitation Centre (Ipfc)

(i) MoMSME-NRDC IPFC, Bengaluru

NRDC Office at Bengaluru was setup in the year 1992 to liaison with the various R&D Organizations and large number of licensees in the Southern States of the Country. Presently, this Centre is located in the GKVK Campus of University of Agricultural Sciences, Bengaluru and is manned by only two permanent Staffs who are reporting to Chief-Business Development at NRDC Headquarters. The MoMSME-NRDC IPFC project started at Bengaluru during April 2012 and continues to sustain the activities as mandated in the project along with NRDC core mandate of providing services in area of intellectual property protection and technology commercialization.

The MoMSME-NRDC IPFC, Bengaluru had initiated talks with Indian Institute of Carpet Technology (IICT), Bhadohi for collaboration by way of signing Memorandum of Agreement (MoA) for providing intellectual property protection and technology commercialization services. During FY 2017-18, this MoA was entered into with IICT, Bhadohi and now the process is on for identifying the innovations for protection and commercialization from this institute.

The MoMSME-NRDC IPFC, Bengaluru was able to acquire onenew technical know-how for commercialization from CSR&TI, Mysuru and concluded fourteen license agreements with lumpsum premium earnings of ₹ 28.00 lakhs. Some notable technical know-hows licensed from the Bengaluru centre are Foliar Micronutrient Compositions for Cardamom & Black Pepper, Nata-de-Coco Production,

Ready to Eat Honey PaanBeeda, Rot-Fix, Aerobic Rice Variety and Anuksh-Silkworm Bed Disinfectant. The IP Facilitation Centre has processed two patent applications on consultancy basis earning total revenue of about ₹ 1.50 lakhs. The Centre has also collected royalties of ₹ 13.44 lakhs from various licensees located in South India during the FY 2017-18.



Fig. 11 NRDC signed Agreement with CIPAM, DIPP, Govt of India for Establishing the 3rd UN-WIPO-Technology Innovation Support Centre in India at NRDC-IPFC at Visakhapatnam

The IP Facilitation Centre has participated in many other technology promotional activities and IPR Awareness Programs organized in South India. Guest lectures were delivered in many of these programs on technologies/processes ready for commercialization and also on intellectual property rights for creating awareness on the various tools available for protection. The Centre has the necessary infrastructure to facilitate and guide innovators and inventors from industry, academia, R&D, etc. for patent searching, patent analyzing, filing of IP protection, etc. of their inventions.

(ii) MoMSME-NRDC Intellectual Property Facilitation Centre (IPFC), Vishakhapatnam

The Corporation in collaboration with the Ministry of Micro Small & Medium Enterprise, (MoMSME) Govt. of India has established an Intellectual Property Facilitation Centre (IPFC) at Vishakhapatnam, Andhra Pradesh. This is the first of its kind in the state of Andhra Pradesh with an objective to boost

IP culture, IP promotion and IP commercialisation in the region. The objective of NRDC IPFC is to foster start-up ecosystem and also to promote technological innovation, protect intellectual property rights and its commercialisation in the region in view of the growing industrialization in this region.

The NRDC-MoMSME Intellectual Property Facilitation Centre (IPFC) was inaugurated by Shri Y.S. Chowdary, the then Hon'ble Union Minister of State, Ministry of Science & Technology and Earth Science, Govt of India. IPFC is closely working with various stakeholders including MSMEs, academia, start-ups, R&D institutes and industries and PSUs in the state to identify potential innovations/inventions which could be patented and commercialized by NRDC. The establishment of the 3rd Technology and Innovation Support Centre (TISC) also has been approved by the World Intellectual property Organisation (WIPO) and Department of Industrial Policy and Promotion (DIPP), Govt. of India at NRDC IPFC Visakhapatnam. The objective of NRDC IPFC is to foster start-up ecosystem and also to promote technological innovation, protect intellectual property rights and its commercialisation in the region in view of the growing industrialization in this region.

