

ANNUAL REPORT 2019-2020



**TECHNOLOGY INFORMATION,
FORECASTING AND ASSESSMENT COUNCIL (TIFAC)**
(An autonomous body of Department of Science & Technology, Govt. of India)



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FORECASTING AND ASSESSMENT COUNCIL (TIFAC)
(An autonomous body of Department of Science & Technology, Govt. of India)

Annual Report 2019-2020

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The Governing Council (2019-20)

<p>Dr V K Saraswat Chairman-TIFAC Governing Council NITI Aayog New Delhi – 110 001</p>	<p>Chairman</p>
<p>Professor Ashutosh Sharma Secretary Department of Science & Technology New Delhi – 110016</p>	<p>Ex-officio Member</p>
<p>Shri Amitabh Kant Chief Executive Officer NITI Aayog New Delhi – 110 001</p>	<p>Ex-officio Member</p>
<p>Dr Shekhar C Mande DG CSIR & Secretary, DSIR Anusandhan Bhavan, New Delhi – 110 001</p>	<p>Ex-officio Member</p>
<p>Shri Ajay Prakash Sawhney Secretary Ministry of Electronics and Information Technology New Delhi – 110 003</p>	<p>Ex-officio Member</p>
<p>Dr Renu Swarup Secretary Department of Biotechnology New Delhi – 110 003</p>	<p>Ex-officio Member</p>
<p>Shri Ramesh Abhishek Secretary Department of Industrial Policy & Promotion Ministry of Commerce & Industry New Delhi – 110 011</p>	<p>Ex-officio Member</p>
<p>Dr G Satheesh Reddy Secretary, DRDO New Delhi – 110 011</p>	<p>Ex-officio Member</p>
<p>Shri Subhash Chandra Garg Secretary Department of Economic Affairs Ministry of Finance New Delhi – 110 001</p>	<p>Ex-officio Member</p>
<p>Shri B Anand, IAS Additional Secretary & Financial Adviser Department of Science & Technology New Delhi – 110016</p>	<p>Ex-officio Member</p>

Dr Nalinaksh S Vyas Professor Department of Mechanical Engineering, Indian Institute of Technology, Kanpur – 208016	Member
Prof Chandrabhas Narayana Chemistry and Physics of Materials Unit Jawaharlal Nehru Centre for Advanced Scientific Research Bangalore- 560 064	Member
Dr Vijay Bhatkar Chancellor (Nalanda University) & Chief Mentor, Multiversity Pune – 411 021	Member
Dr Shrikant Marathe (Former Director, ARAI), Flat No.C-1002, Vaidehi, Residency MIT College Road Kothrud, Pune - 411 038	Member
Prof Thalappil Pradeep Institute Professor Deepak Parekh Institute Chair Professor Department of Chemistry Indian Institute of Technology Madras, Chennai - 600 036	Member
Dr Ashalatha R Professor Sree Chitra Tirunal Institute for Medical Sciences & Technology Thiruvananthapuram - 695 011	Member
Dr A K Srivastava Director-CSIR-Advanced Materials and Processes Research Institute Bhopal - 462 026	Member
Shri Satyanarayan Nandlal Nuwal Chairman Solar Industries India Limited Nagpur-440 033	Member
Executive Director TIFAC, Vishwakarma Bhawan Shaheed Jeet Singh Marg New Delhi – 110016	Member Secretary

EXECUTIVE SUMMARY



TIFAC plays a pivotal role in developing a strong foresight framework and network for the country by carrying out foresight studies in the sectors of national importance. As an unique knowledge network institution, it is mandated to undertake technology assessment and foresight studies in the areas of national importance. TIFAC activities encompass a wide array of technology areas and fill a critical gap in the overall S&T system of India through required technology intervention. TIFAC also prepares Technology Impact Statements with a view to uncover the likely implications and consequences, both desirable and undesirable, of the existing as well as newly emerging technologies upon society, indicating to decision-makers, through generation of future-oriented scenarios, their short-term and long-term implications. TIFAC also has been actively supporting innovations and innovative technologies through patent support and extending soft loans.

After the release of Technology Vision 2035 document, TIFAC proactively continued the follow up actions by dissemination of the outcome of the Technology Vision 2035 reports. The latest released Technology Roadmap for the Water sector is focused on innovative and sustainable water solutions that help in achieving “more from less for more”, freedom from water-borne diseases, cleaner water bodies, and water security for all, and managing and mitigating adverse consequences of climatic uncertainties and natural calamities.

TIFAC continued its efforts on technology foresight and nucleation of collaborative projects in the area of electric mobility in association with the Office of the Principal Scientific Adviser and Department of Science and Technology. These include a concept note for a programme on competency development in the entire value chain of permanent magnet synchronous motors, and draft white papers on Opportunity Charging of Electric Buses and Electric Road Systems for stakeholder consultations on demonstration projects. In this context, TIFAC participated in a delegation from the Office of the PSA to Sweden. A study on systematic analysis of various electrochemical emerging energy storage technologies from Indian perspectives and identification of the priorities, challenges and expected impacts has been initiated. New foresight studies on Bio-Printing technology, Climate Smart Agriculture, Vertical farming, Self-healing Road and Micro-nano facturing have also been initiated by TIFAC.

TIFAC has been facilitating early scaling up of innovative technologies to improvise the technology readiness level and to establish technical and financial feasibility of technologies developed by academia, labs, incubating companies, start-ups / MSMEs. TIFAC carried out assessment, peer review, appraisal of innovative technologies and provided necessary support for implementation of such technologies through periodic monitoring and review. Two innovations were successfully scaled up and showcased in the India International Science Festival (IISF-2019) held at Kolkata during 2019. A Technology Foresight study on Food Processing Industries for the North Eastern region of India was initiated towards technology mapping and formulating a roadmap for the region.

TIFAC has been working with MSME clusters since last thirteen years towards upgrading technological capabilities. This year, TIFAC reached out to six new MSME clusters across the country towards their comprehensive technology mapping namely: Apparel Manufacturing, Toys Cluster, Arecanut Leaf Plate Manufacturing Cluster, Sitalpati Cluster, and Fisheries and Food



& Spices Cluster. During the year, intervention plan for two clusters of Jhula and Agricultural Implements have also been finalized.

The Patent Facilitating Cell (PFC) of TIFAC has been supporting Govt. institutions in filing patents of their invention besides creating awareness about IPR in scientific communities. This year, the PFC for the first time has received a grant of 26 patents in a single year. The Cell had organised 5 two-day, advanced training programme for Patent Information Centres (PIC) in the states and the University IPR Cell (IPCU) Officials. The KIRAN-IPR 11th Batch started in August 2019, with induction of 119 women scientists for one year training on IPR.

TIFAC celebrated its 33rd TIFAC foundation Day on February 10, 2020, during which a web geo portal named 'BHUVAN-JAIVOORJA' was released. It is a tool developed to assess the availability of biomass and land resources effectively along with logistics support from user defined fetch areas. Further to complement this work, a study on 'characterisation of major agro-residues biomass in India' from each of the different agro-climatic zones of our country was taken up to help in match making of suitable technologies for conversion of residual biomass to biofuel.

TIFAC has strengthened its international reach. Recognizing the mutual benefits of scientific collaboration in a broad field of activities of global concern and interest, TIFAC has signed an MoU with International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria as a full time member. TIFAC would represent India as a National Member Organization on the IIASA Governing Council for five years from 2020 to 2024. To leverage the International linkages, a collaborative programme between TIFAC and High School of Economics, Moscow, Russia is underway to understand the S&T needs of India & Russia in identified priority sectors. An MoU is under finalization.

In the coming years, TIFAC will strive continuously as a vibrant body looking at upcoming cutting edge technologies and prioritizing R&D areas which are important in Country's perspective and enabling Make in India and truly an ATMANIRBHAR BHARAT, while simultaneously augmenting the core strengths of TIFAC Scientists and staffs.

