TECHNOLOGY INFORMATION, FORECASTING AND ASSESSMENT COUNCIL (TIFAC)

(AN AUTONOMOUS BODY OF DEPARTMENT OF SCIENCE & TECHNOLOGY, GOVT. OF INDIA)

ANNUAL REPORT

2017-18

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(AN AUTONOMOUS BODY OF DEPARTMENT OF SCIENCE & TECHNOLOGY, GOVT. OF INDIA)

ANNUAL REPORT
2017-2018

Contents

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- Executive Director, TIFAC (Member-Secretary)

EXECUTIVE SUMMARY

Technology Foresight, follow up actions and nurturing innovations have been the major thrust this year.

Technology Vision 2035 document released by the Hon'ble Prime Minister on 3rd January 2016 has been disseminated widely by TIFAC and NITI Aayog to all line departments/ ministries towards identifying areas for technology interventions. As a result, several other sectoral thematic foresight studies were initiated during this year. Further, a few State Governments have also come forward to prepare Vision documents for their respective states. To continue with preparation of technology roadmap (five released last year), One more roadmap on Education was released during the period under 2035 programme. Remaining six technology roadmaps are in advanced stages of preparation.

TIFAC has been protecting the intellectual property of researchers from academic and R&D institutions and also creating awareness among this community. Under KIRAN-IPR scheme, 8th batch of women scientists completed their training during the year and training of 9th batch has been commenced. TIFAC has been actively following-up DST action points of the National IPR Policy. TIFAC continued with the innovation support endeavour. During the year, TIFAC- SIDBI Revolving Fund for Technology Innovation Programme (Srijan), helped scaling-up some innovative technologies, especially addressing areas of national importance like energy efficiency, advanced new material, e-waste processing, productivity increase etc. which have the potential to be aligned with National Missions like Make in India, Swachh Bharat, National Mission on Clean Ganga etc. Further, TIFAC on request of DIPP, assessed more than 1000 applications from start-ups, for tax exemptions under the Start-up India Programme.

Studies undertaken under the MSME program continued to provide a platform for Industry Academia to interact towards addressing technological needs. MSME Internship scheme has provided the much needed technical support to MSMEs, under which nine technology development projects have been completed. Further round of identification of MSME Clusters has also been undertaken.

Enhancing value addition of available resources within our country has been taken up on priority by TIFAC. Three studies, focussing on sea weeds, bauxite and castor seeds are in advanced stages of completion. Towards securing the country's growing energy needs and diversifying the energy basket, TIFAC has undertaken an exercise for collation of district wise available residual bio mass, through primary, secondary and spatial data. The study is expected to be shortly completed.

Studies, focussed on Climate Change, Sustaining rural livelihood, soil nutrients etc., were taken up in association with National institutions and IIASA under India-IIASA programme. TIFAC, on the request of MoEF&CC and DST, is implementing two projects viz. Technology Needs Assessment & Global Technology Watch Group under mitigation and adaptation aspects of Climate Change.

Since last few years, TIFAC celebrates its Foundation Day with a day long discussion on a futuristic topic. This year, TIFAC's 31st Foundation Day was focussed on "Future of Life on Earth – Role of Disruptive Technologies" covering Cellular Agriculture (e.g. meat without animal slaughter, milk without cows & eggs without hen), Vertical Multilayer Farming and Carbon Capture & Utilization. The event saw wide participation amongst Policy makers, Scientists and Students.

Towards strengthening technology foresight activities of TIFAC, enhancing linkages with academia and sensitizing the students about future technology priorities, TIFAC continued internship scheme.

(Sanjay Singh)
Executive Director

TIFAC : 2017-18

Consolidated Outputs, Achievements, Impact & Awards

S.No	Description	Nos. Acheived/ Completed
1	Reports Issued	➢ 7 Reports Released ➢ 2500 Horizon Scanning Technology Updates Posted on TIFAC facebook page
2	Training output	➢ 17 Interns ➢ 103 KIRAN Women Scientists ➢ 16 Certified Trainers ➢ 1000 sensitized on IPR issues
3	Key Contributions to Industry/ Start-ups	➢ 16 Srijan Projects Completed ➢ 851 Start-up applications assessed for DIPP ➢ 2 IPR Workshops
4	Awards / Recognitions	➢ M/s. SKYi Composites received “fastest growing company excellence Award” and name “Most innovative enterprise” by CII & DIPP

1.0 Technology Foresight

1.1 TECHNOLOGY VISION 2035

The Technology Vision 2035 (TV 2035) document released by the Hon'ble Prime Minister on 3rd January 2016 at Indian Science Congress, Mysore has been circulated among different ministries, departments and other stakeholders for reference and to initiate actions in various technology domains. The document has laid down the technology path ways in fulfilling the aspirations of Indian in 2035. During this year several follow up actions were taken. NITI Aayog took a lead to disseminate TV 2035 document to all line departments/ ministries to identify areas for technology interventions. TIFAC scientists delivered lectures on TV 2035 document in different forums. Such follow up actions had resulted into several spin offs. State Governments approached TIFAC for preparing vision documents of the respective states. In addition, various dissemination workshops were organised during the reporting period. A brief description of such activities is mentioned below:

1.1.1 COLLABORATION WITH STATE GOVERNMENTS

Madhya Pradesh

A Dialogue was initiated with Madhya Pradesh Council of Science & Technology (MPCOST) towards initiating the Vision document/ perspective plan for Madhya Pradesh in line with the TV 2035 document. In this regard, a workshop cum hands-on-training session was conducted at MPCOST, Bhopal on 29th August, 2017. In this workshop, the scientists and officials of MPCOST were exposed to TV 2035 exercise, the document and also the methodology for preparation of the document. Hands-on training was imparted to participants on foresight methodologies and tools by a team of TIFAC scientists from Technology Vision 2035 programme. A mock scenario building exercise was also conducted as part of this training. Around 55 scientists and officials from MPCOST attended the workshop and training. Scientists were divided into four groups and each group prepared a separate scenario, customised to Madhya Pradesh in 2035 perspective. A vision statement for MP 2035 was also prepared. As a follow up, DG, MPCOST along with his team visited TIFAC for further discussions and strengthening collaboration on 18th Jan, 2018. Later, TIFAC Scientists visited Bhopal and Indore for creating awareness on Technology Vision 2035 in the events organized by MPCOST.

Hands on training workshop on technology foresight conducted for scientists of MPCOST, Bhopal- Scenario building in progress by a group

Uttar Pradesh

Similarly, Council of Science and Technology, Uttar Pradesh (CSTUP) approached TIFAC for preparing the UP State Vision document. In this regard, a one day workshop "Technology Vision-2035: In Relevance to the State of Uttar Pradesh" organized by CSTUP on 28th February, 2018 at Lucknow

coinciding with the celebration of National Science Day. In this workshop, an exclusive session on Technology Vision 2035 was conducted along with separate sessions on Education and livelihood opportunities, Health, Agriculture and Water sectors. The workshop was aimed at disseminating information regarding the Technology Vision 2035 among the stakeholders, brainstorming on state specific issues, understanding the methodology for conducting a visioning exercise and adopting the envisioned technologies in line with the Technology Vision 2035 which could facilitate in bringing out a vision document for development of the UP State. In this workshop, UP Govt. also made presentations on the activities being taken up by them on each of the above mentioned sectors.

1.1.2 DISSEMINATION WORKSHOP ON TV 2035

In line with the activities for promoting Technology Vision 2035, a dissemination workshop for the North-East region was organized on 15th February, 2018 at Regional Science Centre, Guwahati in collaboration with National Council of Science Museums (NCSM), Kolkata as organizing partner and Indian Institute of Technology Guwahati (IIT-G) as technical partner. Technical sessions on the prerogatives 'Health care & Public hygiene and Disaster & Climate Resilience' were conducted involving experts / speakers from North-East region. The workshop was attended by around 50 stakeholders from State governments, industry, academia, R&D institutes, NGO's, farmers and students. The technical session on "Health care & public hygiene" focused on various aspects of Health sector such as Innovative technologies for minimization of Disability, Drug Development, Sanitation and Infection control in health care setting along with the state government initiatives and glimpse of Technology roadmap on Medical Sciences & Health Care. The technical session on "Disaster & climate resilience" covered the topics/areas like Remote sensing and GIS application in Disaster management under Changing Climate: North-East case; Retrofitting to make disaster resilient building structures; Alternative building materials- Bamboo or local products; Managing the Brahmaputra river system - the people's apprehension and Community based climate risk management; Disaster risk reduction and TV 2035 perspective on "Disaster and Climate Resilient".

Follow up actions taken by NITI Aayog

Prime Minister Office took a decision in a meeting held on 16th November 2017 that TIFAC Vision 2035 needs to be taken forward by all the departments. Accordingly, in the subsequent meeting called by NITI Aayog on 31st Jan 2018 where all the secretaries of Govt. department and other senior officials were invited. In the meeting it was suggested to map the sectoral technologies and send to the respective ministries.

Technology Vision 2035 dissemination workshop at IIT Guwahati

1.1.3 TECHNOLOGY ROADMAPS

Under the TV 2035 vision exercise, preparation of technology roadmaps was taken up in parallel to preparation of vision document. During the reporting period, technology roadmap on Education sector was released. The roadmaps on Materials, manufacturing, Transport, ICT and Health

sector which were released are available in TIFAC website (www.tifac.org.in). A brief of release of Education roadmap is narrated below:

1.1.4 RELEASE OF ROADMAP ON EDUCATION

The Technology Roadmap on Education was released in Pune, on the event of National Education Day on November 11, 2017, by Dr. Anil Kakodkar and Professor Ram Takwale (eminent educationist and Former Vice Chancellor University of Pune and Indira Gandhi National Open University-IGNOU) in the presence of Dr. Vijay Bhatkar (Member TIFAC Governing Council), Dr. Vivek Sawant (CEO, Maharashtra Knowledge Corporation Limited), Prof. Varun Sahni (Vice Chancellor, Goa University) and Prof. Prabhat Ranjan (Executive Director, TIFAC), Advisory committee members of Education sector and other stakeholders.

Release of Technology Roadmap on Education

Embedded in the TV 2035 exercise, the document is located in the intersection of technology, education and society and offers a roadmap to the deployment of technology to meet socially desirable educational objectives. First ever foresight exercise in the country for Education, the document draws the contours of an education system that would befit India and benefit Indians in 2035.

1.1.5 DISSEMINATION ACTIVITIES ON EDUCATION SECTOR

TIFAC was subsequently invited by Kasturirangan Committee, set up by the government to draft the New Education Policy, for the country. A detailed presentation was made before the Committee on December 4, 2017, elaborating the educational needs of Indians in future, the technologies that show potential to impact the education system and suggestions for the new educational policy.

Dissemination Workshop:

With a view to showcase the roadmap, before the leaders in the educational landscape and key stakeholders, a Dissemination Workshop on the roadmap was also organized jointly with AICTE on February 27, 2018. After making presentation on different aspects of the document, a panel discussion was organised on future Education system.

1.1.6 TECHNOLOGY ROADMAPS NEARING COMPLETION

The technology roadmaps which are in advanced stages of completion are - Energy, Water, Infrastructure and Habitat sectors.

1.2 TECHNOLOGY FORESIGHT FOR AUTOMOTIVE R&D (TFAR)

Under the TFAR prorgamme, TIFAC studies emerging technologies in the automotive sector, aiming at catalyzing and nucleating technology development efforts. The activities under this programme have been expanded to address broader issues of transportation, including development of models for transport sector taking into account cross sectoral influences.

1.2.1. DETAILED PROJECT REPORT AND R&D PROGRAMME ON NATIONAL MISSION FOR ELECTRIC MOBILITY

TIFAC has completed and submitted Detailed Project Report and R&D Programme on National Mission on Electric Mobility to Department of Heavy Industry. The report was result of extensive consultations with industry, academia, R&D labs and Government. The report focused on four thrust areas: vehicle systems integration, rechargeable energy storage, charging infrastructure,, motors and power electronics.

1.2.2. TECHNOLOGY FORESIGHT STUDY ON ELECTRIC MOBILITY

TIFAC has taken up a study focusing on various potential impacts of electric mobility, such as impacts on the electricity distribution grid, requirement of critical materials, infrastructure requirements, environmental, economic and societal benefits of electric mobility etc.

During 2017-18, a model has been developed to estimate the optimum location of charging stations for electric public transport buses and size of the energy storage system in the vehicles. This model has been applied with Delhi as a case study. The basic aim is to reduce the investment for charging infrastructure and efficiently promote electrification of public transportation. The outcome of the work was (a) an optimized number of charging stations (b) battery size for each route.

1.2.3. TECHNOLOGY FORESIGHT STUDY ON ELECTRIC AIRCRAFT

Emerging trends in electric passenger aircrafts as well as drones (unmanned aerial vehicles) and their impacts are being analyzed under this study. Various applications of drones and associated issues have been studied. A mathematical model has been developed for comparison between drone based delivery and road based delivery systems. Future potential applications and impacts of electric passenger aircrafts are also being studied.

1.2.4. TECHNOLOGY FORESIGHT STUDY: FUTURE ENERGY STORAGE TECHNOLOGIES

This study aims at estimating the impacts of various emerging electrochemical energy storage technologies in sectors such as transportation, renewable energy etc. Based on the present R&D trends and technology readiness levels (TRL) in various energy storage technologies, the probable future scenarios will be estimated, and mathematical models will be used to estimate impacts of such developments in various applications. The first phase of the study has been carried out with focus on electric vehicle application.

1.2.5. TECHNOLOGY FORESIGHT STUDY : COMPARATIVE ANALYSIS OF EMERGING VEHICLE TECHNOLOGIES IN INDIAN CONTEXT

The study will focus on comparative analysis of benefits and impacts of four emerging alternative powertrain technologies: Battery Electric Vehicle (BEV), Fuel Cell Electric Vehicle (FCEV), Hydrogen powered IC engine vehicle, and methanol powered IC engine vehicle under Indian conditions. This will involve utilization of suitable open source models and also development of models as required.

1.3 THEMATIC FORESIGHT STUDIES

1.3.1 SECURITY TECHNOLOGIES

Technology foresight studies in the area of security technologies have been taken-up to identify malicious threats & vulnerabilities, assess global & national scenarios of countermeasures. The studies would delineate recommendations regarding technology and policy in three different time frames, i.e., actionable, strategic and visionary. The following three studies have been undertaken:

A. Natural Resources and Environment Security

The study has been carried out in association with The Energy and Resources Institute, New Delhi. The study covers sub-sectors namely forest & wildlife resources, agriculture & allied resources, mineral resources, water resources, air & atmosphere and marine resources. The final report is expected by August 2018.

B. Cyber Security for Digital Economy… A Roadmap

The study has been carried out in partnership with Centre for Development of Advanced Computing, Pune and Data Security Council of India, Noida. It encompasses key technology areas such as Internet of Things, Cloud & Virtualization, Big Data, SCADA and Financial Sector. The final report is expected by August 2018.

C. Securing Individuals, Society and Infrastructure

The study is being carried out in association with Sardar Vallabhbhai Patel National Police Academy, Hyderabad and International Institute of Information Technology (IIIT), Hyderabad. The study encompasses security of individuals, mass gatherings, and critical infrastructures like transport (road, railways, shipping, aviation), chemical industries and telecommunication. The final report is expected by September 2018.

1.3.2 RELATIONSHIP BETWEEN GDP GROWTH AND TECHNOLOGY CAUSES IN SELECT DISTRICTS OF ANDHRA PRADESH & TELANGANA

The study ascertains the relation between science & technology inputs and economic growth in five select districts of Andhra Pradesh and Telangana (Visakhapatnam, East Godavari, Srikakulam, Guntur and Adilabad). The study has been completed and the report is under printing.

In this study, various S&T indicators were identified in three sectors of the economy (agriculture, industry & services), further sector-specific index of S&T indicators have been developed and the contribution of S&T inputs to economic growth was established. The study sets a new pathway in its approach to constructing the relationship between science and technology and economic growth.

1.3.3. MSME FOCUSSED TECHNOLOGY FORESIGHT STUDIES THROUGH INTERNS IN TIFAC

1.3.3.1 Completed

Commercial Scale Food Processing Technologies pertinent to Malda Cluster- An attempt towards Rainbow Revolution, PART-III specific focus on economic, marketing & humanity aspects.

1.3.3.2 Ongoing

i. Nutraceuticals-A Technology Perspective

ii. Essential Oil ((flavors and fragrances) and how to enhance export from India by Technology Infusion

1.3.3.3 New Initiatives

Concept document/ approach paper has been submitted to Ministry of Food Processing Industries (MoFPI) for carrying out Technology Foresight Study for 'Food Processing and Nutraceuticals in India' in partnership with Ministry of Food Processing Industries, Govt. of India. MoFPI has approved commissioning the study in principle. The study would address the following:

a. Action plan: Preparing an actionable agenda for the next 3-5 years for ready deployment of technologies, implementation of key projects along with immediate policy interventions for the Food Processing & Nutraceuticals sector.

b. Strategic Directions: Preparing a medium term action plan for the next 5-7 years towards chalking out strategic action plan, strategic partnership, technology acquisition, merger along with scaling up of technologies from laboratory to the field levels for proving their viability etc.

c. Vision: A concrete vision and technology roadmap for the sector to be prepared for 7-15 years.

1.4. QUANTITATIVE TECHNOLOGY FORESIGHT

Study/ Activity	Progress/ Achievements
Quantitative analysis of technology pathways towards achieving the TV2035 prerogative on safe and speedy mobility	A big data analytics based tool, developed earlier, can utilize data from google maps to prepare isochrone maps representing distance from various places to the district headquarter, state capital or national capital. This tool is now being used to generate such maps for various districts.
Modelling Cross Sectoral Interdependence of Transport Sector	Objective is to analyze various issues related to transport sector taking into account cross sectoral influences to get insight into possible future scenarios, and impacts of various policy measures, Interdependence of transport sector with various other sectors is being examined. For this, development of simulation tools as required along with use/ adoption of available open source tools have been taken up. As a part of this effort, work has also been carried out on use of artificial intelligence in travel mode choice analysis and traffic micro-simulation with open source tools.

1.5 HORIZON SCANNING

TIFAC is following developments, breakthroughs and upheavals on the global technology landscape on a regular and continuous basis. Horizon Scanning is carried out routinely for feeding forward technology intelligence in foresight activities for India and generating thematic reports assessing potential opportunities and threats linked with technologies showing up on the horizon.

Technology updates from multiple sources were collected regularly and posted on the TIFAC Facebook page (www.facebook.com/tifac.dst.india) which had 2355 followers on March 31, 2018; in all, there were about 2500 posts during the year. The readership/ reach of these posts was, on an average over 38000 per month. A database of the posts is maintained using Facebook and Twitter.

The technology updates were also used as inputs to Technology Vision 2035 activity and in the sectoral technology roadmaps that are underway.

1.6 CLIMATE CHANGE

1.6.1 CONFERENCE OF PARTIES (COP) 23, BONN, GERMANY

TIFAC conducted a panel discussion on the theme "Technology Preparedness in Achieving NDC Target" in the side events of COP 23 held in Bonn, Germany on November 7, 2018. Dr. Gautam Goswami, Head TV 2035 made a presentation to build the context of the panel discussion. Prof. Prabhat Ranjan, Former Executive Director, TIFAC gave an overview of TIFAC's involvement in the Climate Change field. The initiative of Global Technology Watch Group by SPLICE Division of DST was presented by Dr. Nisha Mendiratta, Advisor DST. Technology preparedness in Steel Industry and Renewable sector were also presented by Tata Steel and CSTEP respectively. UNDP made participants aware about the innovation in Clean Energy Growth in India. CII presented the challenges and way forward in climate action perspectives from Indian industry. The session was very interactive, more than 30 international participants interacted with the panel.

TIFAC participation in COP 22, Germany

1.6.2 TECHNOLOGY NEEDS ASSESSMENT (TNA) PROJECT

The implementation of the Technology Needs Assessment Project towards preparation of 'Biennial Updated Report (BUR-II) and Third National Communication (TNC) under the obligation of the UNFCCC which was started in November 2016, continued this year. This project is aimed at identifying the technology needs for India, their prioritisation and finally preparation of technology action plan sector wise for ten sectors in the context of climate change mitigation and adaptation. The sectors are Coal and Energy, Transport, Industrial Processes and Product Use (IPPU), Forestry, Agriculture, Habitat, Renewable, Water resources, Health and Waste.

The project is being implemented by following both top down and bottom up approach under the guidance and supervision of a National Steering Committee (NSC), headed by a person of eminence of each sector. During this period, the NSC met several times to guide in each and every step in implementing the project.

Initially, for each sector, several sub-sectors/sub-areas were identified (Table 2) after several rounds of discussion by NSC members, brainstorming meetings, regional stakeholders workshops etc. This was followed by scouting of technologies adopting various techniques viz. patent search, horizon scanning, literature survey etc. Further, one of the major aims of the TNA study is to prioritize the scouted technologies on the basis of certain defined criteria matrix for each sector. TIFAC followed the UNFCCC guidelines and accordingly Multi-Criteria-Decision-Analysis (MCDA) was used for the technology prioritization process.

Table 2: Key sub-themes Identified in each sectors of TNA study

Sector	Sub-Sector
Coal & energy	• Mining + Beneficiation • Clean (Advanced coal technology - ACT) • CCS&U Technology • Emissions to Liquid (ETL) • Oil & Gas
Forestry	• Productivity • Protection • Climate Change • Carbon Services • Measurement and Monitoring • Biodiversity Conservation • Livelihood Improvements • Wood Industry
Industrial Product & Process	• Iron and Steel Industry • Non-Ferrous Industry • Cement • Leather • Chemicals • Textiles • Fertiliser • Engineering
Transport	• Road • Rail • Airways • Water
Waste	• Municipal Solid Waste • Industrial Waste water • Plastic Waste • Biomedical waste • E-waste • Biomass (Agro +Animal waste) • Organic (Dry including biomass) • Domestic wastewater • Mixed waste • Non-Industrial Hazardous waste • Laboratory waste
Renewable	• Solar PV • Solar CSP • Wind • Biomass • Grid technology including power electronics • Fuel Cell • Storage • Mini Hydro • Geothermal • RE for non-electricity • RE for energy access

Agriculture	• Climate-smart crop • Food processing • Livestock and livestock feed • Agriculture Engineering • Fisheries and Aquaculture • Soil • Water management • Pest management • Improved Livelihood • Weather Forecasting • Land use management • Crop residue management
Habitat	• Construction • building/housing • Waste and waste water • Green space • Transportation& mobility • Energy • Land use pattern • Water • Disaster risk reduction • Urban Development and planning
Health	• Hydro-meteorological hazards • Water borne and food borne diseases • Air Borne, Cardio-pulmonary & Respiratory Allergic Diseases • Vector-borne and Zoonotic diseases • Agriculture and Nutrition • Non-Communicable Diseases (NCD) & Mental illnesses • Waste Management • Health Information Infrastructure • Occupational Health

Submission of BUR II

Towards meeting the objectives and 1st milestone of the TNA project, TIFAC submitted the technology chapter of BUR-II report to MoEF&CC in October 2017. The report contains introduction covering role of S&T in India's growth, technology innovation and contribution in India's development, challenges and opportunities; Public and private sector initiatives to address climate change, Technology needs for different sectors and also policy issues. The report is under finalisation and acceptance by MoEF&CC.

1.6.3 GLOBAL TECHNOLOGY WATCH GROUP (GTWG)

National Mission on Sustainable Knowledge for Climate Change (NMSKCC) is one of the NAPCC Missions being implemented by Department of Science & Technology, Govt. of India. One of the important components of this mission is preparation of Global Technology Watch Group reports for nine sectors. TIFAC, being a technology think tank and having a good track record in Technology Foresight field, was assigned a project to prepare global technology watch report of six sectors. The prime objective

of the project is to keep a watch on the state-of-the-art technologies emerging globally in the key sectors of economy and prioritise them for India. The major activities under GTWG include technology mapping and technology prioritization with relevance to mitigation & adaptation to climate change along with identification of few big ticket projects in each sector. The six sectors are Renewable Energy, Green Forestry, Sustainable Habitat, Water, Sustainable Agriculture and Manufacturing.

Six Global Technology Watch Groups are constituted to guide and supervise six sectors and a National Steering Committee, chaired by Dr Anil Kakodkar has been guiding all the six sectoral progress. Each sectoral watch group met several times in different stages of sectoral growth. In addition regional stakeholder's consultations were also organised for few sector in order to capture regional problems. During this period, the sectoral Global Technology Watch Groups met several times to guide in each and every step in implementing the project.

The initial comprehensive draft of the GTWG report was submitted to DST in October 2017. In addition, other major component of GTWGproject is to develop GTWG NMSKCC Web-Portal that would be interactive and highly dynamic in nature and will feed information to various other climate change missions. This web portal will be a source for information on global technology development.

Meetings and stakeholder workshops conducted in TNA and GTWG Projects

Stakeholders workshop– Sustainable Agriculture sector, GTWG Project at NAARM, Hyderabad

Stakeholders consultation – Green Forestry TNA Project at IPIRTI, Bengaluru

Stakeholders workshop- Manufacturing sector, GTWG Project, PSG College of Tech., Coimbatore

Steering committee meeting, Industrial Process and Product sector, TNA Project, Kolkata

Steering committee meeting, Sustainable Agriculture ,GTWG Project, NAARM, Hyderabad

Steering committee meeting, Water sector, TNA Project

1.7. DETAILED PROJECT REPORT (DPR) ON NATIONAL MISSION ON INTERDISCIPLINARY CYBER-PHYSICAL SYSTEMS (NM-ICPS)

TIFAC with its core mandate of Technology Foresight and experience of implementation of several mission-mode technology intermediation programmes has taken up the assignment of preparing a Detailed Project Report (DPR) for implementation of National Mission on Interdisciplinary Cyber-Physical Systems (ICPS), an initiative by DST.