Patent Assistance

NRDC IPFC provided technical support for filing of seven patent applications. The IPFC also facilitated for filing of five trademark applications.

Patent Search Facility

The NRDC IPFC has been providing service in patent information and its novelty assessment through patentability search, which is an electronic access window on global patents. The patent search facility enables scientists, MSMEs, investors or business managers to identify and source patents and trademarks which can be used to provide a state-of-the-art technology survey; for world-wide tracking of technological advances or to monitor a competitor's R&D and marketing strategy. The Centre conducted 13 patent searches in 2017-18 and this service is also being offered to industries, providing bibliographic references and abstracts from published literature,



Fig. 12 (a)



Fig. 12 (b)

business information and financial data, text of articles, trade statistics and other relevant business information. This diverse range of information services helps MSMEs, academia and industries to track technologies, get a global overview of the technological competition in their business, research and to obtain background information on sources of technology.

1.10 Promotion of Innovation in North-East & Rural Area

The Corporation with an objective to create employment opportunities and capacity building of development agencies for skill up-gradation through the application of innovative technologies in North East and Rural Areas carried out the following activities during 2017-18

1. EDP on "Skill training on brass melting furnace for production of brass artefacts, home decor items and ornaments." in association with National Metallurgical Laboratory CSIR-NML, Jamshedpur- 831007 and about 40 candidates were benefited during this programme.

2. EDP on "CSIR-NEERI Zar-Low cost water purification system" implemented in association with SHRISTI F-12, First Floor, Vikaspuri, New Delhi-110018. EDP was conducted at ITI, Rangpo, NH-10, Mining, Rangpo, East Sikkim and about 53 participants were benefited during this programme.
3. EDP on "Training on Hand Made Paper" implemented in association with Grameen Sahara Kuls Road, Chhaygaon, Kamrup, Assam-781124 EDP was conducted at North East Institute of Science and Technology (CSIR-NIEST), Jorhat, Assam and 10 candidates were benefited during this programme.



Fig. 13

1.11 Programme For Development of Technologies for Commercialisation (PDTC)

The programme aims to add value to the lab-scale technologies developed by the universities/research institutes/organizations, dissemination of the information and promotion of entrepreneurship development and appropriate innovative technologies in rural and north-east regions. Under this scheme the Corporation carried out various activities like Development of Innovation Portal, Value addition through preparation of Basic Engineering Design Package (BEDP), Market Surveys, and dissemination of information through exhibitions/seminars/workshops etc., promotion of indigenous technologies abroad through showcasing of indigenous technologies. The various programmes undertaken in this scheme are:

1.1.2 Technology Value Addition

(i) Basic Engineering Design Package (BEDP)

The preparation of Basic Engineering Design Package carried out by the Corporation is a very important value addition activity for laboratory scale technologies. The package provides information on the plant and equipment, raw material and the product, etc. which helps the entrepreneurs in decision making as well as implementation of the project. It requires a detailed study for working out the final process scheme, which can be obtained through series of simulation of the laboratory scale process and then incorporating required engineering input so that the process is workable. Once the BEDP is prepared based on the data the feasibility study and Detailed Project Report (DPR) can be prepared. With these reports it becomes easy for the entrepreneur to carry out detailed engineering for setting up the commercial plant. The reports also help the Corporation in planning for marketing of its technologies.

During the year, BEDP on the following technologies were conducted through professional empanelled consultants:

1. entbucridine- local Anaesthetic
2. Retort pouch processed foods

(ii) Market Surveys

Market surveys have considerable significance in the process of technology transfer. It provide information on the size of market, competitive products and helps the entrepreneur to take a decision, plan for production programme, sizing of the capacity of the proposed plant, penetration of the product in the market, etc. During the year 2017-18, market surveys on the following 14 technologies were conducted through professional empanelled consultants.