(Pradeep Srivastava)
Executive Director
TIFAC

ACRONYMS

AICTE: All India Council for Technical Education	GFR: General Finance Rule
AIIMS: All India Institute of Medical Sciences	GKVK: Gandhi Krishi Vigyana Kendra
ASSOCHAM: Associated Chambers of Commerce	GSI: Geological survey of India
BIS: Bureau of Indian Standards	GTWG: Global Technology Watch Group
BISR: Birla Institute of Scientific Research	IARI: Indian Agricultural Research Institute
CoP: Conference of parties	IBAAS: International Bauxite, Alumina and Aluminium Society
CASTED: Chinese Academy of Sciences and Technology for Development	ICAR: Indian Council of Agricultural Research
CCUS: Carbon Capture Utilisation and Storage	ICAT: International Centre for Automotive Technology
CDAC: Centre for Development of Advanced Computing	ICC: Internal Compliant Committee
CFTRI: Central Food Technology Research Institute	ICT: Information and Communication technology
CGCRI: Central Glass and Ceramic Research Institute	ICMR: Indian Council of Medical Research
CHORD: Centre for Human and Organisational Resource Development	IIASA: International Institute for Applied Systems Analysis
CII: Confederation of Indian Industry	ISSEK: Institute for Statistical Studies and Economics of Knowledge
CMTI: Central Manufacturing Technology Institute	IICB: Indian Institute of Chemical Biology
CPF: Contributory Provident Fund	IICT: Indian Institute of Chemical technology
CRISPR:	IIPA: Indian Institute of Public Administration
CSIR: Council of Scientific and Industrial Research	IISES: International Institute of Social and Economic Sciences
CVC: Central Vigilance Commission	IIOR: Indian Institute of Oilseeds Research
DPIIT: Department for Promotion of Industry and Internal Trade	IIP: Indian Institute of Petroleum
DPR: Detailed Project Report	IISc: Indian Institute of Science
DRDO: Defence Research and Development Organisation	IISF: India International Science Festival
DST: Department of Science & Technology	IIT: Indian Institute of Technology
EEZ: Exclusive Economic Zone	IMMT: Institute of Minerals and Materials Technology
ESI: Employees' state Insurance	IMO: Indian Maritime Organisation
EV: Electrical vehicle	IP: Intellectual Property
FCS: Flexible Complementing Scheme	IPR: Intellectual Property
FICCI: Federation of Indian Chambers of Commerce & Industry	ISEC: Institute for Social and Economic Change
FY: Financial Year	ISRO: Indian Space Research Organisation
GAINS: Greenhouse Gas - Air pollution Interactions and Synergies	ITEC: Indian Technical and Economic Cooperation
	ISTM: Institute of Secretariat Training & Management
	JNARDDC: Jawaharlal Nehru Aluminium Research Development and Design Centre

KCSTE: Kerala State Council for Science, Technology and Environment
KIRAN: Knowledge Involvement in Research Advancement through Nurturing
KPO: Knowledge Process Outsourcing
MAKUT: Maulana Abul Kalam Azad University of Technology
MoU: Memorandum of Understanding
MCD: Multi Criteria Decision Analysis
MDNOER: Ministry for Development of North Eastern Region
MECL: Mineral Extraction Corporation Limited
MNC: Multi National Company
MSMe: Micro Small and Medium Enterprises
MSRAUS: MS Ramaiah University of Applied Sciences
NAPCC: National Action Plan on Climate Change
NCCSD: National Council for Climate Change Sustainable Development and Public Administration
NDC: Nationally Determined Contribution
NECTAR: North East Centre for Technology Application & Reach
NEERI: National Environmental Engineering and Research Institute
NEHU: North Eastern Hill University
NGO: Non Governmental Organisation
NIAM: National Institute of Agricultural Marketing
NIAS: National Institute of Advance Studies
NIIST: National Institute for Interdisciplinary
NIOT: National Ocean Institute of Technology
NIT: National Institute of Technology
NITI: National Institution for Transforming India
NMSKCC: National Mission on Strategic Knowledge for Climate Change
NKN: National Knowledge Network
NKRC: National Knowledge Network Consortium
NRSC: National Remote Sensing Centre
Science and Technology
PCCoE: Pimpri Chichwad College of Engineering
PFC: Patent Facilitating Centre
PIC: Patent Information Centre

PM: Particulate Matter
PMSM: Permanent Magnet Synchronous Motor
PPC: Portland Pozzolana cement
PPF: Public provident Fund
PSA: Principal Scientific Advisor
PV: Photo Voltaic
REACH: Relevance & Excellence in achieving new heights in educational institutions
RISE: Research Institute of Sweden
RFID: Radio Frequency Identification
SCADA: Supervisory control and data acquisition
SCSTE: State Council for Science, Technology and Environment
SDAU: Sardar Krushinagar Dantiwala Agriculture University
SDG: Sustainable Development Goal
SEA: Solvent Extractor's Association
SHS: Swachhata Hi Seva
SHWW: Sexual Harassment of Women at Work
SIAM: Society of Indian Automobile Manufacturers
SIDBI: Small industrial Development Bank of India
SISS: Shanghai Institute for Science for Science
SRFTI: Satyajit Ray Film and Television Institute
SSR: Scientific and Social Responsibility
SSTMC: States Science and Technology Ministers' Conclave
STEEP: Social Technological Environmental Economic and Political
STI: Science Technology and Innovation
TV: Technology Vision
TDB: Technology Development Board
TDS: Tax Deducted at Source
UBI: Union bank of India
USD: United States Dollar
VIT: Vellore Institute of Technology
VNIT: Visvesvaraya National Institute of Technology
WoC-C: Women Scientists Scheme
YSSP: Young Scientist Summer Programme
ZLD: Zero Liquid Discharge

1.0 TECHNOLOGY FORESIGHT

1.1. Technology Vision 2035

Technology Vision 2035, the flagship program of TIFAC brought out the Technology Vision 2035 document, which was released by the Honourable Prime Minister of India in 2016. Since then, several follow up actions have been taken up and continued every year. This year also, the following activities were taken up which included release of technology roadmaps, initiating new foresight studies, delivering lectures, workshops and seminars and conducting training programs on foresight techniques.

1.1.1. Release of Technology Vision 2035 Technology Roadmap on Water Sector

The preparation of sectoral technology roadmaps was initiated by TIFAC with an aim to draft an action plan towards realising the vision captured in the Technology Vision 2035 document. So far six technology roadmaps were released in various sectors. The seventh report on Technology Roadmap on Water was released on 33rd TIFAC Foundation day held on 10th February 2020 by Dr V K Saraswat, Chairman TIFAC in the presence of Prof. Ashutosh Sharma, Secretary-DST and Dr P S Goel, Former Secretary, Ministry of Earth Sciences.

The roadmap on water has captured the past, present, and future scenarios of water resources and provide estimates of the water demand across various segments. The document has articulated the vision for the water sector as “Assured and Fit for Purpose water supply for all by 2035”. Overall objectives are “Developing and rolling out innovative and sustainable water solutions that help achieve “more from

less for more”, freedom from water-borne diseases, cleaner water bodies, water security for all, and managing and mitigating adverse consequences of climatic uncertainties and natural calamities”. The document is focussed on seven key challenges which require holistic solutions. These are: augmenting water availability, addressing the challenges of water quality, developing and implementing en masse technologies that help achieve the mission of “more crop per drop”, managing wastewater, desalination, mitigating uncertainties and large scale monitoring and surveillance using sensor networks and remote sensing technologies.

This document has identified nine mission mode projects to manage the entire water resources along with its judicious use and productive management. To implement the mission mode projects, few technology platforms have also been identified viz, biotechnological interventions, indigenous membrane technology development, polishing technologies, remote sensing, sensors and ICT technologies and modeling and simulation. The document can be accessed through TIFAC website (www.tifac.org.in).