The interdisciplinary area of Cyber-Physical Systems (CPS) is identified as one such emerging field, progress in which is expected to have a significant impact on health care, urban transportation, water distribution, energy, urban air quality, manufacturing and governance. This Detailed Project Report (DPR) on a National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS) will present an overview of CPS in general, outlining its importance to the modernisation and digitalisation of socio-technical systems and services. The activities envisioned under this Mission will provide a great fillip to Indian manufacturing via the invention of new products, services and the creation of skilled young human resource at all levels (from technicians to, researchers and entrepreneurs) and will become a key contributor to realizing the vision of "Digital India", with the folloing aims :

(i) Make India a leading player in CPS technologies.

(ii) Achieve translation of CPS technologies for societal and commercial use, nurture start-ups and increase in the job market.

(iii) Produce next generation technocrats in CPS technologies.

To handle the enormous task of preparing a strategic roadmap for this Mission, consultative approach resorted and same was adopted. 3 Apex Committee meetings, 6 National Consultative meetings and 1 Inter-ministerial meeting were held for preparation of Detailed Project Report on NM-ICPS. An open-ended questionnaire was also evolved to collect insights/ foresight/ ideas and integrate them into this DPR. Now Detailed Project Report is nearing completion after integration of Ideas/ Suggestions/ insights obtained from the above mentioned meetings and questionnaire.

2.0 NURTURING INNOVATION

TIFAC has been supporting innovations at academic institutions, government R&D institutes, industry and also at individual level under its various innovation support programmes. Mainly this technical and financial support is provided in the form of protecting intellectual property and upscaling the technologies from pilot scale to industrial production scale, under different programmes. These programmes are Patent Facilitating Centre (PFC), and TIFAC-SIDBI Revolving Fund for Technology Innovation Programme (SRIJAN). Each of these programmes has its own mandate and support system. TIFAC also endeavours to synergise the functioning and output of these programmes.

2.1. PATENT/IP FACILITATING CENTRE

PFC at TIFAC has been mandated to create IPR awareness and deeper understanding of patents and IPR in the country, facilitating filing, obtaining and maintaining patents on sustained basis, providing patent information as an input to R&D and handling IPR policy matters. In addition to awareness and training, PFC is also handling major scheme of DST's Women Scientist Scheme C (WOS-C) popularly known as KIRAN-IPR. It is actively engaged in the implementation of the National IPR Policy, especially action points of DST.

2.1.1 PATENT/IP FACILITATION

PFC helps in filing and prosecuting patent and other IPR applications in India and in other countries on behalf of academic institutions and government R&D institutes. These patent and IP applications are drafted and filed through patent attorneys on the panel of PFC TIFAC. The cost of filing these patents is borne by PFC TIFAC and patent/IP applications are filed in the name of inventing institute/s. PFC conducts through patentability assessment in house for all the invention disclosure received by it.

Patent/IP Filing: PFC has assessed the patentability of about 103 new cases for filing of patents on behalf of academic and government organisations; out of which 20 new patent applications were filed in India and 3 PCT applications were filed for protecting inventions in other countries.

Patent Grant: During this period 17 Indian patents, one Australian patent and one European patent have been granted as per the details given below:

Patents Granted in financial year (2017-18): 17 Indian, 1 Australian & 1 EP				
Indian Patents				
S. No	**Patent No.**	**Grant Date**	**Applicant**	**Title**
1	282370	06.04.2017	Anna University, Chennai and University of Hyderabad	A process for manufacturing non-stoichiometric titanium nitride films.
2	282555	17.04.2017	Mumbai University Institute of Chemical Technology	Development of novel nano-porous composite material.
3	284469	22.06.2017	Indian Institute of Technology, Kharagpur	Stable dispersion of surface capped silver nano powder in hydrophilic medium with enhanced thermal conductivity.
4	285905	31.07.2017	Department of Science and Technology (DST), New Delhi	A novel solid state biosensor and a process for producing the same.
5	286815	30.08.2017	Punjabi University, Patiala	Rosaglitazone loaded brain permeable nano particles and method of preparation
6	286818	30.08.2017	Punjab University, Chandigarh	Statin loaded brain permeable nano particles and method of Preparation
7	287380	14.09.2017	Punjab University, Chandigarh	Non-staining, novel lecithinised coal tar formulation.
8	287615	21.09.2017	Indian Institute of Technology, Kharagpur	A two-pulse synthesis (TPS) based method and system for DVP signal analysis.
9	288164	09.10.2017	Punjabi University, Patiala	Lipid nano carrier based formulation for topical delivery of Etoricoxib
10	288681	25.10.2017	Uttar Banga Krishi Viswavidyalya, Cooch Behar	Puffed rice with vitamin B.
11	289198	03.11.2017	Veer Narmad South Gujarat University, Surat	Novel tetrahydropyrimidine compounds as anticancer agents and microwave assisted process for their preparation.
12	289453	10.11.2017	Indian Institute of Technology, Delhi	A novel closed loop amplitude and frequency control of self excited induction generator (brushless generator) terminal voltage.
13.	290406	08-12-2017	Indian Institute of Technology, Delhi	Design and development of an instrument to measure cut resistance of fabric.
14.	290771	18-12-2017	University of Allahabad, Allahabad	A culture medium for the growth of malassezia species.
15.	291173	28-12-2017	Lovely Professional University, Phagwara	A drilling machine and a method of drilling.
16.	291288	02-01-2018	Indian Institute of Technology, Kharagpur	Enzymatic transesterification of jatropa oil
17.	292833	12-02-2018	Department of Science and Technology, New Delhi and Durga Sewa Sadan, Bulandshahr	Process for the preparation of a composition for the treatment of water.

Australian Patent				
1.	2012317177	17.08.2017	Indian Institute of Technology, Kharagpur	Venucane : An electronic travel aid for visually impaired and blind people
European Patent				
1.	2641230	04.08.2017	Indian Institute of Technology, Kharagpur	Method and apparatus for detection and removal of rain from videos using temporal and spatiotemporal properties

2.1.2 NATIONAL IPR POLICY

PFC is assisting ED-TIFAC who is Nodal Officer for implementation of the National IPR Policy specially DST action points. Two task forces have been constituted; one for enhancing IPR output under universities and government institutions and division of royalty etc and second for industry academia collaboration and IPR including preparation of standard templates for technology transfer and other related issues. One committee has also been constituted to prepare IPR toolkit. The Task Force for enhancing IP output has met twice and finalised six questionnaires for six categories of IP stakeholders and survey is undergoing in order to take input and formulate strategy.

2.1.3 IPR AWARENESS WORKSHOPS AND TRAINING

PFC TIFAC conducts patent/IP awareness workshops in different part of the country, generally through Patent Information Centres at State Council of Science and Technology. PFC has conducted 8 IPR Awareness Workshops during this period. First workshop was conducted at Itanagar, Arunachal Pradesh in association with Patent Information Centre, Arunachal Pradesh State Council of Science & Technology on May 25-26, 2017. Second workshop was conducted for NIT Kurukshetra at TIFAC on September 22, 2017. Third workshop was organised at Desh Bhagat University, Mandi Gobindgarh in Punjab in association with PIC Punjab on November 28, 2017. Fourth workshop was conducted at Govt PG College, Uttarkashi on November 13, 2017 in association with Uttarakhand State Council for Science & Technology, Dehradun. Fifth workshop for two days was held at The Oxford College of Engineering, Bangalore on December 28-29, 2017. Sixth, seventh and eighth workshops were held in association with Odisha State Council for Science & Technology at NIT Rourkela on December 27, 2017, at IIT Bhubaneshwar on March 27, 2018 and at Behrampur University, Behrampur on March 28, 2018 About 1000 participants attended these workshops.

IPR Awareness Workshop at Bengaluru, Karnataka

IPR Workshop at Mandi Gobindgarh, Punjab

2.1.4 SPECIALISED IPR WORKSHOP WITH UNIDO

Two workshops were organised on Patents and IPRs in association with UNIDO International Centre for Inclusive & Sustainable Industrial Development (IC-ISID); one each at Ludhiana for bicycle sector and Saharanpur for pulp and paper sector on June 8-9 and June 2-3 respectively. These workshops were theme based and were designed to address the IP issues with regards to the specific Industry cluster. During these workshops detailed landscape of IP specially in that industry was presented along with detailed discussion on cluster specific IP issues.

2.1.5 SPECIALISED REPORTS ON IPR

As a followup of the specialised workshops conducted for UNIDO, three patent analysis reports on specific subjects for industry clusters of cement, bicycle and pulp and paper were prepared and submitted to UNIDO. These reports will be published by UNIDO.

2.1.6 TRAINING TO WOMEN SCIENTISTS IN IPR (KIRAN-IPR)

The scheme provides opportunity for women with mid-career break and having qualification in science & technology to pursue their career in Intellectual Property. It prepares them towards self-employment by providing on the job training in the area of IPR. Currently, there are 120 seats for one batch. The training for the 9th Batch started from May 1, 2017. A total of 107 women joined the 9th batch training. A one month orientation for them was held at New Delhi from May 1-31, 2017. All the lectures in orientation programme were recorded with new system developed by TIFAC. These lectures have been shared on online course management system (moodle) for throughout the year access. After the Orientation programme, candidates have joined for 11 month on–the-job training at various agencies throughout the country. All recent developments on IPR are also posted on the online portal for updating them. The system provides online evaluation of assignments, opportunity for interaction amongst themselves as well as who taught them during the orientation programme. Regular interactions through video conferencing are being done and would continue.

The training of women scientists of 8th Batch completed in September 2017 as the training of some interns was extended due to maternity, medical and other reasons. Out of the total 111 women scientists who joined the training for 8th Batch, finally 103 successfully completed the training. A few of the notable achievements of the Scheme for 8th Batch are listed below :

- Patent Agents : Thirty three (33) women from 8th Batch have become registered Patent Agents with Indian Patent Office.
- Patent Analysis Reports : In addition to above, trainees of 8th batch were given assignments for preparing technology scan reports with regards to 170 select raw materials which are being exported by India. One hundred and one (101) reports have been received with regards to 139 raw materials. These reports contain detailed patent analysis supported with business data analysis in order to identify and recommend value addition in India before export.

The process of commencing 10th batch has started while training for 9th batch is ongoing. All India exam was conducted on March 25, 2018 and out of 3000 plus aspirants 1704 appeared for this online examination. The training for the tenth batch is expected to start in June 2018.

Women of 8th Batch receiving Certificate

during Inauguration

2.1.7 TRAINING OF TRAINER:

First one week training of trainer for creating awareness under National IPR Policy was organised in Delhi supported by Department of Industrial Policy and Promotion (DIPP) with participation of total 30; 23 alumni of KIRAN IPR and 7 from National Productivity Council (NPC). Out which 16 have been certified as TIFAC - CIPAM (DIPP) trainers.

2.2 TIFAC-SIDBI TECHNOLOGY INNOVATION PROGRAMME (SRIJAN)

The programme objective includes assessment, peer review, appraisal of technology innovations and extending part financial assistance towards scaling up the new technologies. A revolving fund was created with SIDBI to provide the financial assistance as term loan up to Rs.1.00 crore under softer terms & conditions to entrepreneurs particularly MSMEs both existing and start-ups.

The cumulative status of revolving fund along with status of projects under Srijan Programme as on March 31, 2018 is given below:

CUMULATIVE STATUS OF REVOLVING FUND

	Amount
Fund released by TIFAC to SIDBI	Rs.12.50 crores
Loan sanctioned	Rs.21.53 crores

Loan disbursed	Rs.14.35 crores
Principal Recovered	Rs.6.23 crores
Interest Earned @5%	Rs.1.53 crores
Balance in Revolving Fund	Rs. 5.45 crores

Cumulative status of projects

Total number of proposals received and evaluated	104
No. of projects technically recommended	47
No. of projects sanctioned by SIDBI	25
No. of projects took off	19
No. of projects successfully completed	16
No. of ongoing projects	03

Summary of projects completed, sanctioned, ongoing and new projects appraised and technically recommended during the F/Y 2017-18:

2.2.1 PROJECTS SUCCESSFULLY COMPLETED DURING THE FINANCIAL YEAR

S. No.	Title	Implementing Industry	Technology know-how partner	Project cost (Rs. In lakhs)		Innovation & likely Impact
				Total	Loan	
1.	Powdered Oil Based Mud Products (Polvo Series)	M/s. Gumpro Drilling Fluids Pvt. Ltd. Mumbai	In-house R&D	140.40	100.00	Powdered form of emulsifier for use in oil drilling operations. In sub-zero conditions it will avoid preheating required for drums containing liquid emulsifier leading to energy savings. It also minimizes the logistic expenses for retrieving the drums in remotely located oil fields
2.	Commercialization of Standard Rack Mountable, SMPS based precision regulated high voltage power supplies	M/s. IONICS Power solutions Pvt. Ltd. Hyderabad	In-house R&D	125.00	100.00	Indigenously developed Switch Mode Power Supply (SMPS) system for high voltage precision equipments used in lab. The high frequency switching helps in making the power supply compact, light weight and efficient and would be an import substitute.

Powered Oil Based Mud for oil drilling application

Indigenously developed Switch Mode Power Supply (SMPS) for high voltage DC power

2.2.2 NEW PROJECTS TECHNICALLY RECOMMENDED BY TIFAC AND SANCTIONED BY SIDBI

Following six new projects were sanctioned during the financial year

S. No	Title	Implementing Industry	Technology know-how partner	Project cost (Rs. In lakhs)		Innovation & likely Impact
				Total	Loan	
1.	Long fiber reinforced thermoplastics (LFT) compounds and advanced composites such as UD tapes, organo-sheets for injection/ compression molded applications	M/s. Skyi Composites Pvt. Ltd., Pune	In-house R&D	160.00	100.00	The unique extruder design and working of impregnation die and further engineering to make sure that every single fiber is impregnated (wetted) with polymer matrix in order to achieve the product with best quality and performance.
2.	Portable Automatic Poori making machine	M/s. Mukunda Foods (P) Ltd., Bangalore	Under the license of CSIR-CFTRI, Mysore	186.00	100.00	The innovative and compact design of equipment would make poori making and frying operations an integral part of machine which is missing in the conventional semi-automatic poori making machines
3.	Hollow fiber membranes for sewage and waste water treatment	M/s. Technorbital Advanced Materials Pvt. Ltd., Kanpur	In-house R&D	100.00	80.00	Low maintenance and higher self life Ultra Filtration membrane technology for treatment of sewage and industrial waste water

4.	Design and Development of hydraulic Directional Control valve	M/s. Shivam Hydraulics, Ahemdabad	In-house R&D	140.00	100.00	The mono block directional control valve with symmetric spool to provide more options for standardization and flexibility of having various configurations and to offer wide range of applications. The new design of hydraulic parts will make the product low cost, better quality and higher performance and would be an import substitute.
5.	Production of Synthetic oil and Syngas from Industrial/ domestic plastic waste using Advanced Supercritical Thermal Treatment Technology	M/s. Rays Enserv Partnership Firm, Patiala	In-house R&D	160.00	100.00	Advanced super critical thermal technology for converting waste plastics into synthetic oil. The liquid cracking in closed reactor under catalytic conditions will be effective to yield oil with very low wax content.
6.	Tactical Visual Wireless Data Card (TVWDC)	M/s. Starbru Techsystems Pvt. Ltd., Bhopal	In-house R&D and incubated at Delhi University incubation centre	120.00	95.00	Tactical Visual Wireless Data Card (TVWDC) device an integrated module developed for military radio-sets that enables transferring encrypted data, i.e., files (PDF, Word, txt etc.), live snapshots, images and chat seamlessly over the existing Secured Radio Network even while moving between locations by using portable devices similar to mobile phones or tablets without using any GSM/CDMA or Internet technology. It would be a secured file transmission technology for application in defence.

2.2.3. ONGOING PROJECTS DURING THE FINANCIAL YEAR

Following two ongoing projects were continued for review & monitoring during the financial year:

S. No	Title	Industry	Technology know-how partner	Project cost (Rs. In lakhs)		Innovation & likely impact
				Total	Loan	
1.	Production of Low Lactose milk	M/s. Madhumita Dairy Products, Bengaluru	In-house R&D	210.00	100.00	Innovative process technology for production of low lactose cattle milk with >0.1% lactose content for consumption by lactose intolerant population particularly kids and elderly people.
2.	ChillerMate Desuperheater Unit for industrial and commercial operations	M/s. Promethean Energy Pvt. Ltd., Mumbai	Under the license of IIT Bombay	68.00	42.00	Recovery of waste heat from industrial chillers and air compressors for converting it into useful energy for better energy efficiency

Low Lactose Milk in aseptic pouch

Recovery of waste heat from industrial AC

2.2.4. NEW PROJECTS TECHNICALLY RECOMMENDED BY TIFAC AND UNDER FINANCIAL APPRAISAL BY SIDBI

Following nine new projects were assessed, peer reviewed and technically recommended by TIFAC during the financial year which are under various stages of financial appraisal by SIDBI:

S. No	Title	Implementing Industry	Technology know-how partner	Innovation
1.	Chitosan derivative formulation for plant growth and building disease resistance in agriculture and horticulture crops	M/s. Swasti Agro & Bioproducts Pvt. Ltd., Pune	In-house R&D	A novel process for chitosan derivative formulations for enhancing plant growth and building disease resistance.
2.	Manufacturing of electric vehicle e-Trike	M/s. ECOEV India Pvt. Ltd., Mumbai	Under the license of IIT Bombay	An innovative design of spineless composite unibody of electric vehicle targeted for collection cum vending of milk and fish particularly by women community
3.	UV-LED based Mask Aligner	M/s. Cryonano Labs Pvt. Ltd., Kolkata	In-house R&D	A low-cost, compact, portable exposure-cum-mask aligner system with user controlled emission behaviour for photolithographic and nano fabrication applications.
4.	Organic, Eco-friendly, Biosurfactant based solution for Extending the Shelf-Life and Decontaminating Vegetables and Fruits	M/s. Green Pyramid Biotech. Pvt. Ltd., Pune	Technology licensing from CSIR-NCL, Pune and incubated at NCL Venture Centre	A novel biosurfactant formulation derived from natural, renewable, biodegradable sources for removal of pesticides, pathogens and also enhancing the shelf-life of vegetables and fruits.
5.	Indigenous process for micro-encapsulation of probiotic products for enhanced functionality	M/s. Hitech Biosciences India Ltd (HTBS), Pune	In-house R&D	Micro-encapsualtion of probiotic cultures of microbial strains like Lactobacillus, Bifidobacterium, Streptococcus, Lactococcus and related species in order to enhance properties like stability, shelf life, resistance to gastric pH, etc. and make them more suitable for healthcare and dietary supplement application.
6.	UF Ceramic membrane with module/filter unit for fluid (water purification, oil, waste water, dairy etc.) filtration application	M/s Need Inovation, Kolkata	In-house R&D	The innovative ceramic filter manufacturing process, complimented with unique design of ceramic membrane to achieve equal surface area as that of the internationally available ceramic membrane at half the volume. The membrane can handle corrosive and non-corrosive liquids in wide range of pH
7.	RTLS based Intravenous (IV) analytics and notification system for IV administration management	M/s. Smartify Health Pvt. Ltd, Mumbai	In-house R&D	Smart IV device with weight sensor that can calculate level of fluid, Time to Finish (TTF), Flow Rate of the IV bags and send it to Gateway with the help of RF communication module to platform then to webserver to alert the nurse through mobile app for timely change of the Intravenous (IV) bags administered to the patients.

8.	Extraction of Green Silica from Rice Husk Ash	M/s. Brisil Technologies Private Limited, Vadodara	In-house R&D and incubated at IIT-BHU, Varanasi	The technology to extract advanced dispersible grade silica from rice husk ash generated from biomass power plants which is used as filler in tyres to reduce the rolling resistance of tyre resulting in improving the fuel efficiency of vehicles.
9.	CellBRx single use bioreactor for efficient and affordable production of biologics and vaccines	M/s. OmniBRx Technologies Pvt. Ltd., Ahmedabad	In-house R&D	Dynamic Bed Reactor (DBR) technology for rigid wall single use bioreactors offers very large surface area for adherent cell growth in small culture volume. Innovative design offers mixing to ensure homogeneous nourishment and mass transfer while scaling up and cheaper.

2.2.5 AWARDS/ RECOGNITIONS FOR SRIJAN RECOMMENDED INNOVATIONS

Special achievements / recognitions of technology innovations appraised and recommended by TIFAC:

1. M/s. SKYi Composites received the "Fastest growing company excellence award" on 20th May 2017 by International achiever's conference at New Delhi and was named "Most innovative enterprise" by CII and DIPP for innovation in "Long fiber reinforced thermoplastics (LFT) compounds and advanced composites".
2. M/s Aquagri along with Indian Farmers Fertilizer Cooperative (IFFCO) has jointly developed key brand named Sagarika, an organic biostimulant derived from red & brown seaweeds using the innovative seaweeds processing technology developed and transferred by CSIR-CSMCRI and successfully commercialized under Srijan Programme. Product was launched by the Hon'ble Minister of Science & Technology Dr. Harsha Vardhan during the Technology Day 2017. The project has created sustained job for 400 seaweed farmers particularly women through self help groups.
3. M/s. Roboplazma, Pune has exported the innovative "Roboplazma structural steel cutting system" of worth Rs.3.87 crores after scaling up the technology under Srijan.

2.2.6. NEW INITIATIVE: TECHNOLOGY ASSESSMENT OF START-UPS FOR TAX EXEMPTION WITH DIPP

The Union Budget 2016 highlighted some major tax exemptions to the start-ups for 3 years under the Start-up India campaign, a flagship initiative of the Government of India under Department of Industrial Policy & Promotion (DIPP) to build a strong eco-system for nurturing innovation and start-ups in the country. On the request of DIPP, TIFAC initiated the evaluation of applications from start-ups for submitting comments to DIPP for consideration of Inter Ministerial Board (IMB) for approval. The evaluation of proposals were carried out primarily based on parameters like novelty/ innovation, development, deployment or commercialization of new products, processes or services driven by technology or intellectual property, or should be a scalable business model with a high potential of employment generation or wealth creation etc.

TIFAC started this activity in November 2017 and till 31st March, 2018 TIFAC completed assessment of 851 applications from start-ups and comments were submitted to DIPP within a stringent timeline.

3.0 Technology Support

TIFAC follows need based approach in its interventions involving industry. The MSME sector, is one key area where the technology intervention is of crucial importance. The design of the intervention has to be comprehensive, requires much handholding and covers a broad-spectrum of activities to be carried out. TIFAC designs technology intervention plans for industries which are at times followed up with imparting requisite capacity building.

3.1 MSME CLUSTER PROGRAMME

With major target of providing R&D and technical support to the MSMEs, the Programme strives at building a platform that facilitates interaction of MSMEs with academia/ R&D/ technical institutions to leverage their knowledge and expert-base. TIFAC engagement starts with technology mapping and comprehensive assessment of technology needs with specific focus on technology status (product & process) in the cluster, identification of gaps (in terms of technology, competition and market requirements), and designing an appropriate and requisite technology interventions action plan for the cluster. Subsequently, TIFAC undertakes need based capacity building initiatives in the cluster.

Progress under the Programme during the year is given as under:

3.1.1 EXPANDING PROGRAMME REACH:

With an objective/aim of reaching out to more MSME clusters in the country and expanding the reach of the program further, Expression of Interests (EOIs) through all India advertisement (released in newspapers dated 1st November, 2017) were invited from interested MSME Cluster Industry Associations desirous of seeking support from TIFAC's MSME Program. EOI proposals received are being processed.

3.1.2 COMPLETED STUDY

Technology Gap Analysis Study for the Refractory Cluster – Bangabhoomi, Asansol, West Bengal

The cluster houses total of one hundred forty seven (147) units of which only twenty four are involved in the core work of producing conventional refractories, others are associated units of micro and small scale. The raw material used is mainly lohardanga calcined bauxite, high alumina castable grog, rampurhat plastic clay, dhadu plastic clay, bankura plastic clay , absalpur and salanpur non plastic clay etc, and major products from the clusters includes fireclay bricks, bottom pouring refractories, high alumina bricks, castables, fireclay mortar, ramming mass, ladle refractory bricks, tundish board, exothermic sleeves, magnetic bricks, chrome magnetic bricks, insulation bricks

etc. The turnover of the cluster is reducing over years – 6740 lakhs in 2014-15 to 6720 lakhs in 2015-16. The cluster industries (core as well as associated units) employs around 4600 people directly and around 12,200 additionally in allied activities. Only the entrepreneurs/industry owners and the main management people have education to the level of graduation and above.

Technology wise main kiln used for manufacturing refractory products is the Down Draft Kiln (DDK). However, magnesite, chrome magnesite and high alumina bricks are also being made by few entrepreneurs having tunnel kiln and heavy duty press. The major energy source in the cluster is coal from the raniganj and dhanbad areas. On an average energy input or consumption of coal per ton of refractory firing is around 0.3 – 0.5 ton. The cluster produces around 15,000 ton of refractory per year. The refractory market is still dominated by steel – 6%, energy/ chemicals – 15%, glass – 7% etc.