- Centbucridine- local Anaesthetic
- A novel formulation of 219/C002 for the Prevention & Treatment of Glucocorticoid induced Osteosarcopenia
- Methacrylic Acid Copolymer. Type A USP/NF
- Crospovidone

- Instant Products from moringa
- Honey Powder
- Bottling of sugarcane juice/spread
- Functional beverages- (Banana pseudo stem beverage, preserved/bottled sugarcane beverage, Custard apple beverage, Nutri-beverage, Noni RTS beverages)
- Nutraceutical supplements for Acidity, Asthama, Constipation, Calcium iron, Aphrodisiac and Galactagogue
- Pothole repair machine
- Earthquake Warning System
- Ceramic Biomedical implants
- Mercury free water purification UV lamp
- Production of ferrite and pigment grade high purity monodispersed iron oxide from waste chloride pickle liquor and other iron rich sources

(iii) Exhibitions and Publicity

Participation in exhibitions, seminars, workshops and entrepreneurship development programs are of vital importance for the creation of awareness about the activities of the Corporation and the role of the Corporation in technology transfer and technologies available with the Corporation for transfer. With this objective in view, the Corporation participated in 20 exhibitions in India organized by various agencies

(iv) Publications

NRDC continued to bring out its regular publications – Awishkar (Hindi S&T monthly Magazine) and Invention Intelligence (Bi-Monthly English S&T Magazine). The main objectives of the magazines are to disseminate information and create awareness about new technologies, inventions, innovations, IPR issues, etc. amongst the masses and foster the spirit of inventiveness, innovativeness and entrepreneurship in the country.

During the year some of the important topics covered in Awishkar were: Wave Energy; Ozone Layer; Nobel Prize Series-India (2018); 60 Years of space Voyage; 3-D Printing in Medical Care; Innovative Healthcare Technologies; Jaipur Foot; Public Health and Patent; Nuclear Magnetic Resonance; Micro



surgery; Storage of Information through Light; Innovate India-2017 report; Floating Solar Panels; and Top Science Stories (2017).

During the year focused issues on Healthcare Technologies; Environment; Stephen Hawking were brought out. Interview of Dr. Girish Sahni, Director General, CSIR and Secretary, DSIR, Government of India was also published in the May 2017 issue.

During the year some of the important topics covered in Invention Intelligence were: Paris Agreement; Green Technological Innovations of Indian Start-ups and SMEs promoted under GEF-UNIDO-MoMSME Initiative; Innovate India-2017 report; Micro-machines; Wave Energy; Cutting-edge Advances in Prostheses; Lessons in Sustainability from Grassroots Innovators; Agricultural Innovations; Karnataka Rice Hybrid-4; Nobel Prizes in Science-2017; Floating Solar Green Energy; Polymetallic Nodules; Plastic Solar Cells; Offsite Construction Technologies; Artificial Intelligence and IPR Issues; Big Data, Mass Spectrometry; Festival of Innovation and Entrepreneurship at Rashtrapati Bhawan.

List of other Publications

- Technologies from India for Promotion of Entrepreneurship, Incubation, Start-ups, SMEs in Africa
- NRDC Executed Pilot Research Project on Tomato Production in Ghana
- NRDC Annual Report (2016-17)

1.13 Human Resource

The real asset of any company is its human resource. The total regular manpower of the Corporation as on 31st March, 2018 was 62 viz. (Group A-27, Group B-14, Group C-16 and Group D-5) and 22 contractual engagements (viz 15 technical + 7 Non-technical). The representation of reserved category of regular employees as on 31st March 2018 stood at SCs (30.64 % - (19 employees) ST (3.2 % - 2 employee) OBC (3.2 % - 2 employees), PwD (3.2% - 2 employees), ESM NIL (No employees) and women representation (17.7 % - 11 employees) and Minority Community (6.4% - 4 employees) respectively. The Corporation is following all the instructions and Govt. directives relating to reservation of the above categories issued

from time to time. In some areas, their representation could not be brought to the prescribed levels due to non-filling of vacant posts and the continuing rationalization of existing manpower. The employee-management relationship was cordial throughout the year.