1.1.2. Technology Foresight Report on Bio-Printing Technology

A study has been initiated to prepare a Technology Status and Foresight report on Bio-printing technology. It has been identified as one of the crucial technologies in the Technology Vision 2035 document under ‘Universal Healthcare and Public Hygiene’ prerogative. The existence of a large population coupled with a high incidence of genetic disorders makes India an ideal setting for pharmacogenomics research & market and therefore justifies taking relevant action in this direction. The

report would provide recommendations focussing on actions to be taken in the area of research, policy and governance towards adopting the technologies at larger scale for making healthcare more affordable, safe and of better quality. An Advisory Committee has been constituted under the chairmanship of Dr W Selvamurthy, Former Chief Controller R&D for Life Sciences, DRDO including experts from the organisations like VNIT, Nagpur, IIT, Kharagpur, AIIMS and Sree Chitra Tirunal Institute for Medical Sciences & Technology. The Advisory Committee finalised the scope of the report and also deliberated upon the detailed contents to be covered in the report. The report writing is in progress.

1.1.3. Capacity Building/Training Programme by TIFAC Scientists

Dr Gautam Gosswami, Scientist-F and Ms Jancy Ayyaswamy, Scientist-F conducted two-day training & hands on workshop on 'Technology Foresight Methodologies' for IIS (Indian Information Services) Officers at Indian Institute of Mass Communication (IIMC) during October 22-23, 2019. The participants in the programme were taught on the overview of the foresight techniques and methodologies required for cross impact analysis, scenario building exercise and technology prioritisation using Multi Criteria Decision Analysis (MCDA). The hands on exercise sessions were conducted for the participants during the two days training, and TIFAC received very good response from the participants.

1.2. Climate Change Activities

1.2.1 Global Technology Watch Group (GTWG)

The National Mission on Sustainable Knowledge for Climate Change (NMSKCC) is one of the NAPCC Missions being implemented by the Department of Science & Technology, Govt. of India. One of the important components of

this mission is to prepare Global Technology Watch Group reports for the nine sectors. It is an important initiative with an objective to keep an eye on the state-of-the-art technologies emerging globally in the key sectors of economy and prioritise them for India. TIFAC, being a technology think tank, was assigned the project to prepare a global technology watch report for six sectors - Enhanced Energy Efficiency, Green Forestry, Sustainable Habitat, Sustainable Agriculture, Manufacturing and Water.

The executive summary of the GTWG reports was released in the Conference of Parties (COP) 24, Katowice, Poland in 2018. The GTWG reports on Sustainable Agriculture, Manufacturing, Sustainable Habitat and Water have been submitted to the Department of Science and Technology this year. (The detailed report can be accessed through TIFACs website www.tifac.org.in). The salient findings and recommendations emerging in the four completed reports are summarised as below:

a) Sustainable Agriculture

The present initiative by TIFAC through Global Technology Watch Group (GTWG) has resulted in scouting of about 745 technologies divided into 11 sub-categories following different foresight techniques with respect to agriculture and allied disciplines. The top ten technologies from each of the sub-category were shortlisted through a logically drawn quantitative Multi Criteria Decision Analysis (MCDA) technique. Besides, few emerging technologies have been identified by GTWG which have potential to transform agriculture by increasing the farm income and are resilient to climate change. These technologies need immediate attention for validation in various agro-ecological regions and nurtured extensively for use by the concerned stakeholders.

Apart from technologies which would result in

incremental gains, innovative and disruptive technologies, are identified in this report, which includes big-data analytics, artificial intelligence, CRISPR Cas 9, drones, geo-spatial technologies etc. and explore their full potential in the field of agriculture. The report also identified some policy issues and recommends that technology interventions are to be supplemented with a conducive policy framework and robust implementation plan.

b) Manufacturing

The Global Technology Watch Group report on Manufacturing is focused on eight sub sectors namely; Fertilizers, Iron & Steel, Paper & Pulp, Chemicals, Cement, Textiles, Leather and Engineering. The Sectoral group on Manufacturing guided by domain experts has scouted and consolidated a total of 313 global technologies combining all the eight sub-sectors and has captured the technology details comprehensively. The selection of technologies was made using MCDA techniques where technologies were screened on five broad parameters viz., Social, Technological, Environmental, Economic and Policy (STEEP), emission reduction potential, energy savings, end uses, accessibility, cost benefits etc. The foresight techniques such as horizon scanning, stakeholder consultation, expert consultation and literature survey were adopted to scout the global technologies.

The broad technologies identified were: manufacturing of composite cement with simultaneous addition of slag & fly ash, increased addition of fly ash in Portland Pozzolana Cement (PPC), waste-heat recovery from preheater exhaust and cooler vent for co-generation of power, synthesis of better enzymes strains as washing aids for synthetic detergents, biologically engineered algae to replace naphtha as feedstock, usage of ultra-high efficiency systems for ammonia reactor engineering, micro-reactor technology for hazardous pharmaceutical processes and

waterless chrome tanning technology.

c) Sustainable Habitat

The Global Technology Watch Group report on Sustainable Habitat addresses the issues related to good governance, competitive economy, high quality of life and environmental sustainability. This was done through identification of setbacks & assessing technology needs under various sub-sectors through technology scouting & prioritization. The report emphasizes on laying down technology paths for making the habitat climate resilient that is socially acceptable and economically feasible. A gamut of technologies/ approaches were identified that are available globally for attaining sustainable habitat under climate change regime and also in accordance with the Indian ecosystem. Some of the key technologies identified in the report are smart tagging for resource information, warning announcement (real time data access to people using open-source platforms through maps and other visualisation techniques), zero discharge technology integration leading to zero waste, affordable desalination and energy efficient production of bricks moving from BTKs to VSBKs or zig-zag processes (Burnt clay bricks with hollow-core). Other relevant technologies identified in the report also include intelligent buildings, artificial lighting by using absorbed energy, rooftop and building-integrated solar PV & wind systems, RFID (Radio Frequency Identification) technology (between garbage truck & waste collection bins at the time of collection), affordable and low energy space cooling/ventilation systems and specialized centres for e-waste disposal. The report emphasized upon increased use of free energy for air-conditioning and use of heat pumps in buildings.

d) Water

The GTWG-water document attempts to collate all technologies in the water sector from

the perspective of adaptation and mitigation of climate change. Water encompasses several domains and hence after careful analysis, two broad areas were identified; (1) Water Augmentation (2) Water Conservation and Management. Initially, technologies available globally for water augmentation and conservation & management were identified using different technology foresight techniques, viz. horizon scanning, patent search, literature survey, expert consultation etc. Subsequently, technologies were prioritised in the context of our country.

The document has identified a few technology gaps in the form of big-ticket projects or mission mode projects. These projects need to be taken up on priority with proper identification of organizations viz. academia, R&D and industry to achieve technology developments in the shortest possible time. These mission mode projects are categorised as: (1) Development of low energy and low GHG emission technologies for waste / grey

water treatment, (2) Treatment of wastewater from highly polluting industries to achieve ZLD, (3) Low cost desalination for both coastal and inland regions, (4) Development of low-cost smart sensors for increasing agricultural water use efficiencies and (5) Development of computational geo – hydro and other models.

1.2.2 Preparation of Scientific Social Responsibility (SSR) Policy

The CHORD Division of DST entrusted TIFAC a project to formulate a policy on Scientific Social Responsibility (SSR)'. TIFAC prepared the draft policy and submitted to DST. In brief, the SSR policy aims at strengthening science-science, science-society and society-science linkages in an organic manner by building synergy among all the stakeholders to usher in a cultural change in the conduct of science for the benefit of society at large in the country. Initially, TIFAC prepared the Zero Draft of the policy which was modified under the guidance of a National Advisory Committee and National



Steering Committee. Subsequently, the draft policy was discussed in five regional workshops organized at CGCRI, Kolkata; NIAM Jaipur; Goa University, KCSTE -Trivandrum and IIT Guwahati during July to September, 2019 involving different stakeholders viz. Academia, Researchers, Govt. Bodies, Civil Society organizations. After the formulation of the draft policy, the same was uploaded on DST/TIFAC web portal for public consultation. Draft Policy has been finalized and the approval from the Cabinet is underway.

