



AN OVERVIEW

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AN OVERVIEW

1. INTRODUCTION

The Department of Scientific and Industrial Research (DSIR), one of the departments of the Ministry of Science and Technology, was set up through a Presidential Notification, dated 4th January, 1985 (74/2/1/8 Cab.). The mandate of DSIR includes promotion of industrial research for indigenous technology promotion, development, utilization and transfer.


The Allocation of Business for the Department is as follows:

- All matters concerning the Council of Scientific and Industrial Research (CSIR).
- All matters relating to National Research Development Corporation (NRDC).
- All matters relating to Central Electronics Limited (CEL).
- Registration and Recognition of R&D Units.
- Technical matters relating to UNCTAD and WIPO.
- National register for foreign collaborations.
- Matters relating to creation of a pool for temporary placement of Indian Scientists and Technologists.

The primary endeavour of DSIR is to promote R&D by the industries; support industrial units to develop state-of-the-art globally competitive technologies of high commercial potential; catalyze faster commercialization of laboratory-scale R&D; augment technology transfer capabilities; enhance the share of technology intensive exports in overall exports; strengthen industrial consultancy and establish a user-friendly information network to facilitate scientific and industrial research in the country. The DSIR has two public sector undertakings viz. National Research Development Corporation (NRDC) and Central Electronics Ltd (CEL) and two autonomous organizations viz. Council for Scientific and Industrial Research (CSIR) and Consultancy Development Centre (CDC). The Department also provides host facilities and assistance to Asian and Pacific Centre for Transfer of Technology (APCTT) as the focal point in the country.

2. DSIR PROGRAMMES

The Technology Promotion, Development and Utilization (TPDU) Scheme in 11th Five Year Plan was aimed at promoting technology development and industrial research in the country and encouraging its utilization by various sections of economy including industry, academic/research/scientific institutions and the society at large. The components of the TPDU programme were:

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- Industrial R&D Promotion Programme (IRDPP)
 - Technology Development and Demonstration Programme (TDDP)
 - Technopreneur Promotion Programme (TePP)
 - Technology Development Utilization Programme for Women (TDUPW)

During the 12th five year plan, the DSIR has initiated four schemes focusing on innovations, after the recommendation of the Steering Committee on Science and Technology, in-principle approval of the planning commission and approval of the Standing Finance Committee have been obtained. The four schemes are :

- (i) Promoting Innovations in Individuals, Start-ups and MSMEs (PRISM) – This scheme focuses on supporting individual innovators, start-up companies, incubatee companies in public funded technology business incubators and MSMEs besides supporting the approved 11th Plan projects related to Technopreneur Promotion Programme (TePP) spilling over from the 11th five year plan.
- (ii) Patent Acquisition and Collaborative Research & Technology Development (PACE) – This is a new scheme focusing on technology acquisition and its development and demonstration for commercialization.
- (iii) Building Industrial Research & Development and Common Research Facility (BIRD-crf) – This is a new scheme which focuses on creation of common research facilities for micro and small enterprises and subsumes components of the 11th Plan scheme, viz., Industrial R&D Promotion Programme, Information Technology and e-Governance (ITeG) and Asian and Pacific Centre for Transfer of Technology (APCTT).

- (iv) Access to Knowledge for Technology Development and Dissemination (A2K+) – This is a new scheme focusing on facilitating access to scientific journals by in-house R&D units of industry and Scientific and Industrial research Organizations (SIROs). The scheme subsumes the 11th Plan component scheme on Technology Development and Utilization Programme for Women (TDUPW) and DSIR Building and Infrastructure. Besides, the scheme supports the approved 11th Plan projects related to Technology Development and Demonstration Programme (TDDP) spilling over from the 11th five year plan.

Present report includes only the committed liabilities of 11th Plan Technology Promotion, Development and Utilization (TPDU) Scheme.