1.14 Human Resource Development

Training and development of all levels of employees was given due priority by the Corporation to increase effectiveness. Special emphasis was given to organization 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 09 officials of the Corporation were deputed to various training programmes to many Institutes including ICAI, Delhi and NIAS, IISc, Bengaluru, ASCI Hyderabad for enhancing the career prospects of its employees and also to further develop their skill in different areas of management, communication, vigilance and advancement of technology.

The thrust for better utilization of Human Resources and improvement in work practice continued during the year.

1.15 Right to Information (RTI)

Under the provisions of section 4 of the Right to Information Act, 2005, every public authority is required to display necessary information to citizens to secure access to information under the control of public authority in order to promote transparency and accountability in its working and functioning.

NRDC, being a responsible Public Sector Undertaking, has displayed essential information on its website under the head RTI. The management has notified APIO, PIO, Transparency Officer and the First Appellate Authority (FAA) in compliance with the requirements of the RTI Act. Between April 01, 2017 and March 31, 2018, a total of 35 applications were received by the Company and all of them were disposed off by providing requisite information as per rules. Apart from RTI applications, the Company also received 08 appeals against the information provided, which too were duly attended to and appropriately disposed off

by the First Appellate Authority. It is pertinent to note that Central Information Commission has not passed any adverse order against the PIO/FAA.

1.16 Technology Absorption, Adaptation and Innovation

Being a Section 8 company under Companies Act 2013, while a major objective of the Corporation is the promotion, development and commercialization of indigenous technologies, the Corporation itself does not carry out any R&D. However, it promotes and provides limited finances assistance for R&D on a meritorious & need basis to both laboratories and industries.

As the Company's operations do not involve any manufacturing or processing activities, the particulars required under Section 134(3)(m) of the Companies Act, 2013 read with Rule 8(3) of the Companies (Accounts) Rules, 2014 regarding conservation of energy and technology and absorption are not applicable.

1.17 Implementation of Official Language

The Corporation continued to make efforts to fulfill the targets prescribed by Govt. of India in the Official Language Act and Rules framed there in with regard to increase the use of Hindi Rajbhasha in office during the year 2017-18. Employees were motivated to use their working knowledge of Hindi in day to day official work. All the Standard Forms, Files etc. are bilingual. Significant progress has been made in the field of correspondence, noting and drafting in Hindi. All Hindi letters are being replied in Hindi only. 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 popularize the use of Hindi, the Corporation organized a "Rajbhasha Pakhwara" (14-30 September 2017). During the Pakhwara Hindi Noting & Drafting, Letter writing and Hindi Poetry competition was organized & cash awards were given to the winners Cash Awards were also given to employees under "Rajbhasha Incentive Scheme". Three Work Shops on Hindi Unicode was organized for making the Hindi work more comfortable in computers

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.

2. CENTRAL ELECTRONICS LIMITED

2.1 Introduction:

Central Electronics Limited (CEL) is a Public Sector Enterprise under the Department of Scientific and Industrial Research (DSIR), Ministry of Science & Technology, Government of India. It was established in 1974 with an objective to commercially exploit indigenous technologies developed by National Laboratories and R & D Institutions in the country. CEL is one of the companies that utilized home grown technologies during all these years of its existence. The Company is primarily engaged in production of strategic components for defence applications of national importance, equipment for railway safety and solar photovoltaic modules and systems.

The Company has developed a number of products for the first time in the country through its own R & D efforts and in close association with the premier National & International Laboratories including Defense Laboratories. In recognition of all these efforts, CEL not only have the distinction of being a DSIR recognized R & D Company, but also has been honored a number of times with prestigious awards including "National Award for R & D by DSIR".