1.3. Technology Foresight for Automotive Research (TFAR)

Under the TFAR programme, TIFAC study on emerging technologies in the automotive and transportation sector aimed at catalysing and nucleating technology development efforts. Activities under this programme involve the following:

1.3.1 Follow up Actions on Electric Mobility

For electric and hybrid electric vehicles, permanent magnet synchronous motors (PMSM) are preferred for high efficiency and compactness. These motors use permanent magnets made from the rare earth materials, the most preferred one being NdFeB magnets. Almost 95% of the rare earth materials are produced in China, but India also has some reserves. Thus it is possible to develop a complete supply-chain of the rare earth permanent magnet electric motors in India. The R&D Plan for Technology Platform on Electric Mobility published by TIFAC in October 2018, identified the rare earth permanent magnet motors as a priority area and also presented a brief outline of the suggested projects.

During the current year, TIFAC developed a concept note on this topic covering three aspects viz: (a) processing of the rare earth

materials (b) rare earth materials based permanent magnet production (c) fabrication of PMSM motors. Detailed work package of the third programme was also worked out by TIFAC. These were given as inputs to the Office of the Principal Scientific Adviser and the Department of Science and Technology. The office of the PSA had stakeholder discussions on each of these segments. Various specific projects are being formulated.

a) Opportunity Charging of Electric Buses

On request of the Office of the PSA, a draft white paper on Opportunity Charging of electric buses was prepared. The white paper outlined the need for demonstration projects on opportunity charging, technology issues to be studied, potential sites etc. Shri Arghya Sardar, Scientist F, TIFAC visited Sweden in November 2019, as a member of a delegation from the Office of the PSA. This team visited various pilot implementation sites (eRoadArlanda, Line 16, Electric Bus Opportunity Charging in Gothenburg City), and also had detailed discussions with various stakeholders like Elways, ABB, Volvo, Electreon, RISE etc.

The Office of the PSA organized a workshop with the major vehicle manufacturers, and it featured a presentation by TIFAC on the concept of a collaborative demonstration project on opportunity charging of electric buses. Based on discussions in a sub-committee constituted by the Office of the PSA, TIFAC has also developed a simulation model for comparative analysis of opportunity charging systems.

1.1.2 Technology Foresight Study on Electric Mobility

b) Impacts of Electric Mobility

The study focuses on analysis of various impact of electric mobility such as projected future demand for critical materials considering state-of-the-art as well as emerging technology options, impacts on the distribution grid and electric power sector, economic and social

impacts. Work has been carried out on estimation of demand for critical materials and also models for impacts on the grid.

c) Electric Road Systems

A draft report has been prepared with study on various emerging technologies to supply energy to electric road vehicles dynamically. Various technology options such as conductive overhead, conductive rail and dynamic wireless power transfer have been discussed along with present trends, technology readiness levels. A comparative analysis of these options is being carried out.

1.1.3 Emerging Energy Storage Technologies

Electrochemical energy storage technologies have a major significance in the economic progress of the country, with applications cutting across various sectors including portable electronics, electric vehicles, smart grid, mobile towers, renewable energy applications etc. Particularly, in the context of drive towards sustainability, development of energy and resource-efficient energy storage technologies has become a necessity. Need for improvement in the characteristics of the battery in terms of specific energy, power density, temperature tolerance, safety, cost, cycle life, calendar life, charge/ discharge rate, availability of materials etc. have intensified research efforts on electrochemical energy storage technologies.

The objective of this study is a systematic analysis on various emerging energy storage technologies from the Indian perspectives and to identify the priorities, challenges and expected impacts. The first part of this study focuses on assessment of technology trends and technology readiness levels. A draft of the first part of the study has been prepared. The second part would cover comparison of various emerging energy storage technologies in terms of materials/ resource requirements

and projected cost-effectiveness; battery characteristics and performance requirements for various applications and likelihood of meeting these requirements in future based on the R&D trends; technological impacts of future developments in energy storage technologies in various sectors.

1.4. Thematic Foresight Studies

1.4.1 Technology Foresight Study on Food Processing for the North Eastern Region of India

a) TIFAC conceptualized a Technology Foresight study for Food Processing Industries for North-Eastern region of India. In-principle approval from the Ministry of Food Processing Industries (MoFPI) was obtained to carry out the aforesaid study. TIFAC also involved Ministry of Development of North Eastern Region (MDONER) in this study. A Steering Committee was constituted with representatives from the line Ministries of Government of India and leading Research Laboratories for providing overall guidance and steer the study.

The study would broadly cover identification of technology gaps with recommendations on how to catch up with the national benchmark by Food Processing industry in the North-Eastern region and formulating a technology roadmap for the North-East India with focus on the followings:

- i. Actionable Agenda: Identifying technologies ready for deployment along with the likely investment scenario at the first level
- ii. Strategic: Taking up technologies from laboratory scale to field trials, demonstrations for proving their viability and improving readiness level

- iii. Vision: Mobilizing resources & marshalling research policies for targeted, desirable and future technologies in the long term horizon.

The study is being carried out in the following six sectors of food processing in the North Eastern region of India:

- i. Regional Cereal Processing
- ii. Fisheries
- iii. Meat & Poultry Processing
- iv. Fruits & Vegetable Processing
- v. Spice Processing
- vi. Traditional Ethnic Foods

Six pre-draft reports were prepared and discussed in the Steering Committee. TIFAC scientists had brainstorming meetings with sectoral experts from the concerned Govt. agencies, labs, academia, industries and the North Eastern Council in Guwahati and Shillong for extracting valuable inputs specific for the North-Eastern region to incorporate in the study.

- b) **A study on “Traditional Foods- A Technology Perspective”** was completed through student Intern and report prepared.

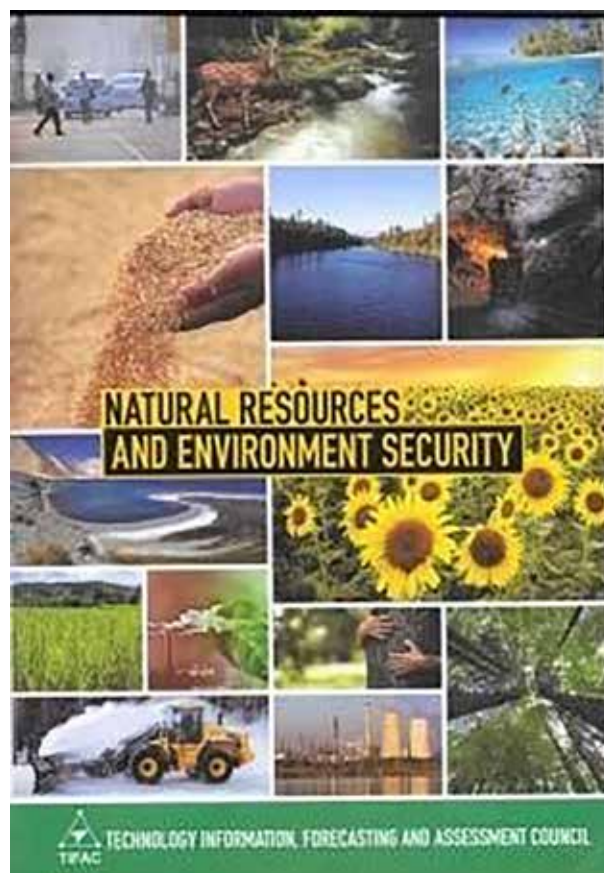
1.1.2 Security Technologies

The following three foresight studies on security technologies have been completed and reports have been released:

- a) **Natural Resources and Environment Security**

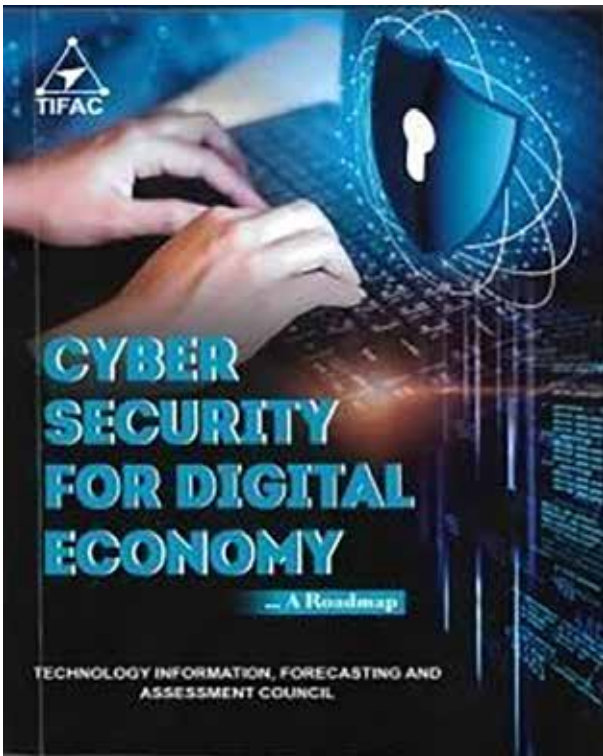
The report explores the potential threat faced by the natural resources and environment from malicious intent and the technological & policy foresight required to thwart the likely damages to them. The report covers threat, vulnerability analysis, impact assessment for the sub sectors namely forest and wildlife resources, agriculture and allied resources,

mineral resources, water resources, air and atmosphere and marine resources. For each of these resources, assessment of existing and emerging technologies and policies has been carried out to identify the gaps. It has also proposed a set of technological and policy recommendations to resolve the gaps.