2.1 Major Achievements

The major achievements of the various programmes of the Department during the period under report are as under:

2.1.1 Access to Knowledge for Technology Development and Dissemination (A2K+):

The twelfth five-year plan scheme of A2K+ has been evolved on the premises that access to knowledge is one of the most desirable inputs for any entrepreneur, innovator conceptualizing a business model to establish or run a company for wealth creation through innovative R&D interventions. The scheme includes the following programme components:

New Programme

- (i) Access to knowledge for Industries and Institutions
- (ii) Industrial Technology related studies (A2K+ Studies)
- (iii) National and International conferences, exhibitions (A2K+ Events)



On-going Programme

- (iv) Technology Development and Utilization Programme for Women (TDUPW)
- (v) Technology Development and Demonstration Programme (TDDP)

The A2K+- Events programme of DSIR provides a platform for exchange of views leading to useful insights on issues relating to industrial research and technological innovation. The programme supports the organization of workshops, interactions, training programmes, exhibitions and other events to facilitate industry, consultancy organizations, academic and research institutions in identifying and developing tools and techniques to remain competitive in today's business climate.

The main objective is to provide a platform for exchange of views and sharing of useful insights and learnings from industry, academia, consultancy and research organizations. These events aim at increasing awareness and capacity building of stakeholders in various facets of industrial research and innovation, leading to strengthening of technological capabilities and competitiveness.

During the year 107 proposals were received from different agencies to organize workshops, stakeholder meetings, interaction meets, training programmes, exhibitions and other events on topics related to promotion of industrial research and innovation.

Under Technology Development and Demonstration Programme (TDDP) in operation since 1992, the department has supported 254 R&D projects of Industrial units with a total project cost of Rs. 750.60 crores in which DSIR support is Rs. 280.40 crores. The projects cover a number of industry sector and the share of these industry sectors in the project supported is: 32% engineering; 27% electronics; 21% Chemical; 7% energy and waste utilization and 13% Health & Pharma. The projects supported have

been spread over 22 states of the country and the share of top five states in the number of project supported is: Andhra Pradesh 18%, Karnataka 15%, Maharashtra 13%, Delhi 10% and Tamil Nadu 10%.


76 technologies developed under the scheme have been commercialized and the department has received a cumulative royalty of around Rs.33.77 Crore during 1997-2015. In the current financial year, progress of 31 projects was monitored and 15 projects were successfully completed.

2.1.2 Promoting Innovations in Individuals, Start-ups and MSMEs (PRISM)

PRISM (Promoting Innovations in Individuals, Start-ups and MSMEs) scheme aims at to support individual innovator which would enable to achieve the agenda of inclusive development – one of the thrust area of XIIth five year plan (2012-2017). It would also provide support to autonomous institutions or organizations or to society registered under the Societies Registration Act, 1860 or Indian Trusts Act, 1882 or other statutes leading to development of state-of-art new technology solutions aimed at helping MSME cluster units.

The proposals shall preferably be considered in the following focus sectors: Green technology, Clean energy, Industrially utilizable smart materials, Waste to Wealth, Affordable Healthcare, Water & Sewage Management and any other technology or knowledge intensive area.

The financial assistance under the programme may vary from Rs. 2.00 lakh to Rs. 50.00 lakh. The department has also successfully completed 10 on-going TePP projects supported during 11th five year plan. Some of the successfully completed projects are Bullock drawn improved multi crop seed cum fertilizer drill, Indian sink utensils washer, Design and development of Fresnel moulds, lenses and goods, Single spring mounted suspension type extendable width cultivator (STF Ph-II), An improved Oropharyngeal airways, Computer interfaced Hi-fidelity affordable mannequin for



Effective CPR (Cardiopulmonary Resuscitation) training, Automated garment dyeing, chemical washing and effluent treatment wet processing machine for cotton textiles and cotton garments, Episomal self amplifying mammalian expression (eSAME) system for expression of recombinant proteins and RNA molecules, and so on.