After thorough survey and analysis, the study identifies major gaps like quality of products produced by Down Draft Kilns (DDK) is not up to the mark - under fired and over fired products due to wide temperature variance and heat distribution in DDK, the rejects are more – around 30%, utilization of coal as main energy source is only about 20%, there is a persistent problem of pollution due to coal around DDK, monolithic refractories not being manufactured in the cluster and high value products like high alumina products etc are not being manufactured amply. The solutions proposed include new improved fuel recharging system need to be redesigned, waste heat recovery system required for DDK, exhaust system need to be improved for getting high thermal efficiency and reducing pollution, monolithics need to be introduced in the cluster and diversification of products needed to utilize underutilized machinery. Recommendations from the study include creation of appropriate facilities for manufacturing monolithic and castables, requirement of common testing laboratory in the cluster for maintaining quality standards, improvement/modification of DDK – redesigning DDK and introduction of solid fuel burner for firing DDK, diversification into fly ash bricks and blocks etc for max utilization of underutilized machinery and undertaking requisite trainings/capacity building initiatives.

3.1.3 ONGOING STUDIES

A total of eight (8) technology analysis studies are going on in thirteen (13) MSME clusters.

Ongoing study nearing completion - Technology gap analysis study in Wood Carpentry and Bamboo Clusters of Mizoram. The study focuses on the three (3) main MSME clusters in Mizoram namely the Baktawng Wood Carpentry Cluster, and Bairabi and Seling Bamboo Cluster and covers industries/enterprises/units related to manufacturing/production of all type of wood and bamboo products. The main objective is to find out the existing technological gaps in the product as well as in the manufacturing processes in the cluster and bring out the causes of the existing gaps, suggest remedial measures and ways towards addressing the same and to present specific recommendations and technology interventions action plan for upgrading the technology base in the clusters.

Progress – Validation workshop towards validating the findings of the study and to finalize the action plan was held in December, 2017 in the clusters. The final study is being submitted after incorporating the suggestions and comments/inputs from the workshop.

3.1.4 OTHER ONGOING STUDIES AS UNDER:

S. No	MSME Cluster	Knowledge Partner (Technical Institute)
1	Saree Cluster, Varanasi, Uttar Pradesh	Indian Institute of Technology – BHU, Varanasi
2	General Engineering Cluster, Coimbatore, Tamil Nadu	PSG College of Engineering, Coimbatore
3	Agricultural Implements Cluster, Noorsarai, Bihar	Indian Institute of Technology - Patna
4	a. Baktawng Wood Carpentry Cluster, Mizoram b. Bairabi Bamboo Cluster, Mizoram c. Seling Bamboo Cluster, Mizoram	National Institute of Technology - Mizoram
5	a. Copper & Bronze Utensils Cluster, Vaishali, Bihar b. Brass and German Silver Utensils Cluster, Bettiah, Bihar c. Brass and Bell Metal Cluster – Mahisadel Purba, Medinipur, West Bengal d. Brass Metal cluster, Pareb, Bihta, Bihar	Indian Institute of Technology – Patna
6	Textile and Garment Manufacturing Cluster, Erode, Tamil Nadu	National Institute of Fashion Technology (NIFT) – Tirupur Exporters Association (TEA), Tirupur
7	Kanaihaganj Jhula Cluster, Nalanda, Bihar	Indian Institute of Technology – Patna
8	Surgical Dressing Manufacturers Cluster, Chatrapatti, Tamil Nadu	National Institute of Fashion Technology (NIFT) – Tirupur Exporters Association (TEA), Tirupur

3.2 MSME INTERNSHIP SCHEME

MSME Internship scheme has been institutionalized towards encouraging enhanced and continued involvement of students and faculty of technical institutions with the industries and providing technical support to the otherwise technologically deficient MSMEs and towards nurturing a student and faculty driven innovation ecosystem for the Indian MSMEs. Implementation of the scheme continued with five Technical Institutions namely: Indian Institute of Technology, Banaras Hindu University, Varanasi, PSG College of Technology, Coimbatore, MS Ramaiah University of Applied Sciences, Bangalore, Pimpri Chinchwad College of Engineering, Pune and VIT, Vellore.

Scheme Replication: Replication of the scheme being undertaken in two institutes, Walchand College of Engineering, Sangli & Shri Ramdeobaba College of Engineering and Management, Nagpur in Maharashtra by Rajiv Gandhi Science and Technology Commission (RGSTC), Govt. of Maharashtra.

Progress: Completed Technology Development Projects – Nine (9) as under:

Sr. No.	Project Title
1	**Design and static analysis of special purpose packaging machine** Brief: Watch strap packaging is being done manually. Under this project, a packaging machine was designed with Akuva Infotech Pvt. Ltd., Bangalore for packing watch straps automatically. The designed system is simple in design and has high speed operation. It has innovative design of heater assembly ensures efficient packaging of watchstraps. It is cheaper as compared to other general purpose machines available in the market and required less maintenance and allows hands free strapping.
2	**Design, simulation and development of acquisition of MRI** Brief: Towards low field cost effective MRI machine development, the project developed and demonstrated a prototype with help of the industry i.e. HEALed Labs and Research Pvt. Ltd., a magnetic coil assembly using magnetic field of earth to construct images of objects. Such low cost development will make the MRI affordable.
3	**Four layered printed circuit board for RF synthesizer** Brief: Project aimed at development of printed circuit board with 4 layers in order to reduce the space and use of multi PCBs.
4	**System engineering approach to design motion control system of multi axis bench top robot** Brief: Cost effective bipolar stepper motors are used to design bench top robot instead of servo motors for speed below 1000 rpm along with the industry Incite Cam Center, Bangalore. Simple 3 axis motion control, embedded systems are used instead of HMI and PLC to reduce the cost drastically. Using stepper motor makes the control logic simple and eliminates the need of expensive drivers. Such bench top robots which are also less bulky.
5	**Automation and control of special purpose packaging machine** Brief: Automatic strapping machine developed ensuring compactness, resulting in easy mobility in partnership with industry Akuva Infotech Pvt. Ltd. The machine's maintenance cost is low and its hands free strapping operation improves production speed and accuracy. Packaging capacity of up to 5000 pieces of watchstraps per day.
6	**Design, simulation and development of reconstruction of MRI** Brief: Towards low field (around 0.2 tesla) cost effective MRI scan machine development, the project successfully developed in association with the industry i.e. HEALed Labs and Research Pvt. Ltd., a custom image reconstruction algorithm and analysis standalone system for integration with the Imager. It uses weaker magnetic field to produce good results and benchmarks the reconstructed algorithm with Terranova (An earth's field Magnetic Resonance Imager by Magritek Limited, Germany).
7	**Automation in Braided wire cutting & M I Rod Straightening & cutting methodology for thermocouple production unit** Brief: Under the project, an automated M.I. rod straightening and cutting machine to cut the rods as per the required dimensions developed. The straightening machines would increase the production rate and will also reduce the manual labour. Further, automation would bring safety measures labours as manual labour would be avoided. The project achieved complete automation in straightening and cutting process of MI Rod resulted into following : • The time required for new machine is reduced by 1/5, within 1 to 2 minute bar is straightened and cut and collected in to the tray. • The process is easy and simple and a single operator can do the complete process of straightening and cutting. • New designed machine is fast enough, which gives raw material into pieces whenever they needed, this ensures that moisture will not enter into the cut pieces as the raw material is cut and directly put to further process.

Sr. No.	Project Title
8	**Analysis of flow of hot gases over clutch plate of 16MnCr5, and design and development of pallet for enhanced heat transfer rate'** Brief : The new pallet developed enhances the heat transfer rate as well as improve the hardness of the clutch plate and also reduce the waviness on the surface of clutch plate. There is drastic improvement in the product as well as process and resulted in reduction in PPM rejection at customer end. The Hardness of the clutch plate increased from 18-28 HRC to 22-25 HRC (Permissible Hardness 22-26 HRC). The Hardness is uniform throughout the surface of the clutch plate and also there is a drastic reduction the warpage of the Clutch plate.
9	**'Design and development of Hydraulic Rotational Jib Crane'** Brief: The project achieved the objective of reducing the cost, electrical components have been eliminated and weight lifting would be done by Hydraulic cylinder which would operate manually. The project dealt with area of material handling systems and new product development which was undertaken due to problem faced by MSME sector. Generally, the material movement is done with the help of overhead cranes, as MSME industries have space constraint so the crane having rotational arrangement is required with minimum space. This crane is designed to lift load capacity of 1000kg with a rotational movement of horizontal arm with respect to vertical column in 1800 angle and hence can be used easily for lifting material in inaccessible areas.

3.3 ASSESSMENT OF RAW MATERIALS TOWARDS VALUE ADDITION AND EXPORTS

Many materials (including agricultural crops, oils, minerals and others) are being exported from our country as it is in their raw form without much value addition or with very little value addition. Most of these raw materials though have high potential towards value addition and subsequent export of value added products/derivatives. Presently, the value addition in these materials is being undertaken by the importing countries and as such our country is losing in terms of export revenues. TIFAC had undertaken the task of exploring the potential and possibilities of value addition in few such identified raw materials and preparing preliminary assessment reports with a view for enhanced value addition and exports. Three (3) raw materials namely **Castor, Bauxite and Sea Weeds** were identified towards need/feasibility assessment for further value addition and exports.

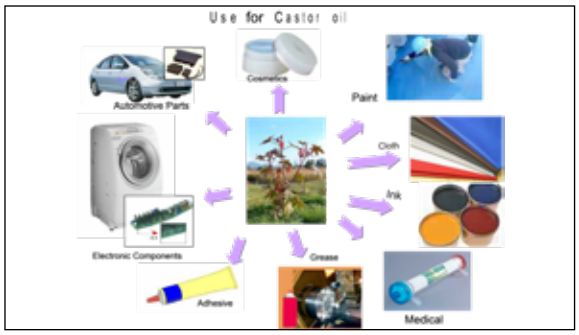
3.3.1 CASTOR:

Background: The Castor or Ricinus Communis L., of the family Eurphorbiaceae, occurs in practically all tropical and subtropical countries, either wild or cultivated. Castor is one of the oldest cultivated crops and one of the most important commercial sources of hydroxylated fatty acids called Ricinoleic Acid. The Indian variety of castor has around 48%- 50% oil content by weight of which only around 45% - 46% on an average is extractable with present technologies at the extractor level. The hydroxyl functionality of Ricinoleic Acid (RA) makes the castor oil a natural polyol providing oxidative stability to the oil, and a relatively higher shelf life compared to other oils by preventing peroxide formation. The presence of the hydroxyl group in castor derivatives provides ability of chemical reactions including halogenation,

dehydration, alkoxylation, esterification, and sulfation. This unique functionality allows the castor oil and its derivatives to be used in industrial applications such as medicines (laxatives etc), food, textiles, plastic & rubber polymers, electronics, paints, coatings, inks, lubricants, adhesives, perfumes, dielectric and hydraulic and brake fluids, industrial feedstock, detergents, dielectric fluids and fuels like biodiesel etc.

Status: Major castor oil producing countries include India and China. India is the largest producer of castor seed and oil and produces on an average 1.4 million tones of castor seed, which meets around 80% of the world's requirement of castor oil. Three states are the major producers of Castor seed namely Gujarat, Rajasthan and Andhra Pradesh. Gujarat alone produces more than 80% of total seed in the country. The average oil output is around 0.67 million tones. Most of this oil is exported to China and Europe as there is little domestic demand for castor oil. Castor based oil extracting industry is located mostly in the state of Gujarat. Production is confined to production of Castor Oil and a very limited portion of oil is converted into only the primary derivatives called the 1st generation derivatives. The major market for castor oil and derivatives are China, Europe, North America, Japan etc. Currently, India lacks in production of value added products and derivatives of 2nd, 3rd and 4th generation, the value preposition in which are many folds. The left over after castor after extraction of oil i.e. the castor meal is also a natural fertilizer rich in NPK and the final by remains i.e. castor cake is being used in feed of animals as it is a rich source of protein but only in limited amounts due to presence of toxic ricin.

Castor plantation near Ahmedabad showing spikes of castor



Different Uses of Castor Oil

Challenges and Issues: The major technical challenges include - increasing yield/production of oil from seed and productivity of the castor crop from field through best agricultural practices and high throughput hybrid seed varieties with more oil content, ricin free castor cake, production of advanced products and derivatives of 2nd, 3rd and 4th order/generation in the country, increasing the domestic base for castor products, finding out alternative uses of castor, policies to support manufacturing of derivatives etc.

Progress :

Draft Report: The draft report contains detailed Recommendations and Roadmap prepared through wider consultations which have brought out the urgent need to plan short, medium and long term strategies including prioritization of R&D and executing the same towards tapping market potential to the maximum extent - both present and emerging. Steps outlining the road map are broadly divided into two distinct categories – (i) Dissemination of best agricultural

practices, and (ii) trajectory of R&D efforts, so that India can gain prominence also in exports of high value added Castor derivatives instead of export of Castor oil and some low value added derivatives. The report also identifies specific domain organizations for addressing respective R&D areas in the road map besides providing inputs for requisite policy formulation.

In order to prepare the final report of the Castor sector, prioritize requisite R&D and prepare an action plan towards boosting value added products/derivatives and exports, wide ranging consultations/ interactions with the different major domain stakeholder Organizations/ Agencies/ Institutes/ Association/ Industries were held including Indian Institute of Chemical Technology (IICT), Hyderabad, National Institute of Agricultural Marketing (NIAM), Jaipur, Indian Oil Corporation Limited (IOCL) R&D centre, Faridabad, Indian Institute of Technology (IIT), Delhi, CSIR - Indian Institute of Petroleum (IIP), Dehradun, Department of Science and Technology (DST), New Delhi, ICAR - Indian Institute of Oilseeds Research (IIOR), Hyderabad, Gujarat State Seed Producers Association, National Seed Association of India, Sardar Krushinagar Dantiwada Agricultural University (SDAU), Gujarat, Jodhpur Agricultural University, Basic Chemicals, Cosmetics and Dyes Export Promotion Council (CHEMEXIL), Delhi and representatives of Solvent Manufacturers Association (SEA) and Oil Promotion Council, Mumbai, Exporters, experts besides TIFAC officials.

The interactions were carried forward in a Brainstorming Workshop cum Discussion Meeting at Delhi on 15th March, 2018 and culminated in a pre finalized Castor report with detailed Recommendations and Road Map. The report has brought out the status, potential, and prospects of Castor and its oil and products. In view of the emerging and fast changing market scenario, the report highlights the challenges especially the technical ones, which needs to be addressed in a composite manner, so that our country is able to consolidate and expand our presence and reach in the market. Finally the report presents an action plan and strategy, both in the short, medium and long term to tap the potential to the maximum extent – both present and emerging. The final report is being made.

3.3.2 BAUXITE:

Background: Bauxites basically are aluminous rock containing hydrated aluminium oxide as the main constituent and silica (SiO2), iron oxide (Fe2O3), and titania (TiO2) in varying proportions, formed by the decomposition and hydrolysis of aluminium-bearing silicates. The iron oxide in bauxite ore is present as haematite or goethite, silica as clay and free quartz and titania as leucoxene or rutile. Bauxite is an essential ore of aluminium which is one of the most important nonferrous metals used in the modern industry. It is also an essential ore for Refractory and Chemical industries. The country has abundant resources of bauxite which can meet both domestic and export demands.

Typical Bauxite Ore

Status: Bauxite has been a priority sector for the upstream aluminium value chain players. World bauxite resources are estimated around 55 to 75 billion tonnes. Of this, recoverable reserves are estimated

around 25-30 billion metric tonnes. Largest recoverable reserves are in Australia followed by Guinea, Brazil, Jamaica, and India. India's bauxite ore production has remained reasonably in line with its aluminium output and is estimated to rise buoyed by increasing domestic demand. Total Bauxite (reserves and resources) in India are placed at about 3,896,864 million tons which is about 5%- 7% of the world. Orissa is the largest producer of bauxite in the country and contributes about one-third of the total production. Kalahandi, Bolangir, Koraput, Sundargarh and Sambalpur are the main bauxite producing districts. It is estimated that more than 160 million tons of bauxite are mined each year. The leaders in bauxite production include Australia, China, Brazil, India and Guinea. Major industries in Bauxite production in India are NALCO, BALCO, HINDALCO, Vedanta etc.

Challenges and Issues: The main challenges and issues primarily identified includes that of challenges in production of bauxite and exploration, utilization of low grade ore, beneficiation and refining of bauxite, use of bauxite as a value added material in various industries, recycling and reuse, development of new and alternative products, export of bauxite, etc.

Progress:

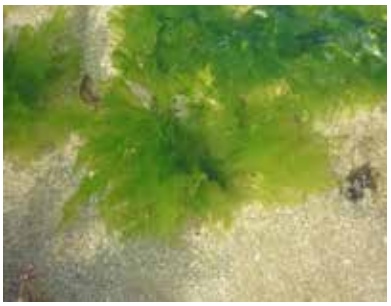
Preliminary Draft Report: A preliminary draft report on Bauxite was compiled and collated from the information and data on Bauxite available in the public domain. The collected information was presented and discussed in detail in a discussion meeting held at Jawaharlal Nehru Research, Design and Development Centre (JNARDDC), Nagpur. The data gathered was shared among participants for feedback and inputs and major areas were identified for further detailing/ work in the report i.e. exploration, beneficiation/ purification, recycling and reuse and value addition.

Interactions with Stakeholders: In order to prepare a final status report of the Bauxite sector, prioritize requisite R&D and prepare an action plan towards boosting value addition/value added products and exports, wide ranging consultations/ interactions with the different major domain stakeholder Organizations/ Agencies/ Institutes/ Association/ Industries were held including in which organizations like Indian Bureau of Mines (IBM), Refractory Industries – SKG Refractory, Castwel Industry, Bauxite Industry - Vedanta, MECL, NALCO, IBAAS, CGCRI, other experts and scientists from JNARDDC and TIFAC.

Planned: The interactions to be carried forward towards preparing and finalizing recommendations and road map in a Brainstorming Workshop cum Discussion Meeting to be convened on 9th April, 2018 at JNARDDC, Nagpur.

3.3.3. SEAWEEDS

Seaweeds which may be cultivated abundantly in India's coastlines can potentially catalyze high economic and social benefits. Products obtained from it have wider applications in various sectors such as food, confectionery, pharmaceuticals, dairy, textile, paper and paint industries. Some of them are also suitable for human consumption and animal feed.



Ulva lactuca

Gracilaria corticata

Sargassum tenerrimum

Seaweeds have a great potential & importance not only in terms of value added products but also as a source of mass employment generation. Sustainable production of seaweeds has a potential to contribute to the society through the creation of jobs: at the first level, i.e. seed hatcheries, grow out operation and processing. At the second level, through industries, supplying goods and services; at the third level through the provision of associated jobs. It is estimated that seaweed farming has a potential to employ, at least 15 million people towards farming of 1 million hectares of sea surface area (i.e. actual cultivation area) within the territorial waters of the country. This will ideally produce 500 million tons seaweed biomass (fresh weight) per year (@500 tons/hectare/year with 5 harvests). The value of this crop would be □175000 crores as per prevailing market value (@ □ 3500/ton biomass fresh).

Extensive literature survey was carried out to collate information on various types of seaweeds, their cultivation, applications and their export potential. Preliminary feasibility analysis of seaweed cultivation was carried out, followed by identification of appropriate stakeholders and consultation with them. The draft report outlining approaches for utilization, employment generation and export potential of seaweeds have been prepared. This was done through conducting literature survey on seaweeds, and consultation with concerned stakeholders. Subsequently, TIFAC partnered with CSIR-CSMCRI, Bhavnagar to develop the report further.

3.4 GAINFUL UTILIZATION OF PLASTICS WASTE

Earlier, Shri Mata Vaishno Devi Shrine Board, Katra, J&K had sought help from the Office of Principal Scientific Advisor to GOI, to solve the problem of non biodegradable plastics waste at Katra. On the request of Office of P.S.A, TIFAC worked with technology providers towards assessment and evaluation of available and implementable technology options for Plastics Waste Utilization at Katra.

Progress: Facilitated generation of a proposal / offer from M/s Rays Enserv, Patiala, an industry engaged in synthetic oil production from waste plastics, towards utilization of waste plastics at Katra for making synthetic oil for industrial use.

3.5 BIOPROCESSES AND BIOPRODUCTS PROGRAM

Programme aims towards carrying out systems studies in the field of bioprocess & bioproducts and supporting R & D in specific niche areas. Under the Program, earlier specialized reports published and several projects were launched towards development & demonstration of new technologies in the areas of biotransformation & enzymatic processes for API, nutraceuticals, phyto-chemicals, value-added bioproducts, bio-energy & biofuels, etc

Major & unique national facility 'centre for biofuels- pilot plant' created at CSIR-NIIST, Thiruvananthapuram for investigating & assessing the technologies for lignocellulosic ethanol from Indian biomass alongwith development of other chemicals for improved process economics.

3.5.1 COMPLETED STUDIES:

Two Assessment Studies and Road map on Production and Utilization aspects in Methanol and Di-Methyl-Ether (DME) prepared at the behest of NITI Aayog and DST earlier with primary objective of reducing the carbon footprint or well to wheel Green House Gas emissions besides securing our energy needs. The reports titled 'Survey report on Utilisation of Methanol & DME' and 'Survey report on Production of Methanol & DME' has been published and released on 31st TIFAC Foundation day on February 10, 2018. A National programme on Methanol & DME has been launched by NITI Aayog and constituted five task forces as (i) Utilization of Methanol / DME (ii) Production of Methanol using high ash coal (iii) Production of methanol using biomass/MSW/other than coal (iv) Conversion/design of methanol/ DME based Engines (v) Dissemination of Information on methanol & DME, which are coordinated by different Ministries. Task force on dissemination of information is to be coordinated by TIFAC.

3.5.2 ONGOING PROJECT:

The project titled setting up 'Centre for Biofuels' – Phase II' at NIIST, Thiruvananthapuram has met its objectives of developing the laboratory scale processes into workable technologies at the pilot plant for selected Indian biomass (sugarcane tops & cotton stalks). Pilot plant trials with steps including pretreatment and hydrolysis process followed by fermentation trials completed. A techno-economic analysis of the entire process was also carried out to address the commercial feasibility of bioethanol production.

The major achievements, outcomes & spin offs from project are as follows:

- Pilot plant for bioprocesses including bioethanol, enzyme production at 100 kg moldy bran level is fully operational
- Process for cellulase production was developed and transferred to Industry – spinoff technology
- Lab process developed for Betaglucosidase (BGL) production and further scale up at pilot plant is being undertaken with financial support from CSIR.
- Two novel yeast strains with ability to ferment non-detoxified hydrolysates isolated and used effectively for fermentation with up to 80% efficiency in converting available glucose
- Concept on Itaconic acid production from hydrolysate demonstrated.
- Preliminary costing analyses completed on bioethanol.
- Twelve technical papers in various journals published by CSIR-NIIST and a patent are expected.

3.5.3 ONGOING STUDY : TECHNOLOGY ASSESSMENT STUDY

Two Technology Assessment Studies on biomass availability and technologies for conversion to biofuels are being carried out. The studies aims to develop zone-wise recommendations for appropriate technologies for conversion of crop residues into biofuels and to provide technological options to concerned industries. The aforesaid studies titled 'Estimating generation and surplus amounts of crop residues in India' launched in partnership with Indian Agricultural Research Institute (IARI), New Delhi and other titled 'Spatial information on biomass potential from crop residues over India using geospatial techniques' with National Remote Sensing Centre (NRSC), Hyderabad has been launched. Spatial data for four crops would be provided by NRSC. IARI study is under completion and the major highlights of IARI report are as follows :

- Study quantified the generation of surplus crop biomass at district level in three crop growing seasons for 662 districts of the country for eleven crops.
- Under primary survey, a total of 43 districts covering 10 different states of India and 1400 farmers were surveyed. The criteria used for selection of districts for primary survey was based on agro-climatic zones and accessible data.
- The report covered data of selected crops on dry biomass generation basis, available surplus biomass, bioethanol potential from biomass and % contribution of selected crops in surplus biomass and their bioethanol production potential in India (statewise)

3.5.4 A one day brainstorming session on 'Seaweed Cultivation and Utilization (Sea CU) 'at CSIR-CSMCRI, Bhavnagar was organized by TIFAC on 27th November, 2017. The major objective of the aforesaid meeting was to present, discuss and validate the information collated on seaweeds, besides chalking out a road map for value addition of seaweed products. Around 35-40 experts and stakeholders across the country participated in the meeting.

4.0 International Linkages

S&T is a global issue and no country can progress in this ffield in isolation given the rising interconnectedness. Continuous engagement with International experts and institutions fuels and sustains the pursuits in S&T domain. This holds true for TIFAC which has Technology Foresight and Innovation as its core mandate. During the year TIFAC continued its engagements with organizations like IIASA.

4.1 INDIA-IIASA PROGRAMME

India-IIASA Programme focuses on undertaking collaborative research projects among scientists from Indian S&T organizations/academic institutions with IIASA researchers in the areas on mutual interests and organizing training workshops. The Programme also offers opportunities for young Indian researchers to work at IIASA under the **'Young Summer Scientist Programme (YSSP)'** and Postdoctoral Programme, which help strengthen their skills in advanced systems analysis and research techniques.

4.1.1 CAPACITY BUILDING:

This is well acclaimed IIASA programme running since 1977. This provides an opportunity to young researchers from all National Member Organization countries to research on a theme related to IIASA's ongoing research on issues of environmental, economic and social change. Through this, young scientist joins an IIASA programme (June-August every year) and experiences at first hand, interdisciplinary cooperation in an international setting.