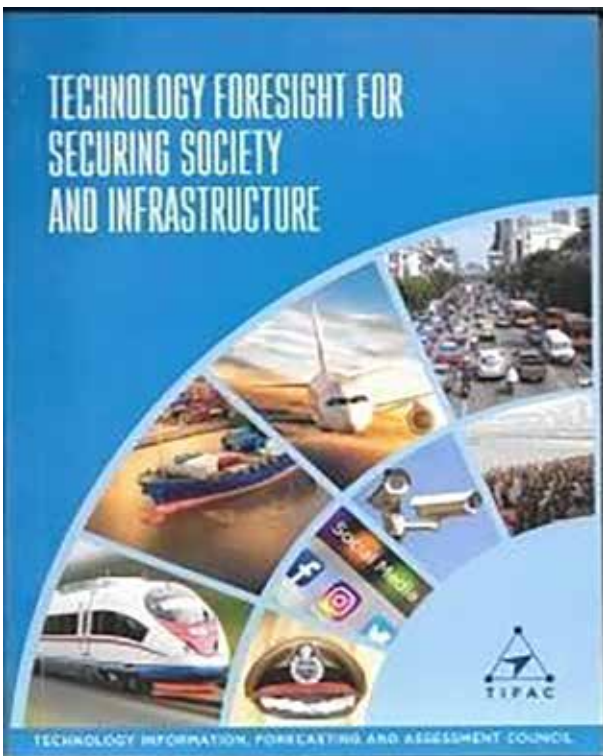
- b) **Cyber Security for Digital Economy - A Roadmap**

The extraordinary benefits of digital technologies bring to India's push for a digital economy is well recognized. Mindful of the accompanying challenges posed by cyber threats, this study has focused on the digital economy in terms of technology trends, cyber security challenges, R&D and preparedness of the Indian cyber security defence ecosystem against the cyber adversaries. The study dealt with security of the key technology areas such as the Internet of Things, Cloud & Virtualization, Big Data, SCADA and the financial sector.



c) Technology Foresight for Securing Society and Infrastructure

The report focuses on security of society as a whole including that of protected persons and



critical infrastructures such as road, railways, shipping, aviation, chemical industries and telecommunication. The study deals on the possible ways in which the technology and technology related policy contours of India’s internal security would need to evolve in the near future. In each domain, a set of recommendations which address the vulnerabilities from a policy and administration angle and gaps from a technological perspective have been included.

1.1.3 Technology Foresight Study on Micro Nano Manufacturing

The technology foresight study on Micro Nano manufacturing has been initiated recently. This study would cover the current status, different micro nano manufacturing processes, identify gaps in terms of technology, infrastructure and skillsets, future trends, opportunities and also policy interventions. Different foresight techniques viz., literature review, stakeholder consultation, patent search, delphi survey along with industry/institute visit would be adopted. Experts from IISc Bangalore, IIT Bombay, IIT Kanpur and CMTI are being consulted for this study. The first meeting of the Committee was held in November, 2019, at IISc, Bangalore in which the focus areas in micro nano manufacturing along with the draft structure of the study was discussed at length.

1.1.4 TIFAC Study on “Vertical Farming vs Horizontal Farming – a Comparative Analysis

A new study on “Vertical Farming vs Horizontal Farming – a comparative analysis” was initiated. The study is being carried out under the guidance of the Study Steering Committee (SSC) comprising experts from academia and industry in the area of Vertical farming and protected cultivation. The aim of this study is to analyze vertical farming technology in comparison with conventional/horizontal farming by identifying the needs, constraints,

implementation opportunities and possible alternative approaches and highlight the potential of vertical farming technology as a possible option for food and nutritional security in India. The Study Steering Committee met twice and visited an industry that is practicing vertical farming for commercial purposes. The study aims to cover comprehensive details on potential of vertical farming in India and comparing it with conventional farming. The study is in progress.

1.1.5 Studies on 'Climate Smart Agriculture' and 'Self Healing Roads'

The TIFAC Governing Council in its 52nd meeting has approved preparation of two white papers on Climate Smart Agriculture and Self Healing Roads. These two studies have been taken up as follow up activities of TV 2035 document.

1.4 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 for feeding forward technology intelligence in foresight and other activities for India and generating reports for detecting early signs of potentially important developments through a systematic examination of potential opportunities and threats, with emphasis on new technologies and their effects showing up on the horizon. To strengthen this further, an initiation has been done to look at the technologies on the horizon and their issues, for Sustainable Development Goals (SDGs) with reference to India by studying and developing a web based automation tool for horizon scanning.

2.0 NURTURING INNOVATION

2.1 Patent Facilitating Centre (PFC)

Patent Facilitating Centre established by DST at Technology Information, Forecasting and Assessment Council with four-fold objectives of creating 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 a major scheme of DST, i.e., Women Scientist Scheme C (WOS-C) popularly known as KIRAN-IPR.

2.1.1 IP/Patent 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 TIFAC and patent/IP applications are filed in the name of inventing institute/s. PFC conducts a thorough patentability assessment in house for all the invention disclosure received by it. The PFC has assessed the patentability of more than 100 new inventions and is in process of next step for filing patent applications w.r.t. patent eligible cases that are in the final stage and recommended by the committee. During this period 36 patents were granted in India. The PFC facilitated filing and prosecution of the following patents which resulted in grant of patents in India.

S.No.	Patent No.	Grant Date	Applicant	Title
1.	312284	03/05/2019	Panjab University, Chandigarh And Kakatiya University, Hyderabad	Novel tetrahydroquinolines as aromatase inhibitors
2.	312609	10/05/ 2019	National Institute of Technology, Calicut	A novel method for the preparation of chitin/pva/ peg crosslinked hydrogel for biomedical application
3.	313869	07/06/2019	Indian Institute of Technology, New Delhi	A Schottky-Gate Bmfet Device and method of operation thereof
4.	315655	08/07/2019	Punjab University, Chandigarh	Biosensor device and method for estimation of urea
5.	315732	09/07/2019	Himachal Pradesh University	The transition metal carbamates of 4-methylpiperazine-1-carbamic acid with copper (ii) and zinc (ii) and their Synthesis