The financial assistance was extended to 13 individual innovators for their innovation centric project proposals during 1st January – 31st March 2015. The details are as follows:

- i. Baby pee foretelling and alerting system
- ii. DTMF (Dual Tone Multi frequency) Control Logic for Automobile Wind Shield Wipers & Washers
- iii. Development of OBU for in cab signaling and control of trains
- iv. Innovative energy saving furnace with recuperator
- v. Development of Novel DIVA ELISA Kit for detection of Paratuberculosis Infection – a major threat in Animal Husbandry
- vi. Development of Kits for Direct-PCR Amplification of Plant DNA
- vii. Removing particulate matter from engine exhaust without increasing back pressure
- viii. Partial replacement of sand by foundry waste to make M30 grade concrete
- ix. Geysers Daan
- x. Solar powered portable cardiac monitoring unit (4 in 1)
- xi. Design, development and performance evaluation of Eco-Trapin-3: Waterless Urinal technology

- xii. Improving the Existing laser tag to make it suitable for a varied spectrum of application
- xiii. Efficient composting of bio-degradable wastes through Mesophilic Aerobic Rapid Composting (MARC) method

2.1.3 Common Research and Technology Development Hubs (CRTDHs).

Keeping in view the need for promoting new product development activities by industry, enhancing translational research and fostering industry-institute interaction leading to growth of innovative capabilities in the country, a programme aimed at creation of Common Research and Technology Development Hubs (CRTDHs) has been started.

The CRTDHs are being set up to enable industries to have access to state-of-the-art equipment, research facilities and expertise available in R&D institutions to facilitate them to take up new/improved product/process development and skill enhancement activities, and also help in converting research outputs into products. During the current year, the Department is in the process of setting up of 2 hubs in the sector of Affordable health at CSIR-IHBT, Palampur and CSIR-CCMB, Hyderabad and 1 hub in the sector of Environmental interventions at CSIR-NIIST, Thiruvananthapuram. The facilities available under the hubs for use by the MSEs/Innovators have been uploaded on the websites of the respective institutes and call for proposals from MSEs to work in the CRTDH have been made. The centres shall be operated on a cost plus non-commercial basis and are evolving a business model for self-sustainability.

2.1.4 Industrial R&D Promotion Programme.

DSIR is the nodal Department for granting recognition to in-house Research and Development centres established by corporate industry. As on 31st December, 2015, there were 1800 in-house R&D



centres with DSIR recognition of these, 99 companies incurred an annual expenditure of over Rs. 50 crores each, 488 companies incurred an annual expenditure in the range of Rs. 5 crore to Rs. 50 crores and 435 industries incurred an annual expenditure in the range of Rs. 2 crore to Rs. 5 crores. During the period under report, 161 in-house R&D centres were accorded fresh recognition and recognition of 554 centres was renewed.

Under the e-governance initiative of DSIR, department invites online applications for Industrial R&D Promotion Programme for greater accessibility and transparency of the department programmes/schemes. Department upload the barcode generated certificates for recognition, registration and its renewal of in-house R&D units of industries, Scientific & Industrial Research Organizations and Public Funded Research Institutions. Department is making efforts to make this programme paper less in future.

Scientific research foundations in the areas of medical; agriculture; natural and applied sciences; and social sciences seek DSIR recognition and registration as Scientific and Industrial Research Organisations (SIROs) under the programme granting recognition to SIROs. The registered SIROs are eligible for availing customs duty exemption on imports and central excise duty exemption on indigenous purchase of essential scientific and technical instruments, apparatus, equipment (including computers), accessories, spare parts thereof and consumables, required for R&D activities. During the period under report, 43 SIROs have been accorded fresh recognition.

Secretary, DSIR, Ministry of Science and Technology, is the Prescribed Authority to certify expenditures where higher rate of depreciation is to be allowed for the plant and machinery installed for the manufacturing of products using indigenous know-how as per provisions of rule 5(2) of IT Rules. During the year under report, certificate was issued to one company by DSIR.


Certificate for claiming excise duty exemption under Notification No. 13/99-CE dated 28th February 1999 was issued to M/s Apex Laboratories Pvt Ltd., Chennai for Sodium fusidate 2% cream embedded with a Biopolymer for patent on 'Sodium fusidate 2% medicinal cream containing fusidic acid which itself is made by in-situ conversion of sodium fusidate under oxygen free environment, incorporating a biopolymer in the form of Chitosan'. The product has superior ultra fine particles size which enables easy penetration enabling faster healing.