4.1.2 COLLABORATIVE STUDIES

On-Going : Under the India-IIASA programme, the following four studies are being completed during 2017-18:

4.1.2.1 A cluster project on Sustaining and improving rural livelihoods through adaptive approaches to land, soil nutrient and water management with Institute of Rural Management Anand (IRMA)-Anand, Centre For Water Resources Development and Management(CWRDM)-Kozhikode,National Institute of Hydrology (NIH)-Roorkee and Gujarat Institute of Development Research (GIDR)-Ahmedabad. The following three projects have been launched by TIFAC:

- Project on Climate Change Adaptation Approaches for Sustainable Livelihoods by IRMA, Anand. The study has completed spatial and temporal variability of climatic parameters by different RCPs such as historical and projected rainfall, temperature, and evapo-transpiration deficit. The AEZ methodology would provide data on current and future agricultural production. The Sustainable

Livelihood Security Index (SLSI) has been calculated with the support of IRMA and these data base would be utilized for targeting the nutrient recommendations for improving the productivity and sustaining the livelihood of farmers.

IRMA has also prepared and submitted the combined report with inputs from other two organizations to give the realistic view of the work carried out at three different sites. The report highlights the methodology specifying the trans-disciplinarily approach of combining the biophysical, socioeconomic and demographic factors. IIASA and Indian scholars have worked very intensively at IIASA to finalize the AEZ calculations for the three case study areas. The AEZ methodology provides data on current and future agricultural production. Based on the data on migration, the spatial pattern of future livelihoods could be analyzed. This would help spatial pattern of livelihoods and climate change adaption strategies.

Obtaining fuzzy cognitive maps from community groups

- Project on Integrating hydrology, climate change and IWRM with livelihood issues: Development of methodology and a DSS for water-scarce Bundelkhand region in India by NIH, Roorkee. The study developed water management tool (e.g. Decision Support System) to assist the local stakeholders in selecting and adopting appropriate water management practices on a sustainable basis. DSS model would create awareness on land & water productivity, water balance (with climate change impacts), livelihood options, technology options, institutional support, operational schemes, etc. The impact of climate change was analyzed by forcing hypothetical climate scenarios on the Thornthwaite-Mather water balance (TNWB) model setup. Under capacity building initiatives, eight training modules have been carried out by the three partner institutions including DA, MPCOST and NIH.

Water Resource Assessment

- Project on Evaluation of soil nutrient budgets at field, farm and regional level in humid tropics of Kerala and development of a model for management of soil health by CWRDM, Kozhikode. The study aimed to quantify the nutrient inflows and outflows (viz., soil erosion and leaching) in different cropping systems at spatial scales in Kerala soils and validate the model at different spatial scales in Kerala soils with the help of Geographic Information System (GIS). The study was carried out in three phases. The nutrient inflows, outflows, nutrient balance through nutrient budgeting model was quantified by the field experiments by CWRDM. The observed and predicted

values of soil loss using NUTMON model is matching in most of the cases. The Sustainable Livelihood Security Index (SLSI) has been calculated with the support of IRMA and these data base would be utilized for targeting the nutrient recommendations for improving the productivity and sustaining the livelihood of farmers. DSS structure and concepts have been prepared with the help of IIASA. The draft final report has been submitted by CWRDM and the report is being publsiehd by TIFAC.

Experimental plot view with Board of treatments

The three studies under cluster umbrella has developed shared climate change scenarios and DSS methodologies on climate, land and water and preparing guidelines in sustenance and improvement in rural livelihoods. The project findings would also work out a strategy for replication of solution and their scaling up in other parts of India.

4.1.2.2 Study on Study on Development and Application of GAINS-City Model for Indian Cities by National Environmental Engineering and Research Institute (NEERI), Nagpur aimed to develop a modified version of the GAINS-Asia model for major Indian urban areas such as Delhi and Kolkata. The study finds that nearly a fourth of the 15,000 tonnes of PM2.5 emitted annually is due to road dust and about 40% due to power plants and residual and commercial combustion.

The work on Delhi using GAINS model has been completed. It includes emission inventory by NEERI, data gathering and future projection of emission using GAINS model considering three different scenarios such as Business as Usual (BAU), - based on current legislations, Advanced Control Technology (ACT), - based on better efficiency equipments and Low Carbon Techniques (LCT) – by use of cleaner fuel/technology. The dispersion modeling was carried out by NEERI using American Meteorology Society–Environmental Protection Agency Regulatory Model (AERMOD) with primary aerosol. In addition, IIASA helped in carrying out the dispersion modelling for Delhi after inclusion of secondary aerosol data. Impact on the health and cost implication has also been carried out by IIASA.

Regarding the work for the Kolkata region, the primary data was collected for Kolkata for domestic and commercial sources. NEERI could not carry out air quality impact for Kolkata as they do not have the secondary aerosol data i.e emissions from other neighbouring cities of West Bengal. There is no separate 'GAINs Region' defined for Kolkata. Therefore, all the inventory work for Kolkata had to be done temporarily on Delhi region to develop a 'scenario' for Kolkata. It was demonstrated that models could be effective tools for the regulators to consider proper controlled measures.

The Government Foresight Organizations Network (GFN) provides an opportunity for government organizations to discuss global emerging issues requiring policy action and to share experiences in horizon scanning and foresight activities every year. TIFAC participated in the 7th meeting of GFN during November, 25-26, 2016 and the Global Innovation & Development Forum on November, 27, 2016 in Beijing (China). Methodology of preparation of Technology Roadmaps on Materials and Manufacturing was presented in the meeting and received appreciation from the experts.

Workshop on GAIN Asia Model at CPCB, New Delhi

4.1.2.3 Study on Agro-biodiversity Conservation and Ecosystem Development– A Study in Indian agro-climatic sub-zones by Institute for Social and Economic Change (ISEC), Bangalore. The study identified conceptual issues and gaps, develop biodiversity indicators relevant for agricultural landscapes, identify the ecosystem, estimate the economic value of agro-biodiversity, the social costs of their loss, as well as assess the policy options to promote agro-biodiversity conservation.

ISEC has analyzed the crop concentration index, crop diversity index and crop combination for Karnataka. Similarly, for the primary data collected, ISEC have done detailed energy and economy analysis of various traditional and introduced crops along with regression analysis. Detailed land use land cover map of Hosadurga taluk for the year 2001 and 2015 were prepared with the help of satellite data. To check the accuracy of the produced map, accuracy assessment was done for all three study regions using accuracy assessment tool in ERDAS software. To understand future agriculture land use and drivers for the change ISEC Compound Annual Growth Rate (CAGR), Crop Concentration Index (CCI), Linear Regression Analysis and Auto-Regressive Integrated Moving Average (ARIMA) models in the present study. In addition, climate data calculations and maps for rainfall pattern for all the study regions along with number of rainy days for last 4 decades have also been prepared.

Discussions with farmers in study regions

4.1.3 OTHER ACTIVITIES

The interaction with IIASA is helping build up national capability in applied systems analysis and development of integrated models, which can help in planning process and identification of technology priorities. In particular, IIASA's applied systems analysis has brought a global perspective, interdisciplinary research expertise, and policy relevance to issues ranging from the future of India's energy system to increasing the country's food production.

The India-IIASA collaboration has resulted in the publication of approximately 202 journal articles or reports on a diverse range of disciplines and issues, primarily on energy, biofuels, emissions (climate change), and forestry. IIASA's broader agenda also generates research of direct relevance to decision makers in India. IIASA's academic training programs have also been successfully building the next generation of systems analysts in India.

TIFAC in partnership with MoEF&CC, CPCP and NEERI had organized a workshop on Gains Delhi Model in TIFAC on October 26, 2017 to discuss the relevance and outcome of the study and identifies the way it can be taken forward as the matter of policy.

5.0 Events

TIFAC occupies unique space in the S&T spectrum of the country, not only in terms of landscape of technologies it covers but also its focus on the future. A forward looking organization as it is, TIFAC strives to create opportunities for diverse players to come together. It routinely organizes or co organizes events that facilitate networking among stakeholders on one hand to exchange of ideas, knowledge and experience. This section reports the major events that TIFAC has organized during the year.

5.1 TIFAC FOUNDATION DAY

TIFAC celebrated its 31st Foundation Day on February, 10, 2018 in the Lecture Hall-325, LHC complex, IIT Delhi with focus on "Future of Life on Earth – Role of Disruptive Technologies".

The Hon'ble Minister for Women & Child Development, Ms Maneka Gandhi presided over the Foundation Day celebration as the Chief Guest and the Hon'ble Minister of State for Science and Technology and Earth Sciences, Shri YS Chowdary was the Guest of Honour of the event.

Being a technology think tank of India, TIFAC has been celebrating its Foundation day every year on 10th of February to initiate and promote worthwhile areas of socio-economic importance through various technological tools. This year, TIFAC focused on three technology aspects viz: (1) Cellular Agriculture (e.g. meat without animal slaughter, milk without cows and eggs without hen) (2) Vertical Multilayer Farming and (3) Carbon Capture and Utilization.

Distinguished luminaries like Dr. Anil Kakodkar, Chairman, TIFAC, Prof. Ashutosh Sharma, Secretary, DST and Dr V K Saraswat, Member, NITI Aayog and a panel of eminent experts like Prof. Anupam Varma, Formerly National Professor and Dean ICAR-IARI, Dr. Murtaza Hasan, Principal Scientist, Centre for Protected Cultivation Technology, ICAR-IARI, Mr. Shriram Gopal, CEO & Co-Founder, Future Farms, Chennai, Dr. Syed SYH Qadri, Deputy Director National Institute of Nutrition, Hyderabad, Dr. Ajit Sapre, Group President (R&D), Reliance Industries Ltd, Dr Aniruddha Sharma, CEO, Carbon Clean Solution (UK), Dr. Jagdish Kishwan, former Director General, ICFRE, Dr Akhilesh Gupta, Head, Climate Change Programme, DST participated in the event.

The event gave the platform for young students, to share their perspectives in the extempore and selected students got prizes also.

The day-long event featured an MoU signed between TDB and TIFAC authorities and a popular science video on Global Warming was released.

5.2 VIGILANCE AWARENESS WEEK

TIFAC observed Vigilance Awareness Week during October 30-November 04, 2017. The theme of the Vigilance week was “My Vision: Corruption Free India”.

6.0 Human Resource Development

The success of any organization's endeavours lay in its human resource and its growth on how well it is developed. This is particularly true for S&T institution because of the pace of changes on one hand to the globalization on the other. TIFAC encourages and supports human resource development in the areas of its work– both internally and externally. It supports internships which allow young college students to work in TIFAC from two to six months under the guidance of TIFAC scientists. The scientists also routinely present or publish their ffindings, insights and experiences, besides serving as resource persons at diverse intellectual platforms.

6.1 TIFAC INTERNSHIP SCHEME

Towards strengthening technology foresight activities of TIFAC, enhancing linkages with academia and sensitizing the students about future technology priorities, TIFAC started the internship scheme in August 2013. During the current year, 17 students (including 3 students who joined earlier, and 14 who joined during the current year) went through internship under different TIFAC scientists. 8 students completed their internship project during the year. Topics on which student interns worked during the year 2017-18 are:

- Interface Standard for Integrated Electric Wheelchair
- Commercial Scale Food Processing Technologies Pertinent to Malda Cluster: an Attempt towards Rainbow Revolution
- Use of Artificial Intelligence in Travel Model Choice Analysis
- Technology Foresight Study on Electric Aircraft
- Electrification of Public Transport Buses
- Patent Data Based Forecasting for Future Education Systems and Skill Requirement for Teachers
- Technology Foresight Study on Food Processing Technology with Longer Shelf Life
- Technology Foresight Study on Nutraceuticals
- Charging Infrastructure for Electric Public Transport Buses
- Technology Foresight Study on Essential Oil (Flavours and Fragrances): How to Enhance Export from India by Technology Infusion
- Feasibility of Air Pollutant or Toxicant Removal by Identifying Certain Plant Species in Delhi Region
- Augmentation of Water Resource Through Treatment of Grey Water using Alga Biomass

- Identification and Analysis of Weak Signals and their Implications for Science, Technology and Innovation Policy
- Comparative Analysis of Emerging Vehicle Technologies in Indian Context - Part I

6.2. PAPERS PUBLISHED / PRESENTED

Papers Presented

1. Sanjay Singh & N Kaushik, presented a paper titled 'Seaweeds - TIFAC Collated Information' at CSIR-CSMCRI, Bhavnagar on November 27, 2017
2. Sunil Nautiyal & Harald Kaechele, Sruthi Subbanna M & Sangeeta Baksi, Study on Land Use Dynamics: Appropriate Methods for Change Estimation in Social Science Research, Earth Systems and Environment (ESEV (2017) 189:168, December 2017.
3. Sanjay Singh & N Kaushik, presented a paper titled 'Exploring Opportunities in seaweeds-TIFAC's Initiatives' at India Seaweed Summit-2018 at Mumbai on February 28, 2018

Papers published in Journal/ Periodicals

1. Swati Sharma. People's Attitude towards Healthcare Technologies. International Journal of Health Care & medical Informatics 2017 (ISSN 2455–9199); 4(2): 24-27. Doi https://doi.org/10.24321/2455.9199.201710
2. Swati Sharma, Gautam Goswami. A perspective on Medical Sciences & Healthcare. Healthy India Chronicle. July, 2017. 1(1): 66-71 www.healthyindiachronicle.in
3. Sunil Nautiyal & Harald Kaechele & M. S. Umesh Babu & Pavan Tikhile & Sangeeta Baksi, Land-Use Change in Indian Tropical Agro-Ecosystems: Eco-Energy Estimation for Socio-Ecological Sustainability, Environ Monit Assess (2017) 189:168, March 2018

6.3. PARTICIPATION IN NATIONAL AND INTERNATIONAL CONFERENCES / SEMINARS / SYMPOSIA

1. Ms. Sangeeta Baksi participated in the scoping workshop on the world in 2050 organized by Belmont Forum in partnership with IIASA, Austria at IIASA during April 05-07, 2017.
2. Ms Nirmala Kaushik, participated in stakeholder's consultation workshop on 'Renewable Energy Sector' under Technology Need Assessment (TNA) project on May 24, 2017.
3. Dr. Brajeshwar Chandelia participated in the brainstorming meeting organized by Centre for Human and Organizational Division (CHORD), Dept of Science and Technology (DST) on "Impact of gender mainstreaming policy" at Vishakhapatnam on July 07, 2017.
4. Dr. T. Chakradhar, attended International Seminar on Water Pollution & Human Health during 27th – 28th July, 2017

at Jamia Millia Islamia, New Delhi and made aware the participants about TV 2035 exercise and TIFAC's initiatives in Water and Health sectors.

5. Ms Nirmala Kaushik, participated in 'World Biofuels Day-2017'on August 10, 2017 organized by MoPNG.

6. Shri P.R. Basak Participated as an invited member in the Jury Panel of Initial Screening Committee of GEF-UNIDO-MSME Global CleanTech Innovation Programme (GCIP) 2017 for innovations in areas of energy efficiency, renewable energy, waste beneficiation and water efficiency on 17th & 18th August 2017 organized by IDEMI (Min. Of MSME), Mumbai.

7. Ms. Sangeeta Baksi Participated in the 4th Post Combustion Capture Conference organized by the international energy agency (IEA) during September 05-08, 2017 at Alabama, Birmingham, USA.

8. Smt. Sujatha. R participated in the Startup India Conference on Launch of State/UT startup ranking organized by Department of Industrial Policy and Promotion (DIPP) on 6th February 2018.

9. Shri Sanjay Singh, Adviser-TIFAC and Ms Nirmala Kasushik, Scientist, participated in an International Conference on Sustainable Biofuels -2018 during February 26-27, 2018 organized by Mission Innovation India Unit, DBT.

10. Shri Sanjay Singh, Adviser-TIFAC and Ms Nirmala Kasushik, Scientist, participated in EU- India Conference on Advanced Biofuels during March 6-8, 2018.

11. Ms. Sangeeta Baksi Participated in the workshop on MESSAGE model (India Energy Model) organized by Niti Aayog, New Delhi on March 22, 2018

12. Ms. Sangeeta Baksi participated in the TERI-IIASA Workshop on "Identifying Water, Energy, and Land Nexus Challenges in the Indus Basin" held on March 23, 2018 at IHC, New Delhi

6.4 TRAINING PROGRAMMES ATTENDED

- Ms Nirmala Kaushik, participated in a five day training programme on ''Knowledge Management & Knowledge Sharing in Organizations' for scientists & Technologists during February 5-9, 2018 at IIPA sponsored by DST.

6.5 INVITED LECTURES

1. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on "Historic perspective and evolution of IPR" in a programme organized by IIT Delhi on 4th May, 2017 at New Delhi.

2. Shri P.R. Basak delivered lecture on "Scaling of Technology Innovation with Case Studies" as an invited faculty in the one week training programme on Basic Technology Management of DRDO Scientists organized by Institute of Technology Management, Mussoorie on 15th May 2017.

3. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on "Management of Intellectual Property Rights" in a programme organized by Patent Information Centre at Arunachal Pradesh State Council for Science & Technology on 25th May, 2017 at Itanagar.

4. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on "Intellectual property rights and case studies on Bicycle sector" in a programme organized by Research and Development Centre for Bicycles and Sewing Machines (RDCBSM) on June, 2017 at Ludhiana .

5. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on "Use of patent information in R&D bicycle sector" in a programme organized by Research and Development Centre for Bicycles and Sewing Machines (RDCBSM) on June, 2017 at Ludhiana.

6. Shri P.R. Basak delivered lecture on Srijan Scheme and scaling of technology innovation in the knitting cluster at Tirupur and textile cluster at Erode under the validation workshop of technology gap analysis study of TIFAC on 26th & 27th July 2017.

7. Ms Sangeeta Nagar, Scientist E delivered a lecture on "Importance of IPR" in a programme organized by Shaheed Rajguru College of Applied Sciences for Women, Delhi University, on 27th July, 2017 at New Delhi.

8. Ms Dipti, Principal Training Coordinator delivered a lecture on "Patent Information and its access" in a programme organized by Shaheed Rajguru College of Applied Sciences for Women, Delhi University on 27th July, 2017 at New Delhi.

9. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on "Management of Intellectual Property Rights in paper and pulp sector" in a programme organized by Central Paper and Pulp Research Institute (CPPRI), Saharnpur on June, 2017 at Saharnpur.

10. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on "Overview of IPR" in a programme organized by MeghnadSaha Institute of technology MSIT, Kolkata on August, 2017 at Kolkata.

11. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on "Overview of Intellectual Property Rights" in a programme organized by Dr. B R Ambedkar University on August, 2017 at Agra.

12. Dr. Gautam Goswami, Scientist-F & Head, Technology Vision 2035 Programme delivered a lecture on "Technology Vision 2035" document at Foreign Services Institute on 5th September, 2017.

13. Ms Dipti, Principal Training Coordinator delivered a lecture on “Patent System in India” in a programme organized by Nathdwara Institute of Engineering and Technology, Nathdwara on 8th September, 2017 at Nathdwara.

14. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on “Evolution of IPR Ecosystem in India in last two decades and way forward” in a programme organized by Training of Trainers with DIPP on 22nd September, 2017 at TIFAC.

15. Dr Aruna, IPR Scientist delivered a lecture on “Patent and its accessibility” in a programme organized for NIT Kurushetra on 22nd September, 2017 at TIFAC.

16. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on “Management of IPR in Academic Institutions” in a programme organized for NIT, Kurukshetra on 22nd September, 2017 at TIFAC.

17. Dr. Gautam Goswami, Scientist-F & Head, Technology Vision 2035 Programme delivered a lecture on Future “Technology Fabric of Future India” on 25th September at Jagannath Institute of Management Studies (JIMS), New Delhi.

18. Shri P.R. Basak delivered lecture on “Technology Innovation and Scaling” as Guest Speaker in the Conference on India Manufacturing Show (IMS 2017) on Industry 4.0 on the theme “Smart Manufacturing with Technology” organized by Laghu Udyog Bharati (LUB), Karnataka at BIEL, Bengaluru on 31st October 2017.

19. Ms Sangeeta Nagar, Scientist E delivered a lecture on “Patent Searches” in a programme organized by IARI, Pusa on 15th November, 2017 at Pusa.

20. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on “Overview of Intellectual Property Rights” in a programme organized for ZTM IARI, New Delhi on 16th November, 2017 at New Delhi.

21. Dr Aruna, IPR Scientist delivered a lecture on “Patent Information and searches and Patent searches hands on” in a programme organized by Zonal Technology Management Centre, IARI on November 16 & 17, 2017 at New Delhi.

22. Ms Dipti, Principal Training Coordinator delivered a lecture on “Hands on training on Prior Art Search” in a programme organized by Zonal Technology Management Centre ,IARI, PUSA on November 16, 2017 at PUSA.

23. Ms Dipti, Principal Training Coordinator delivered a lecture on “Patent Information & its Access” in a programme organized by Assam Down Town University Guwahati on 17th November, 2017 at Guwahati.

24. Ms Dipti, Principal Training Coordinator delivered a lecture on “Patenting System in India” in a programme organized by Assam Down Town University Guwahati on 17th November, 2017 at Guwahati.

25. Dr. T. Chakradhar, Scientist-C delivered a lecture on “Qualitative methods of Foresight” in the winter school / Training programme on “Advanced Statistical Tools and Techniques for Modeling and Forecasting Agricultural Data” as a part of ICAR Sponsored Centres of Advance Faculty Training (CAFT) programme organized by ICAR-Indian Agricultural Statistical Research Institute (IASRI) on 21st November, 2017 at New Delhi.

26. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on “Patent Searches and patentability

assessment (lectures and Hands on session)" in a programme organized by Siddharth Institute of Engg & Technology Puttur on November 24-25, 2017 at Puttur.

27. Ms Sangeeta Nagar, Scientist E delivered a lecture on "Overview of IPR" in a programme organized by Desh Bhagat University, Mandi Gobindgarh on 28th November, 2017 at Mandi Gobindgarh.

28. Ms Dipti, Principal Training Coordinator delivered a lecture on "Latest Developments in IPR in India " in a programme organized by Sanskriti University, Mathura on 2nd December, 2017 at Mathura.

29. Ms Dipti, Principal Training Coordinator delivered a lecture on " Indian System of Patents and Patent Searches" in a programme organized by Sanskriti University, Mathura on 2nd December, 2017 at Mathura.

30. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on "Patent and IP issues in Materials and Case Studies" in a programme organized by 6th International Symposium on Integrated Functionalities (ISIF 2017), on 13th December, 2017 at Hotel Shangri-La, New Delhi.

31. Ms Sangeeta Nagar, Scientist E delivered a lecture on "Introduction to IPR" in a programme organized by Oxford Group of Institutions, Bengaluru on 27th December, 2017 at Bengaluru.

32. Ms Sangeeta Nagar, Scientist E delivered a lecture on "Importance of IP Cells and IPR Policy in Universities" in a programme organized by Oxford Group of Institutions, Bengaluru on 28th December, 2017 at Bengaluru.

33. Dr. T. Chakradhar, Scientist-C delivered a lecture on "Qualitative methods of Foresight" in the winter school / Training programme on "Recent Developments in Statistical Modelling and Forecasting in Agriculture" as a part of ICAR Sponsored Centres of Advance Faculty Training (CAFT) programme organized by ICAR-Indian Agricultural Statistical Research Institute (IASRI), on New Delhi on 8th January, 2018 at New Delhi.

34. Dr. Gautam Goswami, Scientist-F & Head, Technology Vision 2035 Programme delivered a key note address on "Technology landscape of future India" in INCOM, organized by Jadavpur University on 6th January 2018.

35. Dr Aruna, IPR Scientist delivered a lecture on "Introduction of Intellectual Property Rights and importance of patenting" in a programme organized by KVS 45th Jawaharlal Nehru National Science, Mathematics and Environment Exhibition for Children-2018 at KV AAI Rangpuri on 30th January, 2018 at New Delhi.

36. Ms Dipti, Principal Training Coordinator delivered a lecture on "Latest Developments in IPR in India and Patent Search" in a programme organized by Amity University, Lucknow on 1st February, 2018 at Lucknow.

37. Ms Sangeeta Nagar, Scientist E delivered a lecture on "Promoting Independence & Entrepreneurship in Women" in a programme organized by ARSD College, Delhi University, VIBHA (Vijnan Bharti) and JNU on 9th February, 2018 at New Delhi.

38. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on "Overview of Intellectual Property

Rights" in a programme organized by Lingaya's University, Faridabad on 16th February, 2018 at Faridabad.

39. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on "Process of writing and filing patents" in a programme organized by Rajasthan University, Jaipur on 24th February, 2018 at Jaipur.

40. Dr. Gautam Goswami, Scientist-F & Head, Technology Vision 2035 Programme delivered a lecture on "Technology Preparedness for Climate Change in India" at Xavier Institute of Communications, Mumbai on 26th February 2018.

41. Dr. Gautam Goswami, Scientist-F & Head, Technology Vision 2035 Programme delivered a lecture on "Technology Vision 2035 – Sharing Experience" in Science Day, organized by CSTUP on 28th February 2018 at Lucknow.

42. Dr. Gautam Goswami, Scientist-F & Head, Technology Vision 2035 Programme delivered a lecture on "Technology Vision 2035 & Future Technologies" in the Students Science Congress held on 15th March 2018 organized by MPCOST at Jabalpur.

43. Shri Yashawant Dev Panwar, Scientist E and Head PFC delivered a lecture on "Management of IPR in Academic Institutions" in a programme organized by Manav Rachna International Institute of Research and studies (Deemed University) Faridabad on 20th March, 2018 at Faridabad.

44. Dr. Gautam Goswami, Scientist-F & Head, Technology Vision 2035 Programme delivered a lecture on "TECHNOLOGY VISION 2035" at SAGE University on 24th March 2018 at Indore.

45. Suresh Babu Muttana delivered a lecture on "Electric Vehicles : Challenges and Opportunities in India" at PACE Institute of Technology and Sciences, Ongole, Andhra Pradesh on 24th March, 2018

46. Ms Dipti, Principal Training Coordinator delivered a lecture on "Patent Information and its Access" in a programme organized by IIT Bhubaneshwar on 27th March, 2018 at Bhubaneshwar.