S.No.	Patent No.	Grant Date	Applicant	Title
6.	315834	11/07/2019	1.Cochin University of Science and Technology (CUSAT), Kochi 2.Raman Research Institute, Trivandrum	Optical limiting ferromagnetic Nanoparticles and device thereof
7.	315898	12/07/2019	Dolphin (PG) Institute, Dehradun	Column reactor for the Synthesis of cyclic carbonate of polyols via carbamide process
8.	316377	18/07/2019	Indian Institute of Technology, Kanpur	Dielectric resonator
9.	316472	19/07/2019	Indian Institute of Technology, Delhi	Electro-oculogram (EOG) based Multimode controller system
10.	318935	26/08/2019	Indian Institute of Technology, New Delhi	Mechanical Processing of silk Yarn
11.	319415	29/08/2019	Indian Institute of Technology, Kharagpur	Method of making concrete units inside cells of Plastic sheets
12.	319799	04/09/2019	Malviya National Institute of Technology, Jaipur	"Pneumatic Twisle"
13.	319911	05/09/2019	Indian Institute of Technology, New Delhi	Radial impregnation die (RID) for rapid processing of continuous fiber-thermoplastic composite
14.	320921	20/09/2019	National Institute of Technology, Durgapur	System and method of stable rotation of a magnetically levitated ferromagnetic body
15.	322060	30/09/2019	Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh	D-penicilline nanoparticle and process of synthesis
16.	322666	14/10/2019	Malaviya National Institute of Technology, Jaipur	Natural ventilation system for building through solar and/or wind energy
17.	323734	25 /10/ 2019	Indian Institute of Technology, Delhi	System and method for Accessing data using wireless communication
18.	324671	07/11/2019	Department of Chemistry, University of Lucknow	De-oiled mustard cake based adsorbent and process thereof

S.No.	Patent No.	Grant Date	Applicant	Title
19.	325256	18/11/2019	Department of Science and Technology, DST, New Delhi	A torch oscillation system
20.	325719	25/11/2019	Indian Institute of Technology, Kharagpur	A control system to minimize the dynamic power loss in an unbalanced voltage regulator module and its method of operation
21.	327026	09/12/2019	Manipur University	Novel method of separation and Isolation of indirubin from strobilanthesflaccidifolius leaves.
22.	327068	10/12/2019	Indian Institute of Technology, Kharagpur	An online micro-tool diameter measuring system for micro-electrochemical/ micro-electro discharge machine
23.	327217	12/12/2019	Malaviya National Institute of Technology (Deemed University), Jaipur	An improved straight vegetable oil (SVO) fuelling system for CI engine operated two wheeler
24.	327603	17/12/2019	National Institute of Technology Tiruchirappalli	An electronic circuit for self sensing piezoelectric actuator and method of operating thereof
25.	327638	18/12/2019	Malaviya National Institute of Technology (Deemed University), Jaipur	A device for improving fuel Efficiency of a four stroke spark ignition (si) engine
26.	327961	22/12/2019	Directorate of Youth Services, Government of West Bengal.	Lift for residential use up to 2 nd floor and method for running the same.
27.	328209	26/12/2019	Punjab University, Chandigarh	Surface-modified bile-salt stabilized non-ionic surfactant nano-vesicles for oral delivery of bioactives
28.	329412	14/01/2020	Central Pulp and Paper Research Institute, Uttar Pradesh	Method and apparatus for depithing of bagasse
29.	329795	21/01/2020	Manipur Science & Technology Council, Imphal	An improved dry fish fermentation compressed apparatus and Method thereof

S.No.	Patent No.	Grant Date	Applicant	Title
30.	330609	29/01/2020	Indian Institute of Technology, Delhi; and Central Council For Research in Aurveda and Siddha	System for providing restorative/relaxation bathing
31.	330765	30/01/2020	Motilal Nehru National Institute of Technology, Allahabad	A Process For Bioremediation of Industrial Grease Waste Using A Bacterial Consortium
32.	332014	14/02/2020	General Shivdev Singh Diwan Gurbachan Singh Khalsa College	Bioremediation of reactive dyes with Paenibacillus sp
33.	332689	24/02/2020	Guru Nanak Dev University, Amritsar	Conjugates of n-Benzylpyrrole or n-Benzoylpyrrole with indolinone as highly effective anticancer agents
34.	333028	26/02/2020	Punjab University, Chandigarh	A metalosome assembly and a process or preparation thereof
35.	335174	19/03/2020	Punjab University, Chandigarh	Novel Nanoemulsion/ self-nano-emulsifying Drug delivery system for enhanced oral bioavailability of muscle relaxant
36.	335708	21/03/2020	Punjab University, Chandigarh	Multi-Component Crystalline Form of Oxcarbazepine

2.1.2 Training Programmes and Workshops

PFC had organised 5 two-days advanced training programmes for the Patent Information Centres (PIC) in different states for IPR cells as per below mentioned details. Over all, a total of 250 scientists were benefited from these programmes which included researchers in addition to PIC and IPCU officials:

- Two-day training programme organised at Rajiv Gandhi Science & Technology Commission, Govt of Maharashtra, Bombay on June 11-12, 2019, for IPR Cells in Universities of Maharashtra.
- State level IPR workshop was held at

Goa University, on September 26-27, 2019, along with Goa State Council of Science & Technology.

- Training Programme on Intellectual Property Rights was held on 14th-15th October 2019 at ICSSR, NEHU, Shillong along with State Council of Science Technology and Environment (SCSTE), Meghalaya. The PIC officials from North-East states attended the programme.
- Workshop on Intellectual Property Rights (IPR) for Women Researchers in Sciences was held at BISR along with PIC Jaipur during November 29-30, 2019.

- Training on IPR especially for patents and patentability assessment was organized at Hyderabad in association with the Patent Information Centre (PIC) at Telangana State Council of Science and Technology during December 22-23, 2019.

2.1.3 Training to Women Scientists in IPR (KIRAN-IPR)

Women Scientist Scheme (WOS-C), KIRAN-IPR is a flagship programme of the KIRAN Division of Department of Science & Technology (DST). Through one of its components- 'Women Scientist Scheme-C (WOS-C)'- it provides one year on-the-job training in the area of Intellectual Property Rights (IPR) to women with science background. The Patent Facilitating Centre (PFC) of TIFAC has been entrusted with the implementation of WOS-C. The scheme is being operated from four coordination centres at Delhi, Chennai, Pune and Kharagpur. Total 762 women have been trained in 10 batches and about 300 women have registered themselves as Patent Agents with the Indian Patent Office.

2.1.4 Commencement of 11th Batch of WOS-C

During the period, one year training of 11th

Batch of WOS-C started. In response to all India advertisement, 3976 applications were received out of which 3913 were found eligible. 1635 candidates appeared for the online examination held on April 28, 2019, in 30 cities across the country. After the exam and interview, 120 women scientists were short listed for the one year training under the 11th batch. A total of 119 candidates joined training out of 120 total selected. One month orientation programme was held in New Delhi during August 1-30, 2019, at New Delhi. Women from all the 4 Coordination Centres at Delhi, Chennai, Pune and Kharagpur participated in the programme. Highlights of the Orientation Programme are given below:

- About 65 lectures delivered on different aspects of IPR and related matters.
- Three days during the programme were dedicated to hands on training on patent searches using various free and paid patent databases.
- Visit to the Patent Office, New Delhi
- Industry visit to Ericson
- Delhi Tour & Talent Day





Women attending the Orientation Programme at New Delhi in August 2019



After the orientation programme, the women were placed with about 45 agencies coordinated by 4 centres for 11 month on the job training. The agencies include IPR attorney law firms, govt departments like ICMR, CSIR, Patent Office (all 4 branches at Delhi, Mumbai, Chennai and Kolkata), PICs, State S&T Councils, MNCs, KPOs, etc.

The women scientists of Delhi Centre also attended the following conferences during this period:

- a) 5th International Conference on IPR & 5th CII Industrial IP Awards 2019 held on December 3-4, 2019, at Hotel Le Meridien, New Delhi.
- b) 12th Global Intellectual Property Convention at New Delhi (Vigyan Bhavan and Le Meridian) from January 8-10, 2020. It is Asia's leading conference for in-house IP counsels and innovators to interact with IP attorneys from around the world to discuss the best practices and solutions to maximise the value of their innovations and IP.

2.1.5 Completion of Training of 10th Batch

The training of 10th Batch of women scientists concluded in May 2019 and for some women who availed extension due to maternity or other domestic reasons, their training concluded in December 2019.

During the training, the women of Delhi Centre attended the India Intellectual Property Convention and 11th National Intellectual Property Awards 2019 held on International World IP Day on April 26, 2019, organised by CII and DPIIT at New Delhi.