DSIR is the nodal Department for registration of public funded research institutions (PFRI), universities, IITs, IISc and NITs, for availing customs duty exemption and central excise duty exemptions under notifications 51/96-Customs and 10/97-Central Excise. During the period under report, 9 such institutions were newly registered with DSIR; and 70 institutions were granted renewal of registration.

Secretary, DSIR is designated as the Prescribed Authority under section 35(2AB) of Income-tax Act, 1961. Fresh approvals were accorded to 121 companies by the prescribed authority. Agreements of co-operation for R&D were also signed with these companies. The detailed R&D expenditure of the approved companies have also been examined by DSIR and 334 reports valued at Rs. 9828 crores have been forwarded to DGIT (E) in Form 3CL, as required under the IT Act.

2.1.5 Asian Pacific Centre for Transfer of Technology (APCTT).

The Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology (MOST), Government of India has been the national focal point of APCTT since its inception in 1977. Matters pertaining to the APCTT and UN-ESCAP are dealt with in cooperation with the Ministry of Commerce and Industry and the Ministry of External Affairs, Government of India. DSIR also plays an active role in APCTT's functioning,



particularly relating to its programmes and policies. India being the host country has been providing institutional support to APCTT.

Institutional support of US\$ 200,000 in Indian Rupees (to meet local costs) for the period (2014-2015) is expected to be paid to APCTT in addition to funding for building repairs, renovation work, and municipal taxes. DSIR has also extended programme support towards the APCTT project entitled, “Promotion of National Innovation Systems (NIS) in Countries of the Asia-Pacific Region – Phase II”.

A Technical Committee comprising of experts nominated by the governments of APCTT member countries has been advising APCTT on the formulation of the programme of work and on technical matters concerning the operations of APCTT. The 11th Technical Committee of APCTT was held at New Delhi on December 17, 2015 and was attended by representative of DSIR.

It is also stipulated that the Centre shall have a Governing Council consisting of a representative designated by the Government of India and no fewer than eight representatives nominated by other members and associate members of ESCAP elected by the Commission. The members and associate members elected by the Commission shall be elected for a period of three years, but shall be eligible for re-election. The members of APCTT’s Governing Council for the period 2014-2017 are Bangladesh, China, Fiji, India, Indonesia, Islamic Republic of Iran, Malaysia, Pakistan, Philippines, Republic of Korea, Samoa, Sri Lanka, Thailand and Viet Nam. The 11th Governing Council held at New Delhi, India on December 18, 2015 and was attended by representative of DSIR.

2.1.6 Information Technology and e-Governance.

IT-eG division implements e-Governance in the Department progressively that needs to be in

conformance to the National eGovernance Action Plan. IT-eG Division operates on a separate IT Budget Head that came into effect in DSIR since FY 2004-05 for the implementation of an IT Action Plan.

The DSIR Website has been made compliant to the Guidelines for Indian Government of Websites (GIGW). The website has been regularly updated.

A project entitled ‘Design, Development, Implementation of Enterprise Application and Maintenance Support Services for DSIR’ is ongoing. The project has two RFPs, ie. RFP1 includes Enterprise Integration, Program Implementation and eService Delivery and RFP2 includes Office Automation Solution, Workflow Management, Record Management, and Data Warehousing. Most of the programmes / modules have been made functional under the ERP project and are being reviewed regularly. Hands-on-Training is being imparted to the DSIR employees for use various modules developed and gone live. Third party security audit of the said ERP project has been completed by the CERT-In empanelled consultant.

An e-Book on DSIR Activities and Achievements (including CSIR, CDC, CEL and NRDC) has been prepared and uploaded on the DSIR Website.