47. Ms Dipti, Principal Training Coordinator delivered a lecture on "Patent Information and its Access" in a programme organized by Behrampur University, Odisha on 28th March, 2018 at Odisha.

48. Suresh Babu Muttana delivered a lecture on "Electric Vehicles : Opportunities for Engineers" at 12 th SAEINDIA National Student Convention held during 30-31 March, 2018 at MLR Institute of Technology, Hyderabad

6.6. OTHER ENGAGEMENTS

1. Shri P.R. Basak and Shri Mukesh Mathur were members of Scientific Advisory Committee (SAC) constituted by DST for evaluation and assessment of suitable measures for Reclamation of Bhalswa Landfill site of North Delhi Municipal Corporation (NDMC) and Ghazipur Landfill site of East Delhi Municipal Corporation (EDMC)

2. Shri P.R. Basak was nominated as a Member of Jury Panel in the Regional Workshops (North Zone & East Zone) of Indian Innovation Initiative (i3) 2017 organized by CII

7.0 Infrastructure and Resources

No organization can operate without a robust infrastructure especially in the age of fast technological changes. TIFAC is electronically connected to rest of the world being embedded in the National Knowledge Network (NKN). It also makes its presence felt in the social media through its Facebook and Twitter accounts. By virtue of being a member of the National Knowledge Resource Consortia (NKRC), the scientists have access to large number of e-resources. Besides, TIFAC library has around 2500 titles and is a unique repository of books on Foresight and Futures.

7.1 NATIONAL KNOWLEDGE NETWORK (NKN)

During the year, TIFAC continued to make use of the connectivity to the National Knowledge Network (NKN). The connectivity provides TIFAC a 100 mbps line for internet connectivity and other services offered by NKN. Interactions were continued with National Informatics Centre (NIC) for making use of other provisions in the NKN.

7.2 E-RESOURCES

TIFAC continued subscribing to E-resources, including Emerald, IEEE, J-Gate, Nature Publishing Group, Oxford University Press, Royal Society of Chemistry, Taylor and Francis, Thomson Innovation, Web of Science & Wiley. during the year and online desktop computer access was facilitated. Grammarly, an online tool for correcting grammar mistakes and other writing errors in Word Documents and Emails was provided to all scientists. The e-resources are subscribed through the National Knowledge Network Consortium (NKRC), a joint consortium of DST and CSIR.

7.3 IMPLEMENTATION OF OFFICIAL LANGUAGE POLICY

The implementation of Official Language policy is done under the guidance of Official Language Implementation Committee and was continued during this year as well. Four Hindi workshop were organized for the benefit of employees. The Hindi Fortnight (Pakhwada) was organized in September 2017. TIFAC employees participated in 11 different competitions and were given away certificates and cash prizes.

7.4 LIBRARY

TIFAC Library, a knowledge centre, facilitates and fosters the flow of the scientific / technical information. The Library continued to strengthen its holdings by procuring scientific books/reports and journals/serials as per the requirement of TIFAC. A total 11 scientific/ technical books/ reports were procured during the year; the current holding of TIFAC Library is 2467. In addition, 18 of scientific / technical journals, magazines and serials were subscribed.

7.5 TIFAC INFORMATION INTERFACES

The Information Management Cell (IMC) continued maintaining the TIFAC Website (http://www.tifac.org.in). The websites served as interfaces for servicing queries received by some users. The TIFAC site has witnessed a monthly visitors hit of about 1.5 Lakh visitors per month.

TIFAC is now active on social media through Facebook and Twitter with the following URLs

- www.facebook.com/tifac.dst.india
- www.twitter.com/TIFAC_India

These are being used to reach out to people for sharing TIFAC events, activities, advertisements, schemes and opportunities. TIFAC is actively scanning latest technologies reported at various sources across the globe. Such technology information having very important role in future technoscape, appear on Facebook page of TIFAC and its Twitter account and has been liked, commented and discussed by a large number. This activity in turn helps us and others in foreseeing future technologies.

8. Auditor's Report

S. K. JUNEJA & ASSOCIATES
CHARTERED ACCOUNTANTS

4704, Ashoka Enclave, Plot No. 8A
Sector-11, Dwarka, Delhi-110075.
Phone: 9810331588, 9810641785
E-mail: madhujun94@gmail.com

INDEPENDENT AUDITOR'S REPORT

The Members
The Governing Council
Technology Information, Forecasting and Assessment Council (TIFAC)
New Delhi

REPORT ON THE FINANCIAL STATEMENTS

1 We have audited the accompanying financial statements of M/s Technology Information, Forecasting and Assessment Council (TIFAC), New Delhi, (hereinafter referred to as `Society') which comprise the Balance Sheet as at March 31, 2018 and the Statement of Income and Expenditure Account for the year then ended, and a summary of significant accounting policies and other explanatory information.

MANAGEMENT'S RESPONSIBILITY FOR THE FINANCIAL STATEMENTS

2 The management of the Society is responsible for the preparation of these financial statements that give a true and fair view of the financial position and financial performance of the Society in accordance with the accounting principles generally accepted in India including Accounting Standards issued by the Institute of Chartered Accountants of India.Theirresponsibility includes maintenance of adequate accounting records for safeguarding the assets of the Society and for preventing and detecting frauds and other irregularities; selection and application of appropriate accounting policies; making judgments and estimates that are reasonable and prudent; design, implementation and maintenance of adequate internal financial controls, that are operating effectively for ensuring the accuracy and completeness of the accounting records, relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

AUDITOR'S RESPONSIBILITY

3 Our responsibility is to express an opinion on these financial statements based on our audit. We have conducted our audit in accordance with the Standards on Auditing issued by the Institute of Chartered Accountants of India. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain

reasonable assurance about whether the financial statements are free from material misstatement.

4 An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal financial control relevant to the Society's preparation of the financial statements, that give a true and fair view, in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on whether the Society has in place an adequate internal financial controls system over financial reporting and the operating effectiveness of such controls. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by the Society's management, as well as evaluating the overall presentation of the financial statements.

5 We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

OPINION

6 In our opinion and to the best of our information and according to the explanations given to us, the aforesaid financial statements give the information required and give a true and fair view in conformity with the accounting principles generally accepted in India of the state of affairs of the Society as at 31stMarch 2018 and Excess of Income over Expenditure for the year ended on that datesubject however to:

a) Non recognition as Assets of Loans given to various parties under various projects from the year 1992 to 2005 which have not been recognized as `Loans' in Assets side of the Balance Sheet amounting to Rs. 46.74crores. (Note No. 12 of Notes on Accounts of the Balance Sheet)

b) Non allocation of housekeeping expenditure, electricity, security services, water and horticulture spent as office space is also shared by NECTAR & TDB for which the amount is unascertained. (Note No. 8of Notes on Accounts of the Balance Sheet) .

c) As per DST letter Dt.18.11.2016 providing a grant of Rs.90,12,000/- only to the Society for financial support for Global Technology Watch Group, the society has not maintained separate audited accounts. The interest of grant amount has not been accounted for in the grant as per conditions of the sanction letter.

d) As per DST letter Dt.25.10.2016 providing a grant of Rs.1,20,000/- only to the Society for organizing consultation meeting for Science and Heritage Research Initiative (SHRI) to be held on 03.11.2016, the society has not maintained separate audited accounts. The interest of grant amount has not been separately reported and accounted for in the grant as per conditions of the sanction letter.

e) As per DST letter Dt.13.10.2016 providing a grant of Rs.1,20,000/- only to the Society for organizing selection meeting for STI Policy Fellowship on 18.10.2016 at VishwakarmaBhavan, the society has not maintained separate audited accounts. The interest of grant amount has not been separately reported and accounted for in the grant as per conditions of the sanction letter.

f) During the year a workshop was organized from 12-14th January 2017 in which 69 delegates participated besides 6 organizers. As per sanctioned note TIFAC was required to collect Rs.5000/- from each participants as registration fees before the start of event. Whereas PFC a division of TIFAC has collected such fees only from 12 participations till the close of the year. The balance amount of Rs.2.85 lakhs to be recoverable from such participants have not even been shown as balance recoverable in the balance sheet.

g) The society is not maintaining fixed assets register in proper format so as to show inventory of individual fixed assets items. Physical verification of fixed assets items has not been done by the society.

h) The society is not maintaining inventories of publication of its reports.

i) As per previous audited balance sheet as at 31.03.2016 an amount of Rs.4,28,510/- was recoverable from Executive Director, Prof. PrabhatRanjan, but the same has not been recovered during the year.

j) As per previous audited balance sheet as at 31.03.2017 an amount of Rs.2,56,16,929/- was payable to Department of Science and Technology which has not been paid during the year.

k) As per the agreed schedule of fees payable to local attorneys for their affiliation with foreign attorneys, the local attorneys are allegeable to be paid 20% of professional fees only of foreign attorneys. Whereas society has paid 20% of professional fees of foreign attorneys plus their filing/government fees.

l) The income of the year of the Society is under stated by an unascertained amount because of salary paid to Mr.Suresh Kumar K, Scientist in excess of his entitlement from the period 31.07.1998 to 30.06.2011 for which the amount has not been ascertained by the management and not shown as amount recoverable in the Balance sheet. (Ref. Para No.8 of Part 1 of CAG Internal Audit Report for the period 2014-2016.)

m) The income of the year of the Society is under stated by an amount of Rs.271472/- being overpayment of Transport Allowance to the Non entitled officers of the Society vizMr.Sanjay Singh, Scientist G &Mr.VibhuMushran, Scientist G, for the period from 01.04.2014 to 31.03.2016and not shown as amount recoverable in the Balance sheet. (Ref. Para No.3 of PartII of CAG Internal Audit Report for the period 2014-2016.)

n) The income of the year of the Society is under stated by an unascertained amount being overpayment of Transport Allowance to the Non entitled officers of the Society vizMr.Sanjay Singh, Scientist G &Mr.VibhuMushran, Scientist G, for the period from 01.04.2016 to 31.03.2018 and not shown as amount recoverable in the Balance sheet.

o) TIFAC had been releasing funds in advance to the extent of 80% of the total budgeted amount sanctioned to other institutes for conducting Workshops. After completion of the Workshop, the institutesare required to submit the Utilisation Certificates to TIFAC so that the outstanding amount shown as advance in the institutes name is to be shown as expenditure and the balance amount, if there is any, is to be reimbursed. While going through the Financial Accounts of TIFAC it has been observed that one

institute “IPIRTI, Bangalore” to whom amount of Rs.1,84,000/- has been released as advance on 11.08.2017, has not submitted Utilisation Certificate till the date of audit.

7) We further report that:

a) We have sought and obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purpose of our audit;

b) In our opinion proper books of account as required by law have been kept by the Society so far as appears from our examination of those books;

c) The Balance Sheet and Statement of Income & Expenditure Account dealt with by this Report are in agreement with the books of account;

d) In our opinion, the aforesaid financial statements comply with the applicable Accounting Standards issued by the Institute of Chartered Accountants of India except where disclosed otherwise.

e) In our opinion and to the best of our information and according to the explanations given to us, we report as under with respect to other matters to be included in the Auditor’s Report

i. thesociety does not have any pending litigations which would impact its financial position.

ii. The Society did not have any long-term contracts including derivative contracts; as such the question of commenting on any material foreseeable losses thereon does not arise.

Date: 06-09-2018
Place: Delhi

For S K Juneja & Associates
Chartered Accountants
Firm Registration No. 012484N
Sd/-

(Surinder Kumar)
Partner
M. No. 091449

TECHNOLOGY INFORMATION, FORECASTING & ASSESSMENT COUNCIL REPLIES TO AUDIT QUERY "ANNEXURE AR1"

The reply to the observation of Auditors are as given below :

6(a)	The observations have been noted. This is due to the accounting procedure followed during the F.Y 1992-2005. However, the matter is being examined for making the required correction from next year.
6 (b)	Action regarding recovery of dues from NECTAR and Technology Development Board (TDB) is ongoing.
6(c),(d),(e)	TIFAC has opened a separate Flexi Bank Account for the Grant received under external projects which are not coming under regular Grants received from DST. The interest earned from Savings Bank Flexi Account is shown separately in the Income side of the Balance Sheet.
6(f)	The amount is being followed up for recovery.
6(g)	Noted for future compliance as per instruction contained in Rule 215(3) of GFRs.
6(h)	Noted for future compliance
6(i)	Necessary action in this regard is being taken in consultation with DST.
6(j)	Matter is being looked into for compliance.
6(k)	This is as per the approval schedule of Rates. However it has been noted and would be examined when the Approved Schedule of Rates are taken up for revision.
6(l)	The present employment of Sh Suresh Kumar K as Scientist/Engineer D in the pay scale of Rs.10000-325-15200 5th CPC has been done vide office order dated 07.08.1998 at the minimum of pay scale.
6(m),(n)	The matter has already been referred to DST. Decision awaited.
6(o)	The UC till the time of audit has not been received. UC is being Follow up.

Technology Information Forecasting And Assessment Council, (TIFAC)
Balance Sheet as at 31.03.2018

	Schedule	Current Year				Previous Year			
		TIFAC	PFC	WSS	Total	TIFAC	PFC	WSSS	TOTAL
CORPUS / CAPITAL FUND AND LIABILITIES									
Corpus / Capital Fund	1	352635845.06	-650,604.16	1,480,861.91	353,466,102.81	314,039,832.51	8,416,054.73	(6,222,946.76)	316,232,940.48
Reserves and Surplus	2	0.00	0.00	0.00	0.00	-	-	-	-
Earmarked / Endowment Funds	3	0.00	0.00	0.00	0.00	-	-	-	-
Secured Loans and Borrowings	4	0.00	0.00	0.00	0.00	-	-	-	-
Unsecurred Loans and Borrowings	5	0.00	0.00	0.00	0.00	-	-	-	-
Deferred Credit Liabilites	6	0.00	0.00	0.00	0.00	-	-	-	-
Current Liabilites and Provisions	7	154794020.88	1,590,371.00	2,416,256.00	158,800,647.88	130,290,397.93	1,096,382.00	2,861,279.00	134,248,058.93
Total		507,429,865.94	939,766.84	3,897,117.91	512,266,750.69	444,330,230.44	9,512,436.73	(3,361,667.76)	450,480,999.41
Assets									
Fixed Assets (Net)	8	51409559.47	263278.00	288731.00	51961568.47	54,942,731.47	-	-	54,942,731.47
Investments-From Earmarked / Endowment Funds	9	134920000.00	0.00	0.00	134920000.00	117,453,000.00	-	-	117,453,000.00
Investments-Others	10	0.00	0.00	0.00	0.00	-	-	-	-
Current Assets, Loans, Advances etc.	11	321100306.47	676488.84	3608386.91	325385182.22	271,934,498.97	9,512,436.73	(3,361,667.76)	278,085,267.94
Miscellaneous Expenditure					0.00				
(to the extent not written off or adjusted)					0.00				
Total		**507,429,865.94**	**939,766.84**	**3,897,117.91**	**512,266,750.69**	**444,330,230.44**	**9,512,436.73**	**(3,361,667.76)**	**450,480,999.41**
Significant Accounting Policies and Notes on Accounts									
Contingent Liabilities									

Subject to Schedule -1 to 24, forming part of the Balance Sheet
As per our report of even date Attached
For S K Juneja & Associates (FRN : 012484N)
Chartered Accountants

Sd/-
Accounts Officer
TIFAC

Sd/-
Incharge(Fin.&Admin.)
TIFAC

Sd/-
Executive Director (Officiating)
TIFAC

Sd/-
CA. Surinder Kumar (Membership No.091449)
Partner
Date :06.09.2018
Place : New Delhi

Technology Information Forecasting And Assessment Council, (TIFAC)
Income & Expenditure Account for the Year Ended 31.03.2018

	Schedule	Current Year				Previous Year			
Income		**TIFAC**	**PFC**	**WSSS**	**Total**	**TIFAC**	**PFC**	**WSSS**	**Total**
Income from Sales / Services	12	0.00	0.00	0.00	0.00	-	-	-	-
Grants / Subsidies	13	160,000,000.00	7,000,000.00	48,076,415.00	215,076,415.00	151,000,000.00	18,832,650.00	-	169,832,650.00
Fees / Subscriptions	14	70.00	0.00	0.00	70.00	670.00	-	-	670.00
Income from Investments	15	0.00	0.00	0.00	0.00	-	-	-	-
Income from Royalty, Publication etc	16	18,425.00	0.00	0.00	18,425.00	129,159.00	-	-	129,159.00
Interest Earned	17	17,109,450.00	120,510.00	332,917.00	17,562,877.00	19,392,431.00	78,777.03	387,649.00	19,858,857.03
Other Income	18	5,845,049.00	395,717.00	0.00	6,240,766.00	3,501,776.00	5,396.00	-	3,507,172.00
Increased/(Decrease) in stock of Finished Goods and Works-in-Progress	19	0.00	0.00	0.00	0.00	-	-	-	-
Refund from Projects	20	4,971,546.00	0.00	0.00	4,971,546.00	2,610,315.00	-	-	2,610,315.00
Total (A)		**187,944,540.00**	**7,516,227.00**	**48,409,332.00**	**243,870,099.00**	**176,634,351.00**	**18,916,823.03**	**387,649.00**	**195,938,823.03**
Expenditure									
Establishment & Other Administrative Expenses	21	124241151.45	13348758.89	40156807.33	177746717.67	167,215,666.50	9,757,803.00	30,280,754.76	207,254,224.26
Expenditure on Grant, Subsidies etc	22	18723835.00	3209005.00	435620.00	22368460.00	55,004,838.62	1,115,292.00	651,849.00	56,771,979.62
Interest	23	0.00	0.00	0.00	0.00	-	-	-	-
Depreciation (Net Total at the Year end)	8	6383541.00	25122.00	113096.00	6521759.00	7,072,264.00	-	-	7,072,264.00
Total (B)		**149,348,527.45**	**16,582,885.89**	**40,705,523.33**	**206,636,936.67**	**229,292,769.12**	**10,873,095.00**	**30,932,603.76**	**271,098,467.88**
Balance being excess of Income over Expenditure (Expenditure over Income)		38,596,012.55	(9,066,658.89)	7,703,808.67	37,233,162.33	(52,658,418.12)	8,043,728.03	(30,544,954.76)	(75,159,644.85)
Transfer to Special Reserve (Specify each)									
Contingent Liabilities									

Subject to Schedule -1 to 24, forming part of the Balance Sheet
As per our report of even date Attached

For S K Juneja & Associates (FRN : 012484N)
Chartered Accountants

Sd/-
CA. Surinder Kumar (Membership No.091449)
Partner
Date : 06.09.2018
Place : New Delhi

Sd/-
Accounts Officer
TIFAC

Sd/-
Incharge(Fin.&Admin.)
TIFAC

Sd/-
Executive Director (Officiating)
TIFAC

Technology Information Forecasting And Assessment Council, (TIFAC)
Schedules Forming Part of Balance Sheet as at 31.03.2018

Schedule 1 - Corpus / Capital Fund

	Current year				Previous Year			
	TIFAC	**PFC**	**WSSS**	**Total**	**TIFAC**	**PFC**	**WSSS**	**Total**
Opening Balance (General)	144,039,832.51	8,416,054.73	(6,222,946.76)	**146,232,940.48**	196,698,250.63	372,326.70	24,322,008.00	**221,392,585.33**
Opening Balance (SIDBI Revolving Fund)	170,000,000.00			**170,000,000.00**	170,000,000.00	-	-	**170,000,000.00**
Total Opening Balance (A)	**314,039,832.51**	**8,416,054.73**	**(6,222,946.76)**	**316,232,940.48**	**366,698,250.63**	**372,326.70**	**24,322,008.00**	**391,392,585.33**
Amount Given to SIDBI in 2010-2011 (B)				**-**	-	-	-	**-**
Excess of Income over Expenditure (Expenditure over Income)(C)	38,596,012.55	(9,066,658.89)	7,703,808.67	**37,233,162.33**	(52,658,418.12)	8,043,728.03	(30,544,954.76)	**(75,159,644.85)**
Total Closing Balance (A)+(B)+(C)	**352,635,845.06**	**(650,604.16)**	**1,480,861.91**	**353,466,102.81**	**314,039,832.51**	**8,416,054.73**	**(6,222,946.76)**	**316,232,940.48**

Technology Information Forecasting And Assessment Council, (TIFAC)
Schedules Forming Part of Balance Sheet as at 31.03.2018

Schedule 2 - Reserve and Surplus : NIL

Schedule 3 - Earmarked/Endowment Funds : NIL

Schedule 4 - Secured Loans and Borrowings : NIL

Schedule 5 - Unsecured Loans and Borrowings : NIL

Schedule 6 - Deferred Credit Liabilites : NIL

Schedule 7 - Current Liabilities And Provisions :

Particulars	Current Year				Previous Year			
A) Current Liabilities	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
1. Sundry Creditors : a) For Goods				-				-
CGHS (Sh.Rajani Kanth Gupta) Ex. Registrar	2,550.00			2,550.00	2,550.00			2,550.00
Permali Wallae Pvt. Ltd.	3,000.00			3,000.00	3,000.00			3,000.00
URDIP Pune (WSSS)			11,164.00	11,164.00			11,164.00	11,164.00
Alaka Chakraborty	46,648.00			46,648.00	46,648.00			46,648.00
House Rent Recovered (Prof. Prabhat Ranjan)				-				-
2. Statutory Liabilities				-				-
a) Others : TDS Payable (Sub Total (B) of Annexure -8)	737,158.00	171,380.00	613.00	909,151.00	498,463.00	151,273.00	1,333.00	651,069.00
3. Other Current Liabilities								-
Stale Cheque	271,164.00	22,500.00	21,246.00	314,910.00	585,444.00	-	17,756.00	603,200.00
IIT-TIFAC Maintenance (Provisions)	15,104,464.00			15,104,464.00	15,208,928.00			15,208,928.00
Grant : Global Technology Watch Growup (GTWG)	8,107,200.00			8,107,200.00	8,107,200.00			8,107,200.00
Grant : Interdisciplinary Cyber Physical Systems (ICPS)	5,640,000.00			5,640,000.00				
Nationalsteering Committee on Tech Need Assessment (TNA) for Habitat Sector (MOEF&CC)	609,540.00			609,540.00	2,311,548.00			2,311,548.00
Grant : Technology Assessment of Start ups for Tax Exemption	903,000.00			903,000.00				
Grant : CV Raman International Fellowship (DST FICCI)	180,000.00			180,000.00				
Expenses Payable (Sub Total (A) of Annexure - 8)	6,538,595.00	1,296,674.00	2,333,233.00	10,168,502.00	6,632,124.00	841,692.00	2,781,026.00	10,254,842.00
CPF	1,359,975.95	22,500.00		1,382,475.95		26,100.00		26,100.00
GSLIS	21,373.00	1,063.00		22,436.00		1,063.00		1,063.00
Database of Technologies for Management of Muncipal Solid Waste	731,991.00			731,991.00				
4 (a) Uspent Balance of Running Projects	817,872.00	76,254.00		894,126.00	817,872.00	76,254.00		894,126.00
4. (b) Due to DST (Uspenct Balance Amount In Respect of Old Projects) (List enclosed in Notes to Accounts at S.No7)	25,731,754.93			25,731,754.93	25,731,754.93			25,731,754.93
5.EMD/ Security Deposit (TIFAC) of (Annexure - 9)	638,784.00	-	50,000.00	688,784.00	653,784.00	-	50,000.00	703,784.00
6. Superannuation / Pension/Gratuity	40,189,141.00			40,189,141.00	39,055,529.00			39,055,529.00
7. Accumulated Leave Encashment	47,159,810.00			47,159,810.00	30,635,553.00			30,635,553.00
Total (A+B)	**154,794,020.88**	**1,590,371.00**	**2,416,256.00**	**158,800,647.88**	**130,290,397.93**	**1,096,382.00**	**2,861,279.00**	**134,248,058.93**

TECHNOLOGY INFROMATION FORECASTING AND ASSESSMENT COUNCIL (TIFAC) (REGULAR)
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2018

(Amount – Rs)

		GROSS BLOCK				DEPRECIATION			NET BLOCK	
SCHEDULE 8-FIXED ASSETS	**Rate of Depreciation**	**Cost / valuation As at beginning of the year**	**Additions during the year**	**Deductions during the year**	**Cost / valuation at the year end**	**As at the beginning of the year**	**On during the year**	**Total upto the year end**	**As at the current year end**	**As at the previous year end**
A. FIXED ASSETS		-	-	-	-	-	-	-	-	-
1. LAND		-	-	-	-	-	-	-	-	-
a) Freehold		-	-	-	-	-	-	-	-	-
b) Leasehold		-	-	-	-	-	-	-	-	-
2. BUILDING		-	-	-	-	-	-	-	-	-
a) On Freehold Land		-	-	-	-	-	-	-	-	-
b) On Leasehold Land		-	-	-	-	-	-	-	-	-
c) Ownership Flats/Premises		-	-	-	-	-	-	-	-	-
d) Superstructures on Land not belonging to the entity	10.00	117,850,000.00	-	-	117,850,000.00	87,894,111.13	2,995,589.00	90,889,700.13	26,960,299.87	33,284,320.87
e) Interior work of TIFAC Building	10.00	52,476,907.00	91,250.00	-	52,568,157.00	31,787,753.58	2,073,995.00	33,861,748.58	18,706,408.42	22,987,948.42
3. PLANT MACHINERY & EQUIPMENT : Fire Alarm System at TIFAC Building & Fire Extinguishers	15.00	1,164,703.00	57,418.00	-	1,222,121.00	765,888.54	64,130.00	830,018.54	392,102.46	373,456.46
4. VEHICLES				-	-	-		-	-	-
5. FURNITURE & FIXTURES	10.00	2,023,093.60	893,245.00	-	2,916,338.60	1,569,776.92	91,171.00	1,660,947.92	1,255,390.68	414,042.68
6. OFFICE EQUIPMENT	15.00	24,112,042.58	599,074.00	-	24,711,116.58	21,245,364.25	477,437.00	21,722,801.25	2,988,315.33	3,017,974.33
7. COMPUTER/PERIPHERALS	40.00	11,051,344.28	133,156.00	69,024.00	11,115,476.28	10,479,764.57	245,356.00	10,725,120.57	390,355.71	1,242,455.71
7 (A) COMPUTER/PERIPHERALS (Ext.Proj)	40.00	-	1,052,213.00	-	1,052,213.00	-	366,885.00	366,885.00	685,328.00	-
8. ELECTRIC INSTALLATIONS		-		-	-			-	-	-
9. LIBRARY BOOKS	100.00	5,670,318.55	93,037.00		5,763,355.55	5,663,018.55	68,978.00	5,731,996.55	31,359.00	12,207.00
10. TUBEWELL & W.SUPPLY		-	-	-	-	-	-	-	-	-
11. OTHER FIXED ASSETS		-	-	-	-	-	-	-	-	-
TOTAL OF CURRENT YEAR		**214,348,409.01**	**2,919,393.00**	**69,024.00**	**217,198,778.01**	**159,405,677.54**	**6,383,541.00**	**165,789,218.54**	**51,409,559.47**	**61,332,405.47**
PREVIOUS YEAR		**213,665,819.01**	**683,578.00**	**988.00**	**214,348,409.01**	**152,333,413.54**	**7,072,264.00**	**159,405,677.54**	**54,942,731.47**	**61,332,405.47**
B. CAPITAL WORK IN PROGRESS										

Note : For the assets which have been put to use after 30st September 50% of the preseribed depreciation has been charged.
* Sale of assets of Rs.69024/- refers to the amount refunded by the seller on dt.21.02.2018 due to nondelivery of laptop which was paid online through NIC on dt.17.01.2017 and shown as asset in the year 2016-2017, now rectified and accordingly depreciation charged on this asset of Rs.20707/- was also rectified.