CEL has already established partnerships and linkages with various stake-holders and business associates in the areas of railways, telecom, police, power generation and distribution companies,



Fig. 14



Public Sector Enterprises

service providers in the energy sector, public funded institutions and even rural communities through the state governments. The existing marketing channels are being consolidated and expanded harnessing the unique advantage CEL has experienced manpower in terms of its product base and PSU status.

The renewed mandate of CEL includes development and harnessing technology for (i) Solar Energy Systems and Solutions (ii) Strategic Electronic Components and systems required for Defense, Space, Atomic Energy. (iii) Signaling and Safety in Public Transport Systems (iv) Infrastructure, Eco-systems management and energy conservation and (v) Security and Surveillance in strategic establishments. CEL has been the pioneer in the country in the different areas of manufacturing & proprietary manufacturer of the many strategic electronic components for use by defense organizations in the country.

2.2 Operating Results

The performance of the Company during the financial year 2017-18 is as under:-

Year	(Rs. in Crore)	
	2017-18	2016-17
Production	211.05	302.59
Sales	221.27	291.97
Gross Margin	36.89	31.88
Gross Profit	32.77	27.36
Profit Before tax (PBT)	13.37	20.91
Net Profit after Tax (PAT)	21.70	16.82

2.3 Major Achievements (2017-18):

- The Company has achieved production of ₹ 211.05 Crore and turnover ₹ 221.27 Crores
- The Microwave Electronics Division (MED) - achieved sales of ₹ 86.16 Crore and production of ₹ 81.01 Crore in 2017-18. The Company has sold 60287 Nos. of Phase Control Module (PCM's) to Bharat Electronics Ltd.(BEL) Ghaziabad during the financial year 2017-18

- The Company has achieved the Gross Margin of ₹ 36.89 Crore against ₹ 31.88 Crore in the previous year
- The Net profit after tax was ₹ 21.70 Crores against ₹ 16.82 Crores in the previous year
- There is no comments from Statutory Auditors' Report on the Accounts of the Company for the financial year ended 31st March, 2018 and the Company has received NIL comments on accounts for the year ended 31st March, 2018 by the Comptroller & Auditor General of India
- During the year under review, to encourage employees at all levels, the Company has paid all outstanding arrears of 1997 wage revision to the employees of the company
- The Company has implemented pay revision Board and Below Board Level executives & Non-Unionized Supervisors(if any) w.e.f. 01.01.2017 as per the DPE Guidelines

Company has taken up R&D projects in key areas such as:

- (a) Development of a range of solar applications including smart trees, flexible solar panels, BIPV solutions, portable power plants etc.
- (b) Development of high efficiency solar cells.



Fig. 15 (Dr. Nalin Shinghal Chairman & Managing Director, CEL receiving 15th National Award for excellence in Cost Management from Sh. Piyush Goyal Hon'ble Union Minister for Coal, Railways and other dignitaries)

(c) Upgradation of existing products of Railway Signaling systems and development of new products.

- Development of a range of components & sub-systems for defense requirements

2.4 Swachh Bharat Abhiyan

The Company has implemented Swachh Bharat Abhiyan whole heartedly. Regular cleaning drives are taken up with participation of all employees for cleanness of both inside and outside of the factory premises. During the year under review, the Company has contributed to ₹12.00 Lakhs to Swachh Bharat Kosh under CSR programme.

2.5 Future Strategy

Future Outlook & Vision 2020

All the four areas that the Company operates in (viz. Solar Photovoltaic, Railway Signaling systems, Integrated Security & Surveillance Systems and Defense Electronics) are Per-Se high growth, core sector areas.

Solar Photovoltaics (SPV)

The Government of India has increased the target for implementation of renewable energy under National Solar Mission to 175 GW by the year 2022. The Company is making efforts to enhance solar PV business in Off-Grid/Grid Interactive Power Plants Defence sector, educational institutions etc. under National Solar Mission directly as well as through channel partners. The "Swachh Bharat Abhiyan" has a big requirement of solar powered water pumping systems in the remote areas of the country. Government of India is also focusing on implementation of Solar Water Pumping all over India.