2.1.7 Patent Acquisition and Collaborative Research and Technology Development (PACE).

The scheme Patent Acquisition and Collaborative Research and Technology Development (PACE) aims at facilitating acquisition of early stage technologies from academic and research institutions, including industry and other sources in India and abroad by Indian industries on an exclusive or a non-exclusive basis with a view to manufacture “Made in India” products. The scheme also aims at supporting up-scaling of a lab-scale technology for development and demonstration of innovative products and processes that can be commercialized.

Following activities were completed or were in progress during the year under report:



- Efforts were continued with agencies such as CSIR-Tech for facilitating technology acquisition to SMEs.
- Seven technology development and demonstration projects from industries and collaborating partners (public funded Indian R&D organizations/ academic institutions/ universities) were monitored during the year. These projects involved a total project cost of Rs. 4148.68 Lakhs for which, DSIR extended a support of Rs. 1329.50 Lakh as loan to industry and Rs. 202 Lakhs as grant to collaborating partners.
- Four technology development and demonstration projects from industries and collaborating partners, recommended by the TAC were at various stages of approval. These projects involved a total project cost of Rs. 2583.05 Lakhs for which, DSIR extended a support of Rs. 876 Lakh as loan to industry and Rs. 124.24 Lakhs as grant to collaborating partners.
- Two technology development and demonstration projects from industries with a total project cost of Rs. 1420.50 lakhs and a recommended DSIR support of Rs. 613.00 lakh as loan to industry could not be taken up since the companies withdrew the projects, in view of their inability to comply with the terms and conditions of the scheme.
- Development of a dynamic database on experts available in the R&D organizations / academic institutions / universities / industries in India or abroad to facilitate PPP and tie-ups with Indian industry for collaborative projects through an external expert agency was being pursued.

3. RTI ACT 2005

The Right to Information Act 2005, enacted on 15th June 2005, has been implemented successfully in

the department. As per the provisions of the Act Nodal Officer, Appellate Authority, Transparency Officer, Central Public Information Officer and Central Assistant Public Information Officer are designated.

The proactive disclosures under Section 4 (1) (b) of the RTI Act 2005 enacted on June 15, 2005 are regularly updated [Last Update on 05/01/2016] and available on the DSIR Website at <http://www.dsir.gov.in>. DSIR has complied with the directives received from Central Information Commission. RTI Requests and First Appeals received and their responses are available on DSIR Website.

DSIR has received 235 Applications during 2015 [01/01/2015 to 31/12/2015] and all the Applications were registered and disposed off on RTI Request & Appeal Management Information System at <https://rtionline.gov.in/RTIMIS>. During 2015 [01/01/2015 to 31/12/2015], 21 applications were registered as first appeal and 07 applications was registered as second appeal.

DSIR has been effectively using various IT applications like RTI Request & Appeal Management Information System at <http://rtionline.gov.in/RTIMIS>, RTI Annual Return Information System at <http://rtiar.nic.in> wherein quarterly returns were uploaded regularly.

The Division provided technical support by way of lectures on 'RTI Online Portal, RTI Request & Appeal Management Information System, RTI Annual Return Information System, Proactive Disclosures under Section 4 (1) (b) of the RTI Act' during a Programme on 'Effective Implementation of RTI Act & Record Management for Appellate Authorities and PIOs in the CSIR System' organized by Council of Scientific and Industrial Research at CSIR-Human Resource Development Centre, Ghaziabad on 24/04/2015.

4. AUTONOMOUS INSTITUTIONS

4.1 Council of Scientific and Industrial Research (CSIR)

CSIR recognizing that inclusive innovation in the country would be the way for achieving socio-economic growth and competitive advantage globally has facilitated the national endeavour of achieving faster and inclusive growth by undertaking R&D programmes that focus on innovation. The CSIR has thus been providing the S&T knowledgebase needed for the benefit of the Nation, its industries, including MSMEs and the common people. The efforts are focused at bringing in desired S&T interventions for enhancing the socio-economic development while improving the quality of life, removing drudgery and augmenting income of the people. The projects undertaken by CSIR have been contributing to the generation of valuable knowledgebase and S&T interventions with immense value and potential to create a niche for the country. During the year, CSIR's performance was very striking.