		F.Y 2017-2018								
COMPUTERS/PERIPHERALS (EXT. PROJECT)										
Under GTWG Project		324,000.00								
Under ICPS Project		94,913.00								
Under INSPIRE Project		363,300.00								
Under DIPP Project		270,000.00								
Total		**1,052,213.00**								

TECHNOLOGY INFROMATION FORECASTING AND ASSESSMENT COUNCIL (TIFAC)
PATENT FACILITATING CENTER (PFC)
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2018

(Amount – Rs)

		GROSS BLOCK				DEPRECIATION			NET BLOCK	
SCHEDULE 8-FIXED ASSETS	**Rate of Depreciation**	**Cost / v aluation As at beginning of the year**	**Additions during the year**	**Deductions during the year**	**Cost / valuation at the year end**	**As at the beginning of the year**	**On during the year**	**Total upto the year end**	**As at the current year end**	**As at the previous year end**
A. FIXED ASSETS		-	-	-	-	-	-	-	-	-
1. LAND		-	-	-	-	-	-	-	-	-
a) Freehold		-	-	-	-	-	-	-	-	-
b) Leasehold		-	-	-	-	-	-	-	-	-
2. BUILDING		-	-	-	-	-	-	-	-	-
a) On Freehold Land		-	-	-	-	-	-	-	-	-
b) On Leasehold Land		-	-	-	-	-	-	-	-	-
c) Ownership Flats/Premises		-	-	-	-	-	-	-	-	-
d) Superstructures on Land not belonging to the entity	10.00	-	-	-	-	-	-	-	-	-
e) Interior work of TIFAC Building	10.00	-	-	-	-	-	-	-	-	-
3. PLANT MACHINERY & EQUIPMENT : Fire Alarm System at TIFAC Building & Fire Extinguishers	15.00	-	-	-	-	-	-	-	-	-
4. VEHICLES		-	-	-	-	-	-	-	-	-
5. FURNITURE & FIXTURES	10.00	-	48,000.00	-	48,000.00	-	2,400.00	2,400.00	45,600.00	-
6. OFFICE EQUIPMENT	15.00	-	225,380.00	-	225,380.00	-	16,904.00	16,904.00	208,476.00	-
7. COMPUTER/PERIPHERALS	40.00	-	15,020.00	-	15,020.00	-	5,818.00	5,818.00	9,202.00	-
8. ELECTRIC INSTALLATIONS		-	-	-	-	-	-	-	-	-
9. LIBRARY BOOKS	100.00	-	-		-	-	-	-	-	-
10. TUBEWELL & W.SUPPLY		-	-	-	-	-	-	-	-	-
11. OTHER FIXED ASSETS		-	-	-	-	-	-	-	-	-
TOTAL OF CURRENT YEAR		-	288,400.00	-	288,400.00	-	25,122.00	25,122.00	263,278.00	-
PREVIOUS YEAR		-	-	-	-	-	-	-	-	-
B. CAPITAL WORK IN PROGRESS										

Note : For the assets which have been put to use after 30st September 50% of the preseribed depreciation has been charged.

TECHNOLOGY INFROMATION FORECASTING AND ASSESSMENT COUNCIL (TIFAC)
WOMEN SCIENTIST SCHOLORSHIP SCHEME (WSSS)
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2018

(Amount – Rs)

		GROSS BLOCK				DEPRECIATION			NET BLOCK	
SCHEDULE 8-FIXED ASSETS	**Rate of Depreciation**	**Cost / v aluation As at beginning of the year**	**Additions during the year**	**Deductions during the year**	**Cost / valuation at the year end**	**As at the beginning of the year**	**On during the year**	**Total upto the year end**	**As at the current year end**	**As at the previous year end**
A. FIXED ASSETS		-	-	-	-	-	-	-	-	-
1. LAND		-	-	-	-	-	-	-	-	-
a) Freehold		-	-	-	-	-	-	-	-	-
b) Leasehold		-	-	-	-	-	-	-	-	-
2. BUILDING		-	-	-	-	-	-	-	-	-
a) On Freehold Land		-	-	-	-	-	-	-	-	-
b) On Leasehold Land		-	-	-	-	-	-	-	-	-
c) Ownership Flats/Premises		-	-	-	-	-	-	-	-	-
d) Superstructures on Land not belonging to the entity	10.00	-	-	-	-	-	-	-	-	-
e) Interior work of TIFAC Building	10.00	-	-	-	-	-	-	-	-	-
3. PLANT MACHINERY & EQUIPMENT : Fire Alarm System at TIFAC Building & Fire Extinguishers	15.00	-	-	-	-	-	-	-	-	-
4. VEHICLES		-	-	-	-	-	-	-	-	-
5. FURNITURE & FIXTURES	10.00	-	-	-	-	-	-	-	-	-
6. OFFICE EQUIPMENT	15.00	-	-	-	-	-	-	-	-	-
7. COMPUTER/PERIPHERALS	40.00	-	401,827.00	-	401,827.00	-	113,096.00	113,096.00	288,731.00	-
8. ELECTRIC INSTALLATIONS		-	-	-	-	-	-	-	-	-
9. LIBRARY BOOKS	100.00	-	-		-	-	-	-	-	-
10. TUBEWELL & W.SUPPLY		-	-	-	-	-	-	-	-	-
11. OTHER FIXED ASSETS		-	-	-	-	-	-	-	-	-
TOTAL OF CURRENT YEAR		-	401,827.00	-	401,827.00	-	113,096.00	113,096.00	288,731.00	-
PREVIOUS YEAR		-	-	-	-	-	-	-	-	-
B. CAPITAL WORK IN PROGRESS										

Note : For the assets which have been put to use after 30st September 50% of the preseribed depreciation has been charged.

Technology Information Forecasting And Assessment Council, (TIFAC)
Schedules Forming Part of Balance Sheet as at 31.03.2018

Schedule 9 - Investments from Earmarked/ Endowment Funds

Particulars	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
1. In Government Securities				-				-
2. Other approved Securities				-				-
3. Shares				-				-
4. Debentures and Bonds				-				-
5. Subsidiaries and Joint Ventures				-				-
6. Others (TIFAC-SIDBI Revolving Fund)	134,920,000.00			134,920,000.00	117,453,000.00	-	-	117,453,000.00
Total	**134,920,000.00**	**-**	**-**	**134,920,000.00**	**117,453,000.00**	**-**	**-**	**117,453,000.00**

Technology Information Forecasting And Assessment Council, (TIFAC)
Schedules Forming Part of Balance Sheet as at 31.03.2018

Schedule 10 - Investments - Others : NIL

Schedule 11 - Current Assets, Loans, Advances Etc

Particulars	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
1. Sundry Debtors :				-				-
a) Debts outstanding for a period exceeding six months	270,000.00	222,775.00		492,775.00	720,439.00	187,775.00		908,214.00
2. Cash Balances in Hand (including Cheques / Drafts and Imprest) (Under TIFAC Account)	7,143.00	5,804.00	471.00	13,418.00	6,822.00	4,789.00	4,764.00	16,375.00
3. Bank Balances :								-
Union Bank of India : Deposit Accounts (Short Term deposits) (Annex-7)	255,156,982.00			255,156,982.00	244,594,865.00			244,594,865.00
Union Bank of India : Flexi Deposit Account (Annex - 7)	6,000,000.00			6,000,000.00				
Accrued Interest (Accrued Interest) (Annexure 7)	3,198,189.00			3,198,189.00	1,915,646.00			1,915,646.00
On Savings Accounts	45,610,668.47	303,561.84	3,457,906.91	49,372,137.22	21,895,984.97	5,130,412.73	317,744.24	27,344,141.94
B) Loans, Advances and Other Assets :-								-
1. Loans:								-
a) Staff Loan (Under TIFAC Account) (Annex-1)	1,301,177.00	131,925.00	31,928.00	1,465,030.00	1,392,264.00	161,025.00	-	1,553,289.00
b) Others : Inter Department					200,000.00	4,000,000.00	(4,200,000.00)	-
Advance : Franking Machine	10,359.00			10,359.00	10,359.00			10,359.00
Advance : DAVP	235,081.00			235,081.00	436,143.00		506,303.00	942,446.00
Advance : M/s Balmer Lawrie & Co. Ltd.	243,501.00			243,501.00				
Advance : Jawaharlal Nehru Aluminium research Development	160,600.00			160,600.00				
Advance : Akash Health Care Privat Limited	36,900.00			36,900.00				
Advance : Ishwar Charitable Trust (ICARE Eye Hospital)	18,053.00			18,053.00				
Advance : Forest Reseearch Institute, Dehradun	47,515.00			47,515.00				
Advance : IPIRTI, Bangalore	184,000.00			184,000.00				
Advance : Current Science Association, Bangaluru			40,000.00	40,000.00				
Security Deposit	44,403.00			44,403.00	96,911.00			96,911.00
CV Raman International Fellowshi (DST FICI)	160,000.00			160,000.00				

Database of Tecchnologies for Management of Muncipal Solid Waste	456,991.00			456,991.00					
Global Technology Watch Group (GTWG)	4,692,150.00			4,692,150.00					
Interdisciplinary Cyber Physical Systems (ICPS)	2,050,297.00			2,050,297.00					
Technology Assessment of Start ups for Tax Exemption	481,463.00			481,463.00					
Prof. Prabath Ranjan	428,510.00			428,510.00	428,510.00		428,510.00		
House Rent Recoverable from (Prof.Prabat Ranjan)					17,500.00		17,500.00		
TDS Receivable from Income Tax Department (DIPP)	90,300.00			90,300.00					
Interest Accrued from Union Bank of India (on Savings Bank Account)	216,024.00	12,423.00	78,081.00	306,528.00	219,055.00	28,435.00	9,521.00	257,011.00	
Total (A) + (B)	**321,100,306.47**	**676,488.84**	**3,608,386.91**	**325,385,182.22**	**271,934,498.97**	**9,512,436.73**	**(3,361,667.76)**	**278,085,267.94**	

Technology Information Forecasting And Assessment Council, (TIFAC) (Regular)
Schedules Forming Part of Income & Expenditure for the year ended 31.03.2018

Schedule 12 - Income From Sales / Services : NIL

Scheudel 13 - Grants / Subsidies (TIFAC Regular)

Particulars	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
1. From Central Government				-				-
TIFAC Grant				-				-
a) Grants in Aid (Plan)	47,830,000.00	7,000,000.00	48,076,415.00	102,906,415.00	52,950,000.00	18,832,650.00	-	71,782,650.00
b) Grant in Aid (Non-Plan)	-			-	1,000,000.00			1,000,000.00
c) Grant in Aid (Plan) Capital Assets	17,374,000.00			17,374,000.00	4,950,000.00			4,950,000.00
d) Grant in Aid (Salary)	86,696,000.00			86,696,000.00	76,400,000.00			76,400,000.00
e) Grant in Aid (Salary) Scheduled Castes	8,100,000.00			8,100,000.00	5,700,000.00			5,700,000.00
g) Grant in Aid : Dept. of Biotechnology (India International Science Festival (IISF) 2015)	-			-	10,000,000.00			10,000,000.00
Total	**160,000,000.00**	**7,000,000.00**	**48,076,415.00**	**215,076,415.00**	**151,000,000.00**	**18,832,650.00**	**-**	**169,832,650.00**

Technology Information Forecasting And Assessment Council, (TIFAC) (Regular)
Schedules Forming Part of Income & Expenditure for the year ended 31.03.2018

Schedule 14 - Fees / Subscriptions

Particulars	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
Award for Nari Shakti				-				-
RTIA Questions	70.00			70.00	170.00			170.00
Tender for Housekeeping at TIFAC	-			-	500.00			500.00
Total	**70.00**	**-**	**-**	**70.00**	**670.00**	**-**	**-**	**670.00**

Schedule 15 - Income From Investments (Income on Invest. From Earmarked/Endowment Funds transferred to Funds) : NIL

Technology Information Forecasting And Assessment Council, (TIFAC) (Regular)
Schedules Forming Part of Income & Expenditure for the year ended 31.03.2018

Schedule 16 - Income from Royalty, Publication Etc.

Particulars	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
1) Income from Royalty	-			-	57,083.00			57,083.00
2) Sale of Publications	18,425.00			18,425.00	72,076.00			72,076.00
3) Other (Specify)	-			-				-
Total	**18,425.00**	**-**	**-**	**18,425.00**	**129,159.00**	**-**	**-**	**129,159.00**

Technology Information Forecasting And Assessment Council, (TIFAC) (Regular)
Schedules Forming Part of Income & Expenditure for the year ended 31.03.2018

Schedule 17 - Interest Earned (Regular)

Particulars	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
1. On Term Deposits								
a) Union Bank of India, (Scheduled Banks)	11,466,197.00			11,466,197.00	16,501,447.00			16,501,447.00
2. On Savings Accounts				-				-
Interest from Savings Bank (General)	1,097,430.00		332,917.00	1,430,347.00	901,255.00	68,529.03	387,649.00	1,357,433.03
Interest from Savings Bank Salary Account	561,484.00			561,484.00	24,008.00			24,008.00
Interest from Savings Bank Flexi Account	387,861.00	110,262.00		498,123.00	14,027.00			14,027.00
3. On Loans :				-				
a) Employees (LTA, Scooter ,Car, tour ,LTC, HBA and Computers)	206,546.00	10,248.00		216,794.00	72,080.00	10,248.00		82,328.00
b) Others (Interest from Income Tax and Projects)	922,932.00			922,932.00	475,614.00			475,614.00
4. Interest on Debtors and Other Receivables (TI-FAC-SIDBI Revolving Fund)	2,467,000.00			2,467,000.00	1,404,000.00			1,404,000.00
Total	17,109,450.00	120,510.00	332,917.00	17,562,877.00	19,392,431.00	78,777.03	387,649.00	19,858,857.03
Note : Tax deducted at source to be indicated								

Technology Information Forecasting And Assessment Council, (TIFAC) (Regular)
Schedules Forming Part of Income & Expenditure for the year ended 31.03.2018

Schedule 18 - Other Income

Particulars	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
1.Miscellaneous Income				-				-
Other Receipts	4,100.00	395,717.00		399,817.00	3,151,315.00	5,396.00		3,156,711.00
Rent (SETS)	45,243.00			45,243.00				
Rent (Technology Development Board)	2,849,593.00			2,849,593.00				
2. Income Accrued and Received on Running Projects								
Overhead : WSSS	2,482,488.00			2,482,488.00				
Overhead : Interdisciplinary Cyber Physical System	357,535.00			357,535.00				
Overhead : Global Technology Watch Group	100,000.00			100,000.00				
Overhead : Prepration of Detailed Project Report and R&D Scheme Under the NMEA Project					274,920.00			274,920.00
Overhead : Database of Technologies for Management of Municipal Solid Waste	6,090.00			6,090.00	35,455.00			35,455.00
International Conference on Disaster Management				-	40,086.00			40,086.00
Total	**5,845,049.00**	**395,717.00**	**-**	**6,240,766.00**	**3,501,776.00**	**5,396.00**	**-**	**3,507,172.00**

Schedule 19 - Increase / (Decrease) in stock of Finished Goods & Work in Progress : NIL

Schedule 20 - Refund from Projects, (TIFAC Regular Account)

Particulars	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
Home Grown Technology (Annex-2)	2,000,000.00			2,000,000.00	50,000.00			50,000.00
Advanced Composites Programme (Annex-2)	2,971,546.00			2,971,546.00	1,636,315.00			1,636,315.00
Fly Ash Utilisation Programme (Annex-2)	-			-	-			-
Refund from Projects (Vision 2020) (Annex 2)	-			-	924,000.00			924,000.00
Total	**4,971,546.00**	**-**	**-**	**4,971,546.00**	**2,610,315.00**	**-**	**-**	**2,610,315.00**

Schedule 21 - Establisment & Other Administrative Expenses

Particulars	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
Establishment Expenditure(Annex 3)	103,814,696.95	5,635,221.00	1,359,375.00	110,809,292.95	133,110,600.00	5,611,677.00	986,458.00	139,708,735.00
Administrative Expenses (Annex 4)	20,426,454.50	7,713,537.89	38,797,432.33	66,937,424.72	18,077,870.50	4,146,126.00	29,294,296.76	51,518,293.26
Establishment & Administrative Expenditure (Vision 2020)(Annex-6)	-			-	16,027,196.00			16,027,196.00
Total	**124,241,151.45**	**13,348,758.89**	**40,156,807.33**	**177,746,717.67**	**167,215,666.50**	**9,757,803.00**	**30,280,754.76**	**207,254,224.26**

Schedule 22 - Expenditure on Grants, Subsidies Etc

Particulars	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
Grants given to Institutions/ Organisations				-				-
Project Expenditure (Annex - 5)	15,497,788.00	3,209,005.00	435,620.00	19,142,413.00	30,178,860.62	1,115,292.00	651,849.00	31,946,001.62
Project Expenditure (Vision 2020) (Annex-6A)	661,184.00			661,184.00	15,550,933.00			15,550,933.00
Project Expenditure (Vision 2035) (Annex-6&6A)	2,564,863.00			2,564,863.00	9,275,045.00			9,275,045.00
Total	**18,723,835.00**	**3,209,005.00**	**435,620.00**	**22,368,460.00**	**55,004,838.62**	**1,115,292.00**	**651,849.00**	**56,771,979.62**

Schedule 23 - Interest : NIL

SCHEDULE FORMING PART OF THE ACCOUNTS FOR THE YEAR ENDED 31.03.2018

SCHEDULE 24

SIGNIFICANT ACCOUNTING POLICIES

1. The financial statements are prepared under the historical cost convention on going concern basis. The Society follows the mercantile system of accounting except receipt of Government grants, Royalty and sale of publications.
2. On the Grants on which Overhead @ 20% is granted to the society, they are taken as income in the year of receipt of grant irrespective of the fact whether the sanctioned grant is actually spent or not.
3. Fixed assets are stated at cost less accumulated depreciation. Cost comprises the purchase price and any attributable cost of bringing the asset to its working condition for its intended use.
4. Depreciation on fixed assets is computed on the written down value (WDV) method at the rates and in the manner prescribed under the provisions of Income Tax Act.
5. Amounts released as grants under various projects are accounted for as expenditure for the year in which the same are released, irrespective of the fact that the amounts so released may not have been fully utilized towards the projects during the year.
6. The repayment of Loans/assistance by the beneficiaries to the society as per the conditions stated in the agreement is accounted for on receipt basis.
7. All disbursements (irrespective of its utilization) for projects are treated as expenditure during the Financial Year and assets if any created/purchased by the beneficiaries, out of the said disbursements to the project, are not accounted for as assets in the books of accounts of society.
8. Total expenditure is not bifurcated into plan and non-plan expenditure in the financial statements.
9. Regular Grants in the form of General, Salary and Capital Assets are treated as income and regular expenditure are treated in expenditure during the year and Grants received for specific external projects are shown as liabilities and amount spent against them are shown as Assets.

As per our report of even date annexed herewith

For S K Juneja & Associates
Chartered Accountants
FRN: 012484N

Sd/-	**Sd/-**	**Sd/-**	**Sd/-**
CA. Surinder Kumar	**Accounts Officer**	**Incharge (Fin.&Admin.)**	**Executive Director (Officiating)**
(Partner)	**TIFAC**	**TIFAC**	**TIFAC**

MRN: 091449

Date: 06.09.2018
Place: New Delhi

SCHEDULE FORMING PART OF THE ACCOUNTS FOR THE YEAR ENDED 31.03.2018

SHCEDULE- 24 CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS

A. Contingent Liabilities NIL

B. Notes on Accounts

1. Though society runs various projects under the instructions and guidance of Department of Science and Technology, separate accounts for these projects have not been maintained.
2. Other current liabilities include amount refundable to Department of Science and Technology on account of unutilized balance under various projects which have since been closed the details of which is given as under :-

S. No.	Particulars - Current Liabilities (Schedule 7)	Amount (Rs.)
1.	Project (ICOSER)	1,32,02,152.00
2.	Indian-Myanmar S & T Friendship Library in Yangoon	9,59,659.00
3.	MSEB-Ash Utilisation/ Management	6,00,094.00
4.	FAM Large Scale Stowing of HWP Pond Ash into the Underground Mines of SCCL (M) Manugure	82,94,830.00
5.	Earth Quake Serving Nature's Fury	1,65,157.00
6.	MPSEB use of Fly Ash in Agriculture Development Thermal Power Plants, Sarni	3,56,825.00
7.	TIFAC-World Bank Project	13,39,747.93
8.	DRDO-PFC	3,95,745.00
	Training Progamme on IPR and WTO Issues for scientists/ technologists working in Government sector	2,02,549.00
9.	G.M.W Workshop (SRF)	1,00,170.00
10.	STI Policy Fellowship	39,810.00
11.	Science and Heritage Research Initiative (SHRI)	75,016.00
	Total	**257,31,754.93**

3. Advances and other amounts recoverable in cash or in kind include Rs.2,70,000/- as amount recoverable from Shree Chitra Tribunal Institute for Medical Science and Technology an another Autonomous Institute under Ministry of Science and Technology which is outstanding since March 2011.
4. Stock of Publications and Studies, which are published and printed by the Council and distributed at a cost are not accounted for as Stock in hand at the end of the year.
5. Stale cheques amounting to Rs.314910/- under current liabilities denote cheques issued to various payees which have not been presented for payment and have become obsolete being outstanding for more than three months.
6. NECTOR & TDB have been using approximately 10,000 Sq Ft. & 3,000 Sq Ft. respectively out of total useable area of 50,000 Sq Ft. available with TIFAC but no share of maintenance from NECTOR and TDB is being charged since the matter has not yet been decided by DST.

7. CURRENT ASSETS, LOANS AND ADVANCES

- In the opinion of the Management, the current assets, loans and advances have a value on realization in the ordinary course of business, at least equal to the amount at which they are stated in the Balance Sheet.

8. TAXATION

- In view of there being no taxable income under Income tax Act, 1961 no provision for Income Tax has been considered necessary.

9. FOREIGN CURRENCY TRANSACTIONS

(Amount Rs.)