Out of 104 women who joined the training, 96 women finally completed the training. 58 women out of 96 cleared the Patent Agent examination and received the prize money of Rs. 25,000/- each. About 50 percent women from 10th Batch have found gainful employment in the area of IPR.

2.1.6 Preparation of 12th Batch

The preparations for commencing the 12th Batch have already started. The tender for identifying the online examination conducting agency has been floated in the major newspapers of the country. Other related preparations have also started.

2.1.7 Celebration of International Women's Day on March 8, 2020 and Distribution of Training Completion Certificates to Women Scientists of 10th batch

As directed by DST, PFC-TIFAC celebrated the International Women's Day at TIFAC, Vishwakarma Bhawan Auditorium on March 08, 2020 (Sunday). Ms. Prathiba M. Singh, Hon'ble Justice of Delhi High Court, Professor Ashutosh

Sharma, Secretary DST had participated along with other senior officials of DST. Two leading young scientists, namely, Ms Shweta Kulkarni, AstroPreneur from Pune and prize-winning Women Scientist, Dr. Shweta Rawat of DIPAS, a lab of DRDO, spoke on the occasion and motivated the women scientists.

On this occasion, women scientists of 10th batch received Certificate for successful completion of the one-year hands on training on IPR. Total 96 trainees completed in this batch. About 35 trainees received certificates and others in absentia.



Glimpses of International Women's Day Celebration

An important panel discussion also took place on various schemes of the Government specially for Women Scientists. Participants showed a lot of interest and asked many queries. The panel was led by Dr Anita Gupta, Scientist G and Associate Head, Innovation and Entrepreneurship, Ms Anju Bhalla, Joint Secretary and Ms Namita Gupta, Scientist G of DST. Second panel discussion was organised on the role of DST scheme KIRAN-IPR in enabling women scientists to come back to science and establish themselves as IP entrepreneurs. The programme was attended by 100 plus delegates. The movie “Hidden Figures” was screened during the celebration. The book LADY YOU’RE THE BOSS! By Shri Apurva Purohit was presented to the participants.

2.1.8 India-US Science and Technology Agreement

PFC division assisted DST in concluding negotiation with US on S&T Cooperation including IPR annex; which was signed in August 2019.

2.2 TIFAC-SIDBI Technology Innovation Programme (Srijan)

Under TIFAC-SIDBI joint programme, TIFAC continued to facilitate scaling up of technology innovations to improvise the readiness level and to establish market provenness of technologies developed by academia, labs, incubation centres and start-ups / MSMEs. TIFAC carried out assessment, peer review, appraisal of technology innovations and provided necessary support for implementation through periodic monitoring and review involving domain experts. SIDBI has been carrying out the financial appraisal of TIFAC recommended project proposals and providing financial support as term loan.

Summary of projects successfully scaled up, new technologies assessed and recommended, and review of ongoing projects carried out during the F/Y 2019-20 are as follows:

No. of projects scaled up successfully: 02

No. of new technologies assessed and recommended for scaling up: 01

No. of ongoing projects monitored and reviewed: 02

2.2.1 Projects Successfully Scaled Up During the Financial Year

S.No	Title	Implementing Industry	Innovation	Likely Impact
1.	Extraction of Green Silica from Rice Husk Ash	M/s. Brisil Technologies Private Limited, Vadodara	Processing technology to extract advanced dispersible grade silica from rice husk ash generated from biomass power plants. The high grade silica is used as filler in tyres to reduce the rolling resistance of vehicles resulting in improvement of fuel efficiency.	Company has processed 100 tons of rice husk ash and extracted about 60 tons of dispersible grade silica and sold it to Innovative Tyre and Tubes Ltd. The quality of silica is also certified by the GoodYear Company.
2.	Portable Automatic Poori making machine	M/s. Mukunda Foods (P) Ltd., Bangalore Technology know how licensed by CSIR-CFTRI, Mysore	The innovative and compact design of equipment would make dough making, disc flattening and frying operations an integral part of machine as unique features which is not available in the conventional semi-automatic poori making machines	The automatic machine has the relevance to deliver poori in hygienic condition during the Covid-19 outbreak to feed large public gatherings/ isolation centres etc. It can also be used by small catering businesses.



Automatic poori making machine



Green Silica from Rice Husk Ash

2.2.2 New Project Assessed and Technically Recommended

S.No	Title	Implementing Industry	Innovation
1.	Herbal formulation to keep away wild animals from farm lands and also to promote crop yield	M/s. Provimi Products Pvt. Ltd., Erode (Tamil Nadu)	The unique organic herbal formulation will help the farmers to protect their field /horticulture crops from wild animal intrusion near forest fringes. The unique herbal formulation has also the properties to stimulate and enhance the crop yield.

2.2.3 Ongoing Projects Monitored and Reviewed

S.No	Title	Implementing Industry	Innovation
1.	UF Ceramic membrane with module/filter unit for fluid (water purification, oil, waste water, dairy etc.) filtration application	M/s Need Inovation, Kolkata	Innovative process for manufacturing ceramic filter, 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 could handle corrosive and non-corrosive liquids in wide range of pH and the membrane has high shelf life of 15 years.

2.	CellBRx single use bioreactor for efficient and affordable production of biologics and vaccines	M/s. OmniBRx Technologies Pvt. Ltd., Ahmedabad	The proprietary Innovative Dynamic Bed Reactor (DBR) technology could be incorporated with CellBRx bioreactors to overcome existing problems like scalability, efficiency and affordability. It would offer very large surface area for adherent cell growth in small culture volume and innovative design offers mixing to ensure homogenous nourishment and mass transfer while scaling up. The technology is expected to offer 90% cost reduction for the production of vaccines and biologics to meet current and increasing demand of bio-therapeutics.
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UF Ceramic Membrane

2.2.4 Identification of Innovations through Workshops

Four workshops were conducted with innovators/start-ups in association with incubation centres at IIT-Guwahati, IIT-Kanpur PSG College of Technology, Coimbatore, and CSIR-CFTRI, Mysuru towards identification of innovations. About 50 incubates and start-ups participated in the workshops along with mentoring faculties and scientists.

2.2.5 Technology Showcasing

Two technologies scaled up under the Srijan Programme were showcased in the India International Science Festival (IISF-2019) held at Kolkata. Six innovative products scaled up under Srijan Programme were demonstrated at TIFAC on the TIFAC Day celebration on 10th February 2020.



Technology demo at IISF-2019

3.0 TECHNOLOGY SUPPORT

3.1 MSME Cluster Programme

MSME Program of TIFAC aims to provide R&D and technical support to MSMEs in select technologically homogenous clusters through a methodological approach based on establishing and leveraging academia-industry interaction. The program focuses on harnessing the knowledge and expert base available with the proximate academic and R&D Institutions which with some motivation can be leveraged and support MSME industries. The Program has covered more than forty clusters across the country and has further evolved to augment the innovation support to the MSMEs by linking engineering students also with the MSMEs through the MSME Internship Scheme.

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

Expanding the reach: With an objective of reaching out to more MSME clusters in the country and following a bottom-up approach, Technology Gap Analysis Studies have been initiated in the following Six (6) MSME clusters:

a) **Technology Gap Analysis Study for the Toys Cluster, Channapatana**

The study focuses on the toys cluster situated at Channapatana, Karnataka. The cluster houses more than 250 units/enterprises of micro and small scale manufacturing/producing wooden toys, natural fibre toys/articles, educational aids etc. The turnover of the cluster is around Rs. 20 crore and the products are marketed nationally and internationally including countries like France, Australia, Netherlands, Germany, USA etc. The manpower (around 3,000) are mostly engaged in design, manufacturing/processing, printing and packaging. The main issues of the cluster are continued usage of traditional

technologies/methods of manufacturing toys, lack of innovation in material, designing and application, lack of market platform etc.