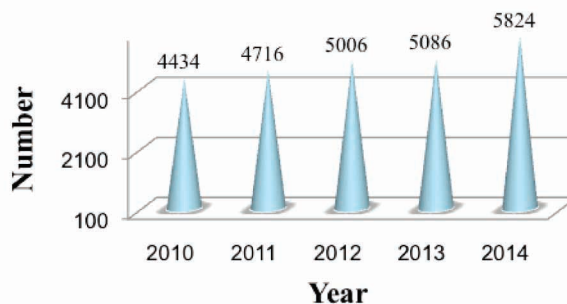
4.1.1 CSIR's Global Positioning

CSIR today is globally benchmarked organization. According to the SCImago Institutions ranking World Report 2014, CSIR is ranked at 84th among 4851 institutions world-wide and is the only Indian Organization among the top 100 global institutions. CSIR holds 17th rank in Asia and leads the country at the first position.

4.1.2 Scientific Excellence

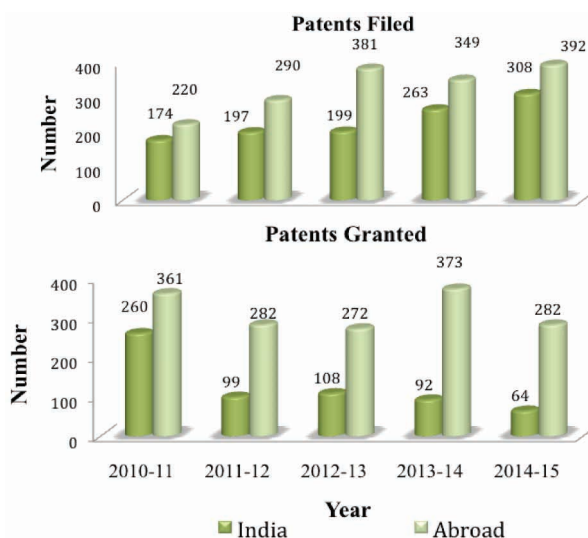
CSIR has published 5824 research papers during 2014 in SCI journals of national and international repute with average impact factor per paper as 2.97. Following Graph shows the trend of research over the last five years.

Number of Research Publications



4.1.3 Value generation through intellectual property

CSIR has filed 392 patents abroad and 308 patents in India during 2014-15, granted 282 patents abroad and 64 patents in India. Following graphs provide data on patents filed and patents granted over the last five years.



4.1.4 Creating and Nurturing S&T Human Resource

CSIR has been systematically creating and nurturing highly qualified S&T manpower in the country. It is presently supporting around 8500 Research fellows, awarded 2252 Junior Research Fellowships and 36 Shyama Prasad Mukherjee Fellowship. CSIR is supporting more than 1000 research schemes to various universities.



4.1.5 Some noteworthy accomplishments

Catalyst Export

CSIR-IIP developed and transferred technology for state-of-the-art catalyst which is used to reduce sulphur in LPG to M/s Lona Industries. The company has received an export order of 600 kg from Sohar Refinery, Oman.

Confocal microscope

CSIR under the New Millennium Indian Technology Leadership Initiative (CSIR-NMITLI) Programme has indigenously designed and developed the complex Broadband Confocal Microscope in partnership with M/s Vinvish Technologies Pvt. Ltd., Thiruvananthapuram and one of the CSIR constituent laboratories namely CSIR-CGCRI. The confocal microscope uses a Supercontinuum light generating source based on a patented photonic crystal fiber (PCF) technology developed by CSIR-CGCRI. The confocal microscope based on developed supercontinuum light source was launched by Hon'ble Minister Science and Technology on 7th October 2014.

Strategic partnership established

CSIR has reached an understanding with Border Road Organization to jointly work for providing niche knowledge and technology base for building and sustainably maintaining the border roads. A technology conclave was organized on June 16, 2014 at CSIR-CRRI to brainstorm the issues involved and develop an action plan.