9.1 Value of Imports Calculated on C.I.F. Basis:	Current Year	Previous Year
Purchase of finished Goods	Nil	Nil
Raw Materials & Components (Including in transit)	Nil	Nil
Capital Goods	Nil	Nil
Stores, Spares & Consumables	Nil	Nil

9.2 Expenditure in foreign currency:		
a) Travel	12,06,209/-	Rs.15,87,787/-
b) Remittances and Interest Payment to Financial Institutions/ Banks in Foreign Currency	Nil	Rs.247,20,508/-
c) Patents Filing abroad	30,04,353/-	14,03,089/-
d) Other expenditure:		
- Commission on Sale	Nil	Nil
- Legal and Professional Expenses	Nil	Nil
- Miscellaneous Expenses	Nil	Nil

9.3 Earning:		
Value of Exports on FOB basis	Nil	Nil

9.4 Remuneration to Auditors:		
(inclusive of applicable taxes)		
- Audit Fees	Rs.1,00,000/-	Rs. 90,000/-
- Taxation matters	Nil	Rs. 5,000/-
- Consultancy Charges	Nil	Nil
- Certification - GST Payable	Nil Rs.18,000/-	Rs. 31,750/- Rs.21,780/-

10. TIFAC has given loans to various parties under various projects from the year 1992 to 2005 which were written off in the Financial Years in which they were given as per the then prevailing accounting policies of TIFAC. These loans have not been recognized as loans and hence not been reflected in the assets side of the balance sheet. The details are given as follows :-

Name of the Project	Overdue upto six months	Overdue from six months upto 3 years	Overdue more than 3 years	Total
Home Grown Technology	0.00	0.00	174489920.00	174489920.00
Advanced Composite Programme	0.00	0.00	134753440.00	134753440.00
Sugar Technology Unit	0.00	0.00	45938588.00	45938588.00
Fly Ash Utilization	0.00	0.00	11834000.00	11834000.00
Agriculture and Agro Food Sector	0.00	0.00	10625000.00	10625000.00
Targeted Programme in other Important Areas	0.00	15677000.00	77088000.00	92765000.00
Total	**0.00**	**15677000.00**	**451728948.00**	**467405948.00**

11. During the year TIFAC has received different Grants totaling Rs.1,04,22,636/- from Department of Science and Technology, Ministry of Environment & Forest and Ministry of Commerce and Industry along with and amount of Rs.104,18,748/- balance carried forward from previous year, which has not been booked as income in Income and Expenditure Account and has been directly shown in their respective heads. During the year TIFAC has made expenditure of Rs.1,30,83,928/- out of these grants accounts and balance of Rs.77,57,456/- has been shown under Current Liabilities and Provisions (Schedule 7). The details of such grants is given as below :-

Such Grants received during the F.Y 2017-2018

Project Name	Funding Ministry	Opening Balance from Prev. Year	Grants Received during the year	Expenditure incurred during the year	Balance	Remark
Interdisciplinary Cyber Physical Systems (ICPS)	Department of Science and Technology	0	5640000	2050297	3589703	Project Running
Global Technology Watch Group (GTWG)	Department of Science and Technology	8107200	0	4692150	3415050	Project Running
National Steering Committee on Tech Need Assessment (TNA) for Habitat Sector (MOEF&CC)	Ministry of Environment Forest & Climate Change	2311548	2967645	5032953	246240	Project Running
Grant : Technology Assessment of Start ups for Tax Exemption	Ministry of Commerce and Industry	0	903000	691537	211463	Project Running

CV Raman International Fellowship (DST FICCI)	Department of Science and Technology	0	180000	160000	20000	Project Running
Database of Technologies for Management of Muncipal Solid Waste	Department of Science and Technology	0	731991	456991	275000	Project Running
		10418748	10422636	13083928	7757456	

Such Grants received during the F.Y 2016-2017

Project Name	Funding Ministry	Opening Balance from Prev. Year	Grants Received during the year	Expenditure incurred during the year	Balance	Remark
STI Policy Fellowship	Department of Science and Technology	0	120000	80190	39810	Project Closed
Science and Heritage Research Initiative (SHRI)	Department of Science and Technology	0	120000	44984	75016	Project Closed
Global Technology Watch Group (GTWG)	Department of Science and Technology	0	8107200	0	8107200	Project Running
National Steering Committee on Tech Need Assessment (TNA) for Habitat Sector	Ministry of Environment & Forest and Climate Change	0	2967645	656097	2311548	Project Running

Such Grants received during the F.Y 2015-2016

Project Name	Funding Ministry	Opening Balance of Grants	Expenditure incurred during the year	Balance	Remarks
Preparation of detailed Project Report and R&D Scheme Under the NMEM Project	Department of Heavy Industry	1506524	919662	586862	Project Running
Preparation of Directory of Assistive Device for Personal with Disabilities under SIPDA Scheme	Ministry of Social Justice & Empowerment	338346	338346	0	Project Closed.
		1844870	1258008	586862	

12. TIFAC has incurred an expenditure of Rs.180.92 crores under Vision 2020 program and Rs.3.01 crores under Vision 2035 till date.
13. CPF Trust Account collects money from the staff of TIFAC as well as from TIFAC and invests this amount in Fixed Deposits of Nationalized Banks on which interest in earned as per the prevailing bank rates. Similarly the trust provides interest to the staff at the rates prescribed in CPF Act from time to time. Till 31.03.2018 there was a deficit of Rs.13,82,475.95/- with the CPF which has been shown as payable to CPF Trust by TIFAC Rs.13,59,975.95 and by PFC Rs.22500/-.
14. Previous year's figures have been regrouped/rearranged wherever found necessary, to make them comparable with current year figures.
15. TIFAC has incurred an expenditure of Rs.892493/- during the year and Rs.1161779/- during previous year for providing tea& coffee/water/opening and closing of office. The tea coffee and water facility is provided both for experts attending the meeting and TIFAC officials/staff/guests.
16. Schedules 1 to 24 are annexed to and form an integral part of the Balance Sheet as at 31.03.2018 and the Income and Expenditure Account for the year ended on that date.

As per our report of even date annexed herewith

For S K Juneja & Associates
Chartered Accountants
FRN: 012484N

Sd/-	**Sd/-**	**Sd/-**	**Sd/-**
CA. Surinder Kumar	**Accounts Officer**	**Incharge (Fin.&Admin.)**	**Executive Director (Officiating)**
(Partner)	**TIFAC**	**TIFAC**	**TIFAC**
MRN: 091449			

Date: 06.09.2018
Place: New Delhi

Staff Advances

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
Staff Advances under TIFAC Account								
B) HBA Advance								
Ms. Sangeeta Baksi	338,400.00			338,400.00	393,000.00			393,000.00
Dr.Debabrata Majumdar	285,000.00			285,000.00	350,000.00			350,000.00
C) Car Advance				-				-
Sh.T.Chandrasekhar	81,900.00			81,900.00	93,600.00			93,600.00
Ms. Achla Khanna	33,000.00			33,000.00	72,000.00			72,000.00
Sh.Deep Prakash	124,000.00			124,000.00				
Sh. N C Chauhan				-	10,000.00			10,000.00
Sh.Yashwant Dev Panwar		118,800.00		118,800.00		140,400.00		140,400.00
D) Leave Travel Concessation				-				-
Sh.Deepak Kumar				-	57,000.00			57,000.00
Sh.Sushil Kumar Jha				-	9,700.00			9,700.00
Sh. Ujjwal Kumar	31,000.00			31,000.00				
Sh.Vipin Shukla	121,363.00			121,363.00	-			-
E) Tour Advance				-				-
Sh.Sajid Mubashir	81,042.00			81,042.00	81,042.00			81,042.00
Sh.Yashwant Dev Panwar			31,928.00	31,928.00				
Dr. Gautam Goswami	822.00			822.00	822.00			822.00
F) Scooter Advance				-				-
Ms. Anita Nair	11,000.00			11,000.00	24,000.00			24,000.00
Sh.Dalip Kumar	23,000.00			23,000.00				
Ms.Ujjwal Kumar				-	26,000.00			26,000.00
Sh.Mahipal Singh Rawat	15,000.00			15,000.00	28,000.00			28,000.00
Sh.Surender Kumar	26,000.00			26,000.00				
Sh.Sushil Kumar Jha				-	4,400.00			4,400.00
Sh. Rajan Sharam				-	6,250.00			6,250.00
G)Computer Advance				-				-
Sh.Mahipal Singh Rawat				-	4,000.00			4,000.00
Sh.Sanjay Sundriyal	19,000.00			19,000.00	-			-
Sh.Anil Kumar Rai	17,000.00			17,000.00	30,000.00			30,000.00
Sh.Sushil Kumar Jha	3,000.00			3,000.00	9,500.00			9,500.00
Sh.Yashwant Dev Panwar		13,125.00		13,125.00		20,625.00		20,625.00
Sh.Rajan Sharma				-	3,750.00			3,750.00
Ms.Mercy James	8,000.00			8,000.00	21,000.00			21,000.00
Sh T Adarsh Mayya	6,000.00			6,000.00	19,000.00			19,000.00
Sh Ujjwal Kumar	9,000.00			9,000.00	22,000.00			22,000.00
Ms.Deepak Kumar	23,400.00			23,400.00	57,200.00			57,200.00
Sh Kunwar Singh	16,250.00			16,250.00				
Sh.Bishram Bhakta	13,000.00			13,000.00	26,000.00			26,000.00
Sh.Dalip Kumar	15,000.00			15,000.00	28,000.00			28,000.00
h) Advance				-				-
Sh. Arghya Sardar				-	16,000.00			16,000.00
Total	**1,301,177.00**	**131,925.00**	**31,928.00**	**1,465,030.00**	**1,392,264.00**	**161,025.00**	**-**	**1,553,289.00**

Annexure –2
REFUND FROM PROJECTS FINANCED (TIFAC REGULAR ACCOUNT) - INCOME

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
(A) Home Grown Technology :								
Development of Robots for Manufacturing	2,000,000.00			2,000,000.00	50,000.00			50,000.00
Sub Total (A)	2,000,000.00	-	-	2,000,000.00	50,000.00	-	-	50,000.00
(B) Advanced Composites Programme				-				-
Development of Composite Modular Acoustic Enclosure				-	**150,000.00**			**150,000.00**
Development of Energy Efficient Axial Flow FRP Fans	239,417.00			239,417.00				
Development of Composite Sky Bus Coaches	2,180,916.00			2,180,916.00	1,486,315.00			1,486,315.00
Jute Composite Coponents For Footwear	551,213.00			551,213.00				
Sub Total (B)	2,971,546.00	-	-	2,971,546.00	1,636,315.00	-	-	1,636,315.00
(C) Fly Ash Utilization Programme								-
Setting up of Fly Ash Bricks making Plant				-				-
Sub Total (C)	-	-	-	-	-	-	-	-
(D)REFUND FROM PROJECT TECHNOLOGY VISION 2020								-
Bio Transformation of Meso Cyclopents 14 Diacetate to 4-Rhydrozycyclopent -ENE-1-(S) Acetate				-	924,000.00			924,000.00
Sub Total (D)	-	-	-	-	924,000.00	-	-	924,000.00
Total (A) + (B) + (C) + (D)	**4,971,546.00**	**-**	**-**	**4,971,546.00**	**2,610,315.00**	**-**	**-**	**2,610,315.00**

Annexure 3
Establishment Expenditure (TIFAC Regular)

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
a) Salaries	66,126,161.00	4,088,135.00		70,214,296.00	50,548,083.00	3,911,798.00		54,459,881.00
Salary - Consolidated	3,376,778.00	1,194,240.00		4,571,018.00	2,930,192.00	1,316,106.00		4,246,298.00
Internship Scheme	836,370.00			836,370.00	628,117.00			628,117.00
Project Associates	330,516.00			330,516.00	358,966.00			358,966.00
b) TIFAC Contribution to New Pension Scheme	4,981,005.00			4,981,005.00	348,543.00			348,543.00
c) Contribution to Provident Fund	2,078,632.95	142,956.00		2,221,588.95	2,060,353.00	140,287.00		2,200,640.00
d) Others (Specify)				-				-
Consultancy Fee (Others)	684,057.00	106,200.00		790,257.00	999,870.00			999,870.00
Consultancy Fee (Legal)	539,370.00			539,370.00	581,700.00			581,700.00
Consultancy Fee (Estt.)	111,429.00			111,429.00				
Hospitalsation Expenses	1,852,078.00			1,852,078.00	990,914.00			990,914.00
Honorarium	28,500.00			28,500.00	88,100.00			88,100.00
Medical Expenses	1,772,865.00	49,690.00		1,822,555.00	1,521,743.00	26,834.00		1,548,577.00
Leave Travel Concession	755,823.00			755,823.00	762,250.00	127,008.00		889,258.00
Gratuity	2,133,612.00			2,133,612.00	39,402,249.00			39,402,249.00
Leave Encashment (TIFAC Employees)	16,889,797.00			16,889,797.00	30,793,315.00			30,793,315.00
Leave Encashment (Deputation)	204,093.00			204,093.00	218,532.00	40,144.00		258,676.00
Tution Fee	1,113,610.00	54,000.00		1,167,610.00	877,673.00	49,500.00		927,173.00
Salary of Accounts Assistant			172,645.00	172,645.00			143,499.00	
Salary of Data Entery Operator			233,090.00	233,090.00			213,698.00	
Salary of Training Assistant			233,090.00	233,090.00			214,286.00	
Salary of Training Coordinator			720,550.00	720,550.00			414,975.00	
Total	**103,814,696.95**	**5,635,221.00**	**1,359,375.00**	**110,809,292.95**	**133,110,600.00**	**5,611,677.00**	**986,458.00**	**138,722,277.00**

Annexure 4
Administrative Expenses (TIFAC Regular)

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
Repair and Maintenance	1,091,407.00	11,600.00		1,103,007.00	1,296,808.00	17,749.00		1,314,557.00
Rent, Rates and Taxes	298,834.00			298,834.00	304,800.00			304,800.00
Car hire Charges	1,878,994.00	80,609.00		1,959,603.00	1,797,331.00	64,405.00		1,861,736.00
Postage, Telephone and Communication Charges	1,155,113.00	69,923.00		1,225,036.00	1,304,336.00	67,630.00		1,371,966.00
Printing,Stationary & Printing of Publications	1,750,770.00	10,412.00		1,761,182.00	1,797,241.00			1,797,241.00
Travelling and Conveyance Expenses	113,411.00	2,401.00		115,812.00	138,278.00	5,503.00		143,781.00
Subscription Expenses	87,645.00	1,487.00		89,132.00	47,207.00	2,776.00		49,983.00
PM Relief Fund (M/s Modern Engineering Plastic Pvt. Ltd.)				-	500.00			500.00
Professional Charges	116,114.00			116,114.00	186,404.00			186,404.00
Auditors Remuneration				-				-
Audit Fee	100,000.00			100,000.00	90,000.00			90,000.00
GST on Audit Fee	18,000.00			18,000.00	21,780.00			21,780.00
TIFAC Software Development				-	25,500.00			25,500.00
Tea/Water/Opening and Closing of Office	892,493.00			892,493.00	1,161,779.00			1,161,779.00
Advertisement and Publicity	1,285,618.00		3,399,088.00	4,684,706.00	-		429,884.00	429,884.00
Others (Specify)				-				-
Bank Charges	9,759.50	1,165.89	1,261.75	12,187.14	5,079.50	1,395.00		6,474.50
Misc. Office Expenses	803,043.00	16,635.00		819,678.00	286,507.00	155,219.00		441,726.00
Membership Fee	237,180.00			237,180.00	87,317.00			87,317.00
Yoga Day	72,000.00			72,000.00				-
Maintenance of Vishwakarma Bhavan	7,500,000.00			7,500,000.00	7,208,928.00			7,208,928.00
Legal Charges	1,053,221.00			1,053,221.00	1,113,757.00			1,113,757.00
WAITRO Membership				-	30,010.00			30,010.00
PM Relief Fund (M/s APL PolyFab)	9,000.00			9,000.00				-
Rajabhasha Committee Meeting	175,841.00			175,841.00	121,190.00			121,190.00
Swatch Bharat Mission	42,495.00			42,495.00				-
Web Portal Service	804.00			804.00	6,678.00			6,678.00
Court Fee				-	14,400.00			14,400.00
Filing of Patent		7,511,805.00		7,511,805.00	-	3,776,451.00		3,776,451.00
Honorarium to Experts		7,500.00	559,467.00	566,967.00		30,000.00	335,830.00	365,830.00
Computer & Peripherals				-	-	24,998.00	96,109.00	121,107.00
Housekeeping of TIFAC Building	1,734,712.00			1,734,712.00	1,032,040.00		-	1,032,040.00
Scholorship for Women Scientist			28,845,856.00	28,845,856.00			27,134,865.85	27,134,865.85
TA/DA for attending Orientation Programme			400,523.00	400,523.00			266,187.00	266,187.00
Orientation Programme			1,065,180.00	1,065,180.00			888,126.00	888,126.00
Contingency, Refresher for Alumni			609,875.58	609,875.58			7,975.91	7,975.91
Overhead			3,886,727.00	3,886,727.00			80,919.00	80,919.00
Web Baseed ICT Modules			29,454.00	29,454.00			54,400.00	54,400.00
Total	**20,426,454.50**	**7,713,537.89**	**38,797,432.33**	**66,937,424.72**	**18,077,870.50**	**4,146,126.00**	**29,294,296.76**	**51,518,293.26**

Annexure-5
PROJECT EXPENSES (TIFAC Regular Account)

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
(a) Follow-Up Action/Special Initiatives				-				-
Production Issue of Methanol & DME				-	339,000.00			339,000.00
Survey on Utilization Issues of Methanol And Dimethyl Ether (DHE)				-	573,750.00			573,750.00
Study on Learning Disability				-	1,706.21			1,706.21
Information & Communication Security and Financial Sector Security	1,155,000.00			1,155,000.00	1,946,500.00			1,946,500.00
TIFAC Brainstroming Session on Seaweed Cultivation	300,000.00			300,000.00				
Sub-Total (a)	1,455,000.00	-	-	1,455,000.00	2,860,956.21	-	-	2,860,956.21
(b) IIASA - TIFAC Projects/Study/Membership Fee				-				-
IIASA - TIFAC joint Workshop (TIFAC)	421,606.00			421,606.00	328,813.00			328,813.00
India - IIASA MemberShip Fee				-	76,023.93			76,023.93
IIASA-TIFAC : Conservation of Agro-Biodiversity and Ecosystem Management : A Study in Indian Agriclimatic Condition	1,172,262.00			1,172,262.00	827,738.00			827,738.00
IIASA-TIFAC Study on Evaluation of Soil Nutrient Budgets	1,042,658.00			1,042,658.00				
TIFAC-IIASA Integrated Water Resources Management	1,281,556.00			1,281,556.00				
TIFAC-IIASA Study on Integrated Hydrology Climate Change and Integrated Water Resources Management				-	718,453.00			718,453.00
TIFAC-IIASA Study on Development & Application of Gains-City Model for Indian Cities with Neeri Mumbai	1,489,079.00			1,489,079.00	-			-
Sub-Total (b)	5,407,161.00	-	-	5,407,161.00	1,951,027.93	-	-	1,951,027.93
(c) HOME GROWN TECHNOLOGIES								
Project related expenses					31,760.00			31,760.00
Sub-Total (c)	-	-	-	-	31,760.00	-	-	31,760.00
(d) Technology Refinment Marketing Programme (TREMAP)				-				-
TREMAP : FAUCETS (With Independent Control for Flow and Temperature)				-	8,000.00			8,000.00
Sub-Total (d)	-	-	-	-	8,000.00	-	-	8,000.00
(e) Technology Foresight for Automative Research								
Technology Foresight for Automative Research (TFAR)	121,776.00			121,776.00	243,486.00			243,486.00
Sub-Total (e)	**121,776.00**	**-**	**-**	**121,776.00**	**243,486.00**	**-**	**-**	**243,486.00**

Annexure-5
PROJECT EXPENSES (TIFAC Regular Account)

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
(f) Technology Foresight Study in Security Technology				-				-
Technology Foresight study on Security Technologies	386,194.00			386,194.00	535,987.00			535,987.00
Technology Study on Individual & societal Security and infrastructure and Physical Security	1,700,000.00			1,700,000.00	2,800,000.00			2,800,000.00
Security Technologies : Natural Resources / Enviornment Security				-	1,000,000.00			1,000,000.00
Sub-Total (f)	2,086,194.00	-	-	2,086,194.00	4,335,987.00	-	-	4,335,987.00
(g) India International Science Festival								
India International Science Festival				-	10,432,451.00			10,432,451.00
Sub-Total (g)	-	-	-	-	10,432,451.00	-	-	10,432,451.00
(h) INSPIRE								
INSPIRE				-	2,338,632.00			2,338,632.00
Sub-Total (h)	-	-	-	-	2,338,632.00	-	-	2,338,632.00
(i) Project Related Expenditure				-				
Meeting Expenditure, Meeting (Project Related), Meeting (NITI AAYOG) TIFAC, DST Review Committee Meeting	1,959,371.00	22,424.00		1,981,795.00	2,071,140.00	24,285.00		2,095,425.00
Travelling Expendiure, Travel Abroad, Travel Expenditure (Project Expenditure)	3,886,191.00	122,440.00		4,008,631.00	4,597,704.48	290,246.00		4,887,950.48
Workshop Expenditure, Workshop :TIFAC/DST ITS Canada), Workshop on CIPC 2016	582,095.00	3,064,141.00	435,620.00	4,081,856.00	1,307,716.00	800,761.00	651,849.00	2,760,326.00
Sub-Total (i)	**6,427,657.00**	**3,209,005.00**	**435,620.00**	**10,072,282.00**	**7,976,560.48**	**1,115,292.00**	**651,849.00**	**9,743,701.48**
Total (a) to (i)	**15,497,788.00**	**3,209,005.00**	**435,620.00**	**19,142,413.00**	**30,178,860.62**	**1,115,292.00**	**651,849.00**	**31,946,001.62**

Annexure -6
EXPENDITURE OF VISION 2020 and Vision 2035

PARTICULARS	Current Year			Previous Year		
	V2020	Vision 2035	TOTAL	V2020	Vision 2035	TOTAL
Establihment & Administrative Expenditure						
Postage, Telephone and Communication			-	32,165.00	49,528.00	81,693.00
Misc Office Expenses			-	-		-
Periodical & Magazine Charges			-	5,598.00		5,598.00
Printing,Stationary & Printing of Publications		440,057.00	440,057.00		2,426,629.00	2,426,629.00
Car Hire Charges			-	-	18,168.00	18,168.00
Repair and Maintenance			-	-		-
Honorarium paid to Expertes		262,500.00	262,500.00	-	182,500.00	182,500.00
Conveyance			-	5,456.00		5,456.00
Legal Charges			-	21,000.00		21,000.00
Sub Total (A)		702,557.00	702,557.00	64,219.00	2,676,825.00	2,741,044.00
Medical Reimbursement			-	603,956.00	-	603,956.00
Salary			-	14,540,135.00	-	14,540,135.00
Leave Travel Concession			-	64,381.00	-	64,381.00
Hospitalisation Expenses			-	411,032.00	-	411,032.00
Tution Fee			-	314,613.00	-	314,613.00
Leave Encashment			-	28,860.00	-	28,860.00
Sub Total (B)		**-**	**-**	**15,962,977.00**	**-**	**21,445,065.00**
Total (A+B)		**702,557.00**	**702,557.00**	**16,027,196.00**	**2,676,825.00**	**18,704,021.00**

Annexure – 6A
PROJECT EXPENDITURE OF VISION 2020

PARTICULARS	Current Year			Previous Year		
	V2020	Vision 2035	TOTAL	V2020	Vision 2035	TOTAL
(a) Targeted Programme in Other Important Area			-			-
Centre for Biofuels (Phase II)			-	2,947,780.00		**2,947,780.00**
Estimation Generation and Surgical			-	1,264,442.00		**1,264,442.00**
Spatial Information System on			-	1,874,500.00		**1,874,500.00**
Technology Gap Analysis study in production/Manufacturing Processes as well as Environment Aspects of Readymade Garments			-	138,843.00		**138,843.00**
Information & Communication Security and Financia Sector Security			-	1,150,000.00		**1,150,000.00**
MSME Expenses	18,527.00		**18,527.00**			
MSME : System Engineering Approach to Design Motion	57,015.00		**57,015.00**			
MSME : Analysis of Flow of Hot Gases over clutch plate of 16MNCR5, and Design and Development of Palet	87,900.00		**87,900.00**	205,100.00		**205,100.00**
MSME : Automation & Control of Special Purpose Pack	59,012.00		**59,012.00**			
MSME : Design and Development of Hydralulic Rotational Jib Crane	87,450.00		**87,450.00**	204,050.00		**204,050.00**
MSME : Design, Simulation and Development of Acqui	69,915.00		**69,915.00**			
MSME : Four Layered Printing Circuit Board for RF	61,923.00		**61,923.00**			
MSME : Design & Static Analysis of Special Purpose	61,136.00		**61,136.00**			
MSME : Design Simulation & Development of Reconstrucion	70,406.00		**70,406.00**			
MSME : Jhula Cluser			-	511,500.00		**511,500.00**
MSME : Refrectory Cluster, Bangabhoomi, West Bangal			-	445,500.00		**445,500.00**
MSME : Surgical Dressing Manufacturing Cluster, Chatrapatti, Rajapalayam			-	613,000.00		**613,000.00**
MSME : Textile & Garmetn Manufacturing Cluster, ERODE, Tamil Nadu			-	**593,250.00**		**593,250.00**
MSME : Automation in Wire Cutting Methodology for Themocouple Manufacturing Unit and Automation	**87,900.00**		**87,900.00**	**205,100.00**		**205,100.00**
MSME : Agriculture Implements Cluster			-	**511,500.00**		**511,500.00**
MSME : Baktawng Wood Carpentry Cluster, Mizroram & Bairabi Bamboo Cluster Mizoram and Selling Bamboo Cluster			-	**522,500.00**		**522,500.00**
MSME : Copper And Bronze Utensils Cluster, Brass and German Selver Utensils Cluster and Bress Metal Cluster			-	**1,188,000.00**		**1,188,000.00**
Rice Mill Cluster in Lakhis			-	**225,000.00**		**225,000.00**
Rice Milling Machinery			-	**225,000.00**		**225,000.00**
	661,184.00		**661,184.00**	**12,825,065.00**		**12,825,065.00**