Railway Safety & Signaling Systems

CEL had been engaged in design and manufacture of Railways signaling equipment such as Analog and Digital Axle Counters & Block Signaling Equipment for last 30 years.

Indian Railways is planning major investment in the area of safety as well as capacity enhancement/ new lines. This is expected to result in a huge demand for signaling

and control equipments. CEL is working towards further developing its own R&D as well as production facilities in these areas, with support from the DSIR.

Strategic Electronics

CEL is involved in the development & production of strategic electronic components such as Phase Control Modules (PCMs) for the Radar systems, Piezo fuse assemblies for High Explosive AntiTank (HEAT) ammunition. The Company has signed ToT agreement with DRDO/DMRL for Ceramic Radome for Seeker Missiles. The Company is also making all efforts to further expand the product portfolio through various new products which are under development such as DivyaNayan (CSIO Project), Laser Virtual Fencing Systems (LASTEC), Electronic Fuse Assembly (OFB), Bullet Proof Jacket (Indian Army & Paramilitary forces) etc.

Integrated Security Systems

The current security scenario in the country has made security systems (Including Baggage Scanners, DFMDs surveillance equipment, intelligent systems, Bomb detection and disposal equipment etc.) a very high growth area. There is a need for reputed and reliable Public Sector entities in these areas. The Company is focusing on this area as an important business segment for future growth.



Fig. 16 CEL Officials receiving SKOCH "Evergreen Gold Award for development of Innovative Solar Applications"

2.6 Foreign Exchange Earning and Outgo

During the year under review, the Company has spent Rs 15.04 Crore in foreign exchange as against ₹ 29.88 Crore in the previous year towards purchase of raw material, components and spares, capital goods, travel and agency commission etc. The Company had



earned foreign exchange of ₹ 2.12 Crore as against ₹ 2.21 Crore in the previous year from export of its products.

2.7 Conservation of Energy

The Company continues its efforts to reduce energy consumption with the Objective of optimal use of energy resources and cost reduction to the Company. Keeping as the philosophy that "ENERGY SAVED IS ENERGY PRODUCED", the Company has installed and commissioned multiple in-house Solar Photovoltaic Power Plants having total capacity of 1.2 MWp. The renewable energy portion in total electricity consumption has been increased upto 52% during March, 2018.

The Company became the first consumer in UP to install net-metering at 33 KV supply voltage. The net



Fig. 17 Solar Railway Platform Shed Commissioned by CEL at Sahibabad Railway Station.

metering system for the 1.2 MWp solar photovoltaic power plants installed in CEL exports its surplus electricity generated through the solar power plants to UPPCL grid. Further the company has drastically reduced the diesel consumption in comparison of previous year.

2.8 Particulars of Employees

In compliance with Section 217(2A) of the Companies Act, 1956 read with Companies (Particulars of Employees) Rules, 1975 as amended, none of the employees of the Company either employed throughout the year or employed for a part of the year was in receipt of remuneration more than that minimum prescribed in the Rules.

2.9 Implementation of Hindi, Industrial Relations

The Company continues to implement the Official Language policies of the Government through motivation and incentivization. Employees were imparted training in usage of Hindi in computer applications. A Hindi month has also been organized from 14 Sep. 2017 to 13 Oct. 2017.

During the Hindi month, competitions in Hindi, in the areas of General Knowledge, Poetry & Hindi Speech were organized for workers and Officers belonging to Hindi and non-Hindi areas. In-House Hindi Magazine named "Hamara CEL" is also published. The Annual Report of the Company is also regularly published in diglot form in compliance of DPE guidelines and employees are encouraged to use Hindi in official correspondence.

2.10 Welfare of Reserved Categories:

All Government directives relating to the reserved categories such as SC, ST, Physically Handicapped, Ex-Servicemen etc. are followed by the Company.