Unique public private partnership

Unique public private partnership established for exploration of natural resources for oil and gas – collaboration of CSIR and Oil and Natural Gas

Corporation Ltd., (ONGC) to collect geophysical data from ONGC oil fields in the Krishna Godvari basin off the east coast of India has been established.

CSIR-IMTECH won the National Intellectual Property Award 2014 and adjudged the “Top R&D Institution in Healthcare

4.2 Consultancy Development Centre (CDC):

Consultancy Development Centre (CDC) is an Autonomous Institution of the Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, Government of India set up for promotion, development and strengthening of consultancy skills and capabilities in the country including enhancement of export of consultancy and professional services.

In the changed policy and economic environment at national and international levels, “Knowledge” is being considered as “Power” and consultancy is a knowledge based profession. CDC aims at fostering and promoting intellectual cross - fertilization of knowledge and ideas at regional and sub- regional levels within the country and interaction at the international level as well.

The mandate of CDC comprises of promotion, development and strengthening of consultancy skills and capabilities in the country including enhancement of export of consultancy and professional services.

During the year plan support of Rs. 200.00 lacs was received from DSIR for carrying out specific projects & activities. Besides plan support activities, CDC undertook various funded projects from various Ministries/Departments of the Government of India.

5. PUBLIC SECTOR ENTERPRISES

5.1 National Research Development Corporation (NRDC):

The National Research Development Corporation (NRDC) is a premier organisation, under Department of Scientific & Industrial Research (DSIR), Ministry of Science & Technology, engaged in the development, promotion and commercialisation 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. NRDC is a unique organisation as it is the only public enterprise wholly dedicated to transfer of technologies developed at R&D laboratories to industry. During the past more than six decades of its existence, the Corporation has developed strong links and network with various R&D organisations 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.

During 2014-15 the Corporation continued to face challenges from the competitors and changes in leadership. However, due to sustained efforts put in by the employees of the Corporation, NRDC earned high lumpsum premium and higher recurring royalty during the financial year 2014-15. The Corporation as compared to last year deficit of Rs 170.42 lakhs earned a profit before tax of Rs 330.04 lakhs during the financial year.

5.2 Central Electronics Limited (CEL):

Central Electronics Limited (CEL) is a Public Sector Enterprise under the 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 has indigenously developed and manufactured a number of products in close association with the premier National & International Laboratories including Defense Laboratories. In recognition of all these efforts, CEL has been awarded a number of times with prestigious awards including “*National Award for R&D by Department of Scientific & Industrial Research (DSIR)*”.

CEL is presently working in four major business segments (viz. Solar Photovoltaics, Railway Signaling Systems, Defense Electronics and integrated Security & surveillance Systems) and has further initiated work in a fifth (training for capacity building in the area of Solar Photovoltaics).

CEL has been the pioneer in the area of Solar Photovoltaics (SPV) in the country with the distinction of honor & manufactured India’s first solar cell in 1977 and first solar module in 1978. It also set -up India’s first solar power plant in 1992. CEL manufactures crystalline silicon solar cells using state-of-the-art technology and a wide range of SPV module starting from 10 Wp to 300Wp to suit customer’s requirement. CEL primary focus on for off-grid, roof top, rural electrification and it has showcased Indian PV technology in many Asian, African and Latin American countries over the last two decades and it has installed over 5,00,000 SPV systems across India and in over 30 countries Internationally.

The company has recently installed a new state-of-the-art automated Module Manufacturing line for enhancing & upgrading the module manufacturing facility.

In addition, CEL is now looking for new technologies for high efficiency solar cell production. It has initiated an R & D project on the Development of Heterojunction with Intrinsic Thin layer (HIT) Solar cells with an efficiency of more than 20%.

CEL is also putting thrust on development of various

application of Solar PV mainly for rural to urban applications. It has recently signed an MOU with Dedicated Mumbai Industrial Corridor Development Corporation (DMICDC) for preparing the renewable energy plan for the new smart, sustainable cities and is also working on making its own campus a green campus.