Annexure – 6A
PROJECT EXPENDITURE OF VISION 2020

PARTICULARS	Current Year			Previous Year		
	V2020	Vision 2035	TOTAL	V2020	Vision 2035	TOTAL
(a) Targeted Programme in Other Important Area		-			-	
Technology Gap Analysis Study			-	500,000.00	-	**500,000.00**
Home Textile Manufacturing Cluster			-	300,000.00	-	**300,000.00**
TIFAC -MSME Internship Scheme with IIT BHU, Varanasi			-	345600.00	-	**345,600.00**
Brainstroming Meeting 2035		1,573,703.00	**1,573,703.00**		-	**3,804,277.00**
Sub-Total (a)	-	1,573,703.00	**1,573,703.00**	1,145,600.00	3,804,277.00	**4,949,877.00**
(b) Project Related Expenditure						**-**
Meeting Expenditure, Meeting (Project Related), Meeting (NITI AAYOG) TIFAC, DST Review Committee Meeting			-	71,931.00	65,802.00	**137,733.00**
Travelling Expendiure, Travel Abroad, Travel Expenditure (Project Expenditure)		288,603.00	**288,603.00**	1,231,203.00	2,596,141.00	**3,827,344.00**
Workshop Expenditure, Workshop :TIFAC/DST ITS Canada), Workshop on CIPC 2016			-	277,134.00	132,000.00	**409,134.00**
Sub-Total (b)	-	288,603.00	**288,603.00**	1,580,268.00	2,793,943.00	**4,374,211.00**
TOTAL (a) to (b)	661,184.00	1,862,306.00	**2,523,490.00**	15,550,933.00	6,598,220.00	**22,149,153.00**

Annexure 7
SHORT TERM DEPOSITS WITH BANKS

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
Short Term Deposits	-				-			
TIFAC	255,156,982.00			**255,156,982.00**	244,594,865.00			**244,594,865.00**
Flexi Account	6,000,000.00			**6,000,000.00**	-			**-**
Accrued Interest	3,198,189.00			**3,198,189.00**	1,915,646.00			**1,915,646.00**
Total	**264,355,171.00**	**-**	**-**	**264,355,171.00**	**246,510,511.00**	**-**	**-**	**246,510,511.00**

Annexure – 8
EXPENSES PAYABLE

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
Expenses Payables Under TIFAC								
Salary Payable	4,979,143.00	342,451.00	91,940.00	5,413,534.00	5,187,173.00	322,834.00	83,345.00	5,593,352.00
Court Loan (Sh.Anil Kumar Rai)	6,297.00			6,297.00				
Consultancy Fee	355,867.00			355,867.00	80,550.00			80,550.00
Contengency				-	75,184.00			75,184.00
Internship Scheme				-	24,000.00			24,000.00
Legal Fee				-	51,300.00			51,300.00
Mr.Sinha				-	4,950.00			4,950.00
NPS Contribution (Employees)	288,231.00			288,231.00				
M/s Ramesh Sethi & Associates	25,875.00			25,875.00				
M/s Bhagwati International	130,935.00			130,935.00				
M/s Sarathi Enterprises, New Delhi	15,400.00			15,400.00				
M/s Bagga Tours and Travels	170,258.00		12,914.00	183,172.00				
M/s I-Imazine	17,260.00			17,260.00				
M/s R G Catering Services	38,162.00			38,162.00				
M/s Ashok Travels and Tours	241,489.00	41,305.00		282,794.00				
M/s Omnitech Automations Pvt. Ltd.	41,817.00			41,817.00				
M/s The Printways				-	26,199.00			26,199.00
M/s Blue Star Limited				-	207,537.00			207,537.00
M/s India Offset Press, New Delhi				-	535,080.00			535,080.00
M/s PSG College of Technology				-	292,196.00			292,196.00
M/s GMC Beverages Pvt. Ltd.	58,888.00			58,888.00	-			-
M/s S.K.Juneja & Associates	131,000.00			131,000.00	126,175.00			126,175.00
GST on Audit Fee	23,580.00			23,580.00	21,780.00			21,780.00
M/s Director, New Delhi HPO, Delhi	11,775.00			11,775.00	-			-
M/s. MTNL	2,618.00	378.00		2,996.00	-			-
M/s Balmer Lawrie & Co. Ltd, New Delhi				-	-	15,068.00	14,888.00	29,956.00
M/s Lexorbis		124,464.00		124,464.00				
M/s Anand & Anand		629,550.00		629,550.00	-	18,000.00		18,000.00
M/s K&S Partners		450.00		450.00	-	274,680.00		274,680.00
M/s Subramanium Natraj & Associates				-	-	7,335.00		7,335.00
M/s Lakshmi Kumaran & Sridharan				-	-	62,856.00		62,856.00
M/s Sing & Associates		78,641.00		78,641.00				
M/s Obhan & Associaets				-	-	63,950.00		63,950.00
M/s Anjan Sen & Associates		79,435.00		79,435.00	-	36,859.00		36,859.00
Scholarship for Women Scientists			2,228,379.00	2,228,379.00	-	-	2,670,053.00	2,670,053.00
M/s Mukesh Studios				-			12,740.00	
M/s Lall Lahiri & Salhotra				-	-	39,050.00		39,050.00
M/s Gurusons Communications Pvt Ltd				-		1,060.00		1,060.00
Sub Total (A)	**6,538,595.00**	**1,296,674.00**	**2,333,233.00**	**10,168,502.00**	**6,632,124.00**	**841,692.00**	**2,781,026.00**	**10,242,102.00**
TDS Payable	737,158.00	171,380.00	613.00	909,151.00	498,463.00	151,273.00	1,333.00	651,069.00
Sub Total (B)	**737,158.00**	**171,380.00**	**613.00**	**909,151.00**	**498,463.00**	**151,273.00**	**1,333.00**	**651,069.00**
Total A+B	**7,275,753.00**	**1,468,054.00**	**2,333,846.00**	**11,077,653.00**	**7,130,587.00**	**992,965.00**	**2,782,359.00**	**10,893,171.00**

Annexure - 9
Earnest Money from Sugar Factories

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
Earnest Money held from Sugar Factories								
Earnest Money: Sakthi Sugars Ltd	100,000.00			100,000.00	100,000.00			100,000.00
Earnest Money : Simbhaoli Sugar	300,000.00			300,000.00	300,000.00			300,000.00
Sub Total (A)	400,000.00	-	-	400,000.00	400,000.00	-	-	400,000.00
Earnest Money from Parties								
M/s Nimbus Harbour Pvt Ltd.	20,000.00			20,000.00	20,000.00			20,000.00
M/s Bhagwati International	50,000.00			50,000.00	50,000.00			50,000.00
M/s Jai Maa Durga Traders	25,000.00			25,000.00				
M/s Deepak Tours & Travels				-	50,000.00			50,000.00
M/s Bagga Tours and Travels	50,000.00			50,000.00	50,000.00			50,000.00
M/s Dip Tecnologies Pvt. Ltd.	5,000.00			5,000.00	5,000.00			5,000.00
M/s Asha Enterprises Pvt. Ltd.	50,000.00			50,000.00	50,000.00			50,000.00
M/s AFE Consultants Pvt. Ltd.	10,000.00			10,000.00				
M/s GMC Baverages Pvt Ltd.	5,000.00			5,000.00	5,000.00			5,000.00
M/s Beltek Canadian Water Ltd. (Aqaufina)	5,000.00			5,000.00	5,000.00			5,000.00
Security Deposite : M/s Pink House Keeping	18,784.00			18,784.00	18,784.00			18,784.00
M/s NSE IT			50,000.00	50,000.00			50,000.00	50,000.00
Sum Total (B)	238,784.00	-	50,000.00	288,784.00	253,784.00	-	50,000.00	303,784.00
TOTAL A + B	638,784.00	-	50,000.00	688,784.00	653,784.00	-	50,000.00	703,784.00

Technology Information Forecasting & Assessment Cuncil
Receipts & Payments for the Period the Year Ended 31.03.2018

	Receipts	Current Year	Previous Year
1	**Opening Balances**		
	Cash in hand	6,822.00	8,773.00
	Cash in Hand (Under PFC New Account)	4,789.00	16,225.00
	Cash in Hand (Under WSSS New Account)	4,764.00	253.00
	Bank balances		
	In Current Accounts	-	-
	In Depost Accounts	246,510,511.00	247,672,403.00
	Savings Accounts	21,895,984.97	27,516,562.09
	Savings Accounts (Under PFC New Account)	5,130,412.73	894,178.73
	Savings Accounts (Under WSSS New Account)	317,744.24	24,274,364.00
	Advance for Franking Machine	10,359.00	5,355.00
2	**Grants Received**		
	From Government of India - Plan (TIFAC)	160,000,000.00	150,000,000.00
	From Government of India - Non Plan (TIFAC)	-	1,000,000.00
3	**Interest Received**		
	On Bank Deposits (TIFAC)	2,046,775.00	939,290.00
	On Bank Savings (TIFAC)	11,466,197.00	16,501,447.00
	Loans Advances etc. (Staff advances)	206,546.00	72,080.00
	Interest from Income Tax/ Projects	922,932.00	475,614.00
	Interest on Debtors & other Receivable (TIFAC-SIDBI Revolving Fund)	2,467,000.00	1,404,000.00
4	**Other Income (Specify)**		
	Refund from HGT Project	2,000,000.00	50,000.00
	Refund from Advance Composite Programme	2,971,546.00	1,636,315.00
	Refund from Vision 2020	-	924,000.00
	Other Income (Annexure 18)	5,845,049.00	3,501,776.00
	Refund from Fly Ash Utilization Programme		
5	**Receipts fro Patent Facilitating Centre**		
	Grant in Aid (Under PFC New Account)	7,000,000.00	18,832,650.00
	Ekaswa A&B CD RoM (Under PFC New Account)	395,717.00	5,396.00
	Interest from Bank (Savings) (Under PFC New Account)	120,510.00	78,777.03
6	**Receipts for Women Scientist Scholourship Scheme**		
	Grant in Aid (Under WSSS New Account)	48,076,415.00	
	Interest from Bank (Savings) (Under WSSS New Account)	332,917.00	387,649.00
7	**Other Receits (Give Details)**		
	Nominal Charges for Dissemination of TIFAC Reports	-	72,076.00
	Income from Royalty	18,425.00	57,083.00
	Tender for Housekeeping at TIFAC	-	500.00
	RTIA Questions	70.00	170.00
	Stale Cheque Received	-	484,090.00
	Grant Interdisciplinary Cyber Physical Systems (ICPS)	5,640,000.00	-
	Grant STI Policy Fellowship DST	-	39,810.00
	Grant for Science and Hertage Research Initiative (SHRI)	-	75,016.00
	Grant : Global Technology Watch Growup	-	8,107,200.00
	Grant Technology Assessment of Start ups for Tax Exemption	903,000.00	-
	Grant CV Raman International Fellowship (DST FICCI)	180,000.00	-
	Grant Data Base of Technologies for Management of Muncipal Solid Waste	731,991.00	-
	National Steerign Committee on Tech Need Assessment (TNA) for Habitat Sector (MOEF&CC)	-	2,311,548.00
	CPF	244,400.00	26,100.00
	GSLIS	21,373.00	1,063.00
		525,472,249.94	**507,371,763.85**

Technology Information Forecasting & Assessment Cuncil
Receipts & Payments for the Period the Year Ended 31.03.2018

Receipts	Current Year	Previous Year
Staff Loan	88,259.00	162,562.00
URDIP Pune (SSWS)	-	11,164.00
Payable by SSWS to PFC (Contra)	-	4,000,000.00
Payable by SSWS to TIFAC (Contra)	-	200,000.00
Security Deposite	-	88,949.00
Interest Accrued (Under WSSS New Account)	52,508.00	155,534.00
IIT-TIFAC Maintenance (Provision)	7,500,000.00	-
Advance DAVP	707,365.00	-
House Rent Recoverable from Prof. Prabat Ranjan	17,500.00	-
Debts Outstanding for a period exceeding six months	415,439.00	-
Superannuation / Pension/ Gratuity (Provision)	1,133,612.00	39,055,529.00
Accumlated Leave Encashment	16,524,257.00	30,635,553.00
Recovery from Assets	69,024.00	988.00
Total (ii)	**26,507,964.00**	**74,310,279.00**
Total (i) + (ii)=(A)	**551,980,213.94**	**581,682,042.85**

Technology Information Forecasting & Assessment Cuncil
Receipts & Payments for the Period the Year Ended 31.03.2018

	Particulars	Current Year		Previous Year	
1	**Expenses**				
a	**Establishment Expenses (Schedule 21)**	102,702,721.00		133,110,600.00	
	Add : Opening Expenses Payable	5,187,173.00		4,738,440.00	
	Less : Expenses Payable	4,979,143.00	102,910,751.00	5,187,173.00	132,661,867.00
b	**Administrative Expenses (Schedule 21)**	20,420,874.50		18,077,870.50	
	Add : Opening Expenses Payable	1,943,414.00		2,234,594.00	
	Add : Loss of sale of Fixed Assets	-		-	
	Less : Payables	2,291,030.00	20073258.50	1,943,414.00	18,369,050.50
	Less : Loss on Sale of Fixed Assets				
	(Previous year figure does not include obsolescence Expenses in it.)				
c	**Expensditure on Grants, Subsidies etc. (As per Schedule 22)**		15,497,788.00		30,178,860.62
2	**Payments made against funds for various projects**				
	Establishment Expenses (Under PFC New Account)	5,635,221.00		5,611,677.00	
	Add : Opening Expenses Payable	322,834.00		400,704.00	
	Less : Expenses Payable	342,451.00	5,615,604.00	322,834.00	5,689,547.00
	Administravtive Expenses (Under PFC New Account)	10,922,657.85		5,261,418.00	
	Add : Opening Expenses Payable	670,131.00		263,693.00	
	Less : Expenses Payable	1,125,603.00	10,467,185.85	670,131.00	4,854,980.00
	Payments made against funds for various projects				
	Establishment Expenses (Under WSSS New Account)	1,359,375.00		986,458.00	
	Add : Opening Expenses Payable	83,345.00		56,500.00	
	Less : Expenses Payable	91,940.00	1,350,780.00	83,345.00	959,613.00
	Administravtive Expenses (Under WSSS New Account)	39,233,052.33		29,946,145.76	
	Add : Opening Expenses Payable	2,699,014.00		11,164.00	
	Less : Expenses Payable	2,241,906.00	39,690,160.33	2,699,014.00	27,258,295.76
	Grant Utilisation - Vision 2020	661,184.00		31,578,129.00	
	Add : Opening Expenses Payable	-		-	
	Less : Expenses Payable	-	661,184.00	-	31,578,129.00
	Grant Utilisation - Technology Vision 2035		2,564,863.00		9,275,045.00
	Adddition in Fixed Assets				
	Office Equipment		599,074.00		338,712.00
	Library Book		93,037.00		37,243.00
	Furniture & Fixtures		893,245.00		84,924.00
	Computer & Peripherals		133,156.00		134,724.00
	Interior Work of TIFAC Building		91,250.00		-
	Fire Alarm System at TIFAC Building & Fire Extinguishers		57,418.00		87,975.00
	Computer & Paripherials (Ext. Project)		1,052,213.00		-
	Furniture & Fixtures (PFC)		48,000.00		-
	Office Equipment (PFC)		225,380.00		-
	Computer & Paripherials (PFC)		15,020.00		-
	Computer & Paripherials (WSSS)		401,827.00		-
3	**Other Payments (Specify)**				
	Interest Accrued (Under PFC New Account)		-		18,411.03
	Earnest Money /Security Deposit		15,000.00		3,100,000.00
	Stale Cheques (TIFAC)		288,290.00		
	Advance DAVP		-		522,338.00
	National Steering Committee on Tech Need Assessment (TNA) for Habitat Sector		1,702,008.00		-
	Advance : Balmer Lawrie & Co Ltd.		243,501.00		-
	Advance : Jawaharlal Nehru Aluminium Research Development		160,600.00		-
	Advance : Akash Health Care Private Limited		36,900.00		-
	Advance : Ishwar Charitable Trust (ICARE Eye Hospital)		18,053.00		-
	Advance : Forest Research Institute, Dehradun		47,515.00		-
	Advance : OPIRTI, Bangalore		184,000.00		-

	Advance : Current Science Association, Bangalore		40,000.00		-
	CV raman International Fellowship (DST FICCI)		160,000.00		-
	Database of Technologies for Management of Muncipal Solid Waste		456,991.00		-
	Global Tecnlology Watch Group		**4,692,150.00**		**-**
	Interdisciplinary Cyber Physical System (ICPS)		**2,050,297.00**		**-**
	Technology Assessment of Start Ups for Tax Exemption		**481,463.00**		**-**
	TIFAC-SIDBI Revolving Funds)		**17,467,000.00**		**11,404,000.00**
	House Rent Recovery (Prof. Prabhat Ranjan)		**-**		**4,000.00**
	IIT-TIFAC Maintenance (Provisions)		**7,604,464.00**		**848,542.00**
	Unspent Balance of Running Projects		**-**		**1,026,998.00**
	Payable by SSWS to PFC (Contra)		**-**		**4,000,000.00**
	Payable by SSWS to TIFAC (Contra)		**-**		**200,000.00**
	India IIASA Membership Fee (Provision)		**-**		**24,500,000.00**
	House Rent Recovery (Prof. Prabhat Ranjan)		**-**		**17,500.00**
	Debts Outstanding for a period exceeding six months		**-**		**430,846.00**
	TDS Receivable from Income Tax Department (DIPP)		**90,300.00**		**-**
	Interest Accrued from Union Bank of India		**49,517.00**		**219,055.00**
			238,229,243.68		**307,800,655.91**

Technology Information Forecasting & Assessment Cuncil
Receipts & Payments for the Period the Year Ended 31.03.2018

Particulars	Current Year		Previous Year	
Closing Balance				
Cash in Hand		7,143.00		6,822.00
Cash in Hand(Under PFC New Account)		5,804.00		4,789.00
Cash in Hand(Under WSSS New Account)		471.00		4,764.00
Cash at Bank		51,610,668.47		21,895,984.97
Cash in Hand (Under PFC New Account)		303,446.88		5,130,412.73
Cash in Hand (Under WSSS New Account)		3,457,906.91		317,744.24
Short Term Deposite		258,355,171.00		246,510,511.00
Franking Machine		10,359.00		10,359.00
Total (ii)		**313,750,970.26**		**273,881,386.94**
Total (i) + (ii) = (B)		**551,980,213.94**		**581,682,042.85**

S. K. JUNEJA & ASSOCIATES
CHARTERED ACCOUNTANTS

4704, Ashoka Enclave, Plot No. 8A
Sector-11, Dwarka, Delhi-110075.
Phone: 9810331588, 9810641785
E-mail: madhujun94@gmail.com

INDEPENDENT AUDITOR'S REPORT

The Trustees
TIFAC Contributory Provident Fund Trust
New Delhi

REPORT ON THEFINANCIAL STATEMENTS

1. We have audited the accompanying financial statements of TIFAC Contributory Provident Fund Trust, New Delhi, (hereinafter referred to as `Trust') which comprise the Statement of Affairs as at March 31, 2018.

MANAGEMENT'S RESPONSIBILITY FOR THEFINANCIAL STATEMENTS

2. These financial statements are the responsibility of the management of TIFAC Contributory Provident Fund Trust with respect to the preparation of these financial statements that give a true and fair view of the financial position and financial performance of the Trustin accordance with the accounting principles generally accepted in India including Accounting Standards issued by the Institute of Chartered Accountants of India. This responsibility includes maintenance of adequate accounting records in accordance with the for safeguarding the assets of the Trust and for preventing and detecting frauds and other irregularities; selection and application of appropriate accounting policies; making judgments and estimates that are reasonable and prudent; design, implementation and maintenance of adequate internal financial controls, that are operating effectively for ensuring the accuracy and completeness of the accounting records, relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

AUDITOR'S RESPONSIBILITY

3. Our responsibility is to express an opinion on these financial statements based on our audit. We have taken into account the accounting and auditing standards and matters which are required to be included in the audit report under the provisions of the Act and the Rules made thereunder. We conducted our audit in accordance with the Standards on Auditing.Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

4. An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments,

the auditor considers internal financial control relevant to the Trust's preparation of the financial statements, that give a true and fair view, in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on whether the Society has in place an adequate internal financial controls system over financial reporting and the operating effectiveness of such controls. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by the Society's management and Governing Council, as well as evaluating the overall presentation of the financial statements.

5. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

OPINION

6. In our opinion and to the best of our information and according to the explanations given to us, the aforesaid financial statements give the information required by the Act in the manner so required and give a true and fair view in conformity with the accounting principles generally accepted in India of the state of affairs of the Trust as at 31stMarch 2018 however subject to the following:

The Funds of the Trust should be invested as per the Investment Pattern laid in Government of India, Ministry of Finance (Department of Economic Affairs) Notification No. F.12(1)-DD/86 dated 17th March, 1986. But the above mentioned notification is not available with the Trust and the Funds are being invested into Fixed Deposits with the Nationalised Banks.

7. We Further state that

a) we have sought and obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purpose of our audit;

b) in our opinion proper books of account as required by law have been kept by the Trust so far as appears from our examination of those books;

c) the Statement of Affairs dealt with by this Report are in agreement with the books of account;

Date: 06-09-2018
Place: Delhi

For S K Juneja & Associates
Chartered Accountants
Firm Registration No. 012484N

Sd/-
(CA. Surinder Kumar)
Partner
M. No. 091449

Contributory Provident Fund of TIFAC
Statement of Affairs as on 31st March, 2018

Previous Year as on 31.03.2017	Particulars		Current Year as on 31.03.2018	Previous Year as on 31.03.2017	Particulars	Current Year as on 31.03.2018
	Interest Accrued			6,494,735.13	Union Bank of India S/b A/C	2,887,088.02
41,066,821.20	Last Balance	49,407,104.20		520,330.00	Special deposit with RBI	520,330.00
6,518,118.00	Add: Received /Accrued during the year	4,235,580.06		87,451,479.00	Interest due on RBI Deposit	40,972.06
	Add: Difference of Interest Paid to employees as per	1,419,387.01			Short Term deposit with UBI including	48,108,598.00
	cpf a/c of interest received on investment upto 31.03.18				interest accrued thereon	
1,822,165.00	Add: Interest received to prior period	-		603,503.00	Flexi Deposit- UBI	632,126.00
		55,062,071.27				
-	Less: Intrest paid during year	44,204,141.17				
49,407,104.20			10,857,930.10		**Loan/ Advances to staff members**	
				36,700.00	Shri Anil Kumar Rai	-
	Employees Contribution			-	Shri Arghya Sardar	103,818.00
19,853,548.93	Last Balance	22,268,140.93		31,000.00	Ms. Sangeeta Nagar	-
7,603,063.00	Add: Received during the year	3,408,782.00		147,000.00	Sh. M Suresh Babu	42,000.00
27,456,611.93		25,676,922.93		83,500.00	Dr. D. Majumdar	-
5,188,471.00	Less: Paid during the year	6,575,370.00		10,000.00	Mr. T. Adarsh	-
22,268,140.93			19,101,552.93	57,989.00	Ms. Mala Sarpal	17,057.00
				-	**Receivable from TIFAC**	1,382,475.95
	TIFAC Contribution					
22,061,584.00	Last Balance	23,700,553.00				
2,447,719.00	Add: Received during the year	1,160,280.00				
24,509,303.00		24,860,833.00				
808,750.00	Less: Paid during the year	1,356,351.00				
23,700,553.00			23,504,482.00			
	Employer & Employees Contribution for March		270,500.00			
60,438.00	**Payable to Tifac**					
95,436,236.13	**Total**		**53,734,465.03**	**95,436,236.13**	**Total**	**53,734,465.03**

Subject to Schedule-I, forming part of the Balance Sheet.
As per our report of even date attached herewith.

For S K Juneja & Associates
Chartered Accountants
FRN : 012484N

Sd/-
CA. Surinder Kumar
Partner
Membership No.091449
Date : 06/09/2018
Place : New Delhi

Sd/-
Mukesh Mathur
Chairman

Sd/-
Deep Prakash
Trustee

COUTRIBUTORY PROVIDENT FUND OF TIFAC

SCHEDULE FORMING PART OF ACCOUNTS FOR THE YEAR ENDED 31.03.2018

SCHEDULE – I

SIGNIFICANT ACCOUNTING POLICIES AND NOTES ON ACCOUNTS

1. The financial statements are prepared under the historical cost convention on going concern basis. The Trust follows the mercantile system of accounting except interest received on special deposit with Reserve Bank of India (RBI) thru Union Bank of India (UBI) on calendar year basis & hence accounted for on receipt basis.

2. The Trust follows the Rule as notified by Government of India, Ministry of Finance, Department of Expenditure under sub section (2) of section 8 of the Provident Funds Act, 1925 (19 or 1925), vide their notification no. 4(1)-EV/92 (II) dated 10th August, 1993 and have also added to the schedule to the said Act the name of Technology information, Forecasting and Assessment Council (TIFAC) under sub section (3) of Section 8 of the said Act, Vide Act, vide notification no. 4(1)-EV/92(I) dated 10th August, 1993.

3. CPF Trust Account collects money from the staff of TIFAC as well as from TIFAC and invests this amount in Fixed Deposits of Nationalized Banks on which interest in earned as per the prevailing bank rates. Similarly the trust provides interest to the staff at the rates prescribed in CPF Act from time to time. Till 31.03.2018 there was a deficit of Rs.13,82,475.95/- with the CPF which has been shown as recoverable from TIFAC Rs.13,59,975.95 and from PFC Rs.22500/-.

As per our report of even date attached herewith

For S K Juneja & Associates
Chartered Accountants
FRN: 012484N

Sd/-	**Sd/-**	**Sd/-**
CA. Surinder Kumar	**Mukesh Mathur**	**Deep Prakash**
(Partner)	**(Chairman)**	**(Trustee)**
MRN: 091449		

Dated: 06.09.2018
Place: New Delhi

TECHNOLOGY INFORMATION, FORECASTING AND ASSESSMENT COUNCIL (TIFAC)
(AN AUTONOMOUS BODY OF DEPARTMENT OF SCIENCE & TECHNOLOGY, GOVT. OF INDIA)
A-WING, VISHWAKARMA BHAVAN, SHAHEED JEET SINGH MARG, NEW DELHI-110016
WWW.TIFAC.ORG.IN