The study is being carried out by M S Ramaiah University of Advanced Sciences (MSRUAS), Bangalore as knowledge partner and will identify gaps in products manufacturing technology and formulate technology interventions action plan for upgrading the cluster's technological base.

b) **Technology Gap Study for Katkhal Sital Pati Cluster of Katkhal Hialakandi, Assam**

The cluster houses around 227 units involved in producing a variety of products mainly mat, file covers, hand bags etc. The turnover of the cluster is around Rs. 5 lakh and the products are sold in local markets. Around 1,000 people are engaged in the cluster directly or indirectly. Presently, traditional methods and tools are being used by the workers in the cluster. The main issues comprise low productivity due to inadequate mechanization and constraint of resources. Most of the workers are not exposed to modern process, methods or technology. It has been assessed that introduction and adoption of new technologies would lead to enhanced productivity and efficiency. The study being carried out with NIT, Mizoram as the knowledge partner would highlight the status of technology currently used in the cluster and the constraints in the present processes as well as the products produced besides presenting a technology intervention plan.

c) **Areca nut/Sal Leaf Plate Manufacturing Cluster – Bishnupur, West Bengal**

The cluster is currently producing only low value products. The study is exploring technical

options to produce value added items. The study would also survey other such similar clusters across the country so that the value added products once developed, can also be replicated at other clusters. As a part of the study, few prototypes of the value added items would also be made. The study is being carried out by Maulana Abul Kalam Azad University of Technology (MAKAUT) Govt. of West Bengal, with association of faculty of Jadavpore University. The Survey of the clusters, costing of the present products and their testing have been completed. Development of better remunerative products is ongoing.

d) Apparel Manufacturing Cluster - 24 North Parganas, West Bengal

Once a vibrant cluster, presently in view of the intense competition, it is in need of infusion of efficient technologies to make the cluster competitive. The study will map and list the present status of the indigenous machineries in use, bring out the shortcomings in terms of design, productivity & pricing vis a vis the imported machines which hinder their adoption by the units. The study will also prepare a plan for designing of the machineries with cost estimates and identified stakeholders. The study is being carried out by MAKAUT, West Bengal.

e) Fisheries Cluster, Manipur & Food and Spices Cluster, Churanchandpur, Manipur

Manipur has a rich diversity of freshwater fish resources besides a rich variety of fruits, vegetables, cereals, pulses, spices, etc. The major fish varieties include Grass Crap, Silver Crap, Rou/Mingal, Kamal Crap and Katla. Some of the indigenous fishes of Manipur are Pengba, Nagamu, Porom, Ngakra etc. Common horticulture crops grown in the State include Kharif vegetables, Rabi vegetables, Spices etc. There is ample potential and opportunity for value addition of fish as well as food processing industry.

The study by NIT Tripura will take an aggregate look at the fishery sector as well as agricultural products. It will prepare an integrated development plan for improving production, production of value added produce along with a viable plan for commercialization and marketing, leveraging the potential of the region.

3.1.1 Status of Studies

I Completed study – Final report submitted for the following two (2) clusters:

- a) **Jhula cluster, Kanhaiyaganj, Bihar:** - The study carried out by IIT Patna has closely examined the various Jhulas being produced at Kanhaiyaganj such as Toy Trains, Columbus, Joint Wheel, Dragon ride, Roller Coaster, Marry Round etc. It has brought out the deficiency in the existing designs which is leading to sub optimal material and energy consumption. Accordingly, need for design optimization and standardization has been strongly recommended. Substitution of several parts with composites materials has also been advised. As part of the study, the findings have been widely shared with cluster representatives.
- b) **Agricultural Implements Cluster, Noorsarai, Bihar:-** The study carried out by IIT Patna has examined the various Agricultural Implements presently being made at Noorsarai, Bihar. The range of implements include Rotary Tiller / Rotavator, Tillers, Small Engine Driven Rotary Tiller, different fitments such as cultivator for Tractor for tilling, Tractor Trolley with Hydraulic jack, and other post harvest equipments like Rice Huller. The study in its analysis has brought out several deficiencies related to designing and processing steps. As a product diversification, the study has suggested

new implements which could be produced in the cluster. As part of the study, the findings have been widely shared with cluster representatives.

II Ongoing Studies

The Draft study reports had been submitted for the four (4) MSME clusters (i) Utensil clusters, Bihar and West Bengal (ii) Surgical dressing manufacturers cluster, Chatrapatti, Tamil Nadu, (iii) Textile and garment manufacturing cluster, Erode, Tamil Nadu and (iv) General engineering cluster, Coimbatore. Validation workshop for these study reports will be organized shortly.

3.1.2 Validation Workshops Convened

The recommendations emerging out of the studies are presented in validation workshops to share, disseminate and seek feedback of the cluster representatives towards finalising follow up intervention plans. During the period, workshops have been convened at: Jhula cluster, Kanhaiyaganj b) Agricultural implements cluster, Noorsarai, Bihar and c) Saree cluster, Varanasi.

3.2 MSME Internship Scheme

The MSME Internship Scheme has been structured to encourage enhanced and continued involvement of students and faculty of academic technical institutions with the industries and providing technical support to the otherwise technologically deficient MSMEs. The scheme also promotes and nurtures student and faculty driven innovation ecosystem for the Indian MSMEs. Such approach also facilitates greater opportunities for students for hands-on practical experience of working in the industries and developing closer linkages.

The scheme is being implemented through four academic institutions namely, Pimpri Chinchwad College of Engineering (PCCoE) - Pune, Vellore Institute of Technology (VIT) - Vellore, M S Ramaiah University of Applied

Sciences (MSRUAS) - Bengaluru and PSG College of Technology – Coimbatore. More than 280 students have completed technical internships in MSME industries so far and around 60 students have completed their internships in MSME enterprises this year.

3.2.1 Replication of MSME Internship Scheme

Support and implementation of the scheme through the Rajiv Gandhi Commission for Science and Technology, Government of Maharashtra, is continuing in two Technical Institutes of Maharashtra.

3.3 Assessment of Raw materials towards Value Addition and Exports

Earlier, TIFAC had undertaken exploration and preparation of preliminary assessment reports on the potential and possibilities of value addition in few identified raw materials (including agricultural crops, oils, minerals and others) which are currently being exported from our country in raw form either without value addition or with little value addition. These raw materials have potential for value addition within the country and exported as value added products/derivatives. Three raw materials taken up towards need/feasibility assessment for further value addition and exports were Castor, Bauxite and Seaweed.

Comprehensive reports were prepared in association with wide-ranging stakeholders namely: Solvent Extractor's Association (SEA), Castor Directorate of ICAR, Indian Institute of Oilseeds Research (IIOR), CHEMEXIL- Ministry Of Commerce, Gujarat State Seed Producer's Association, National Seed Association of India, Sardar Krushinagar Dantiwada Agriculture University (SDAU), Banaskantha, Gujarat, CSIR- IICT, National Institute of Agricultural Marketing (NIAM) - Jaipur, Indian Oil Corporation - Faridabad,

IIT - Delhi, Jawaharlal Nehru Aluminium Research Development and Design Centre (JNARDDC), Nagpur and CSIR - Central Glass and Ceramics Research Institute (CGCRI), Kolkata. The organizations like CSIR-Institute of Minerals and Materials Technology (IMMT), Odisha, Indian Bureau of Mines – Ministry of Mines, Indian Refractory Maker's Association, International Bauxite, Alumina and Aluminium Society (IBAAS), Geological Survey of India (GSI), Mineral Exploration Corporation Limited (MECL) and Nagpur University also contributed. The domain industries were also associated in the preparation along with sectoral experts. The reports focused on prioritizing research and development efforts in the country in the identified areas and served as a useful resource for technologists and policy makers. The recommendations emerged from the reports were being disseminated widely amongst a broad range of stakeholders.

3.3.1 Other Ongoing Studies

a) Value added products from Castor seeds

India is the largest producer of Castor seed (around 10 lakh ton annually) accounting for around 87% of the world's castor seed production and Castor oil (around 3.5 - 5.0 lakh ton annually) meeting nearly 90% of world's castor oil requirement and is the largest exporter of castor oil to the world. 80-85 percent of castor seed production in the country is concentrated in Gujarat, followed by Andhra Pradesh and Rajasthan. Oil from castor is one of the most important commercial sources of hydroxylated fatty acid (ricinoleic acid) enabling usage of castor oil in numerous important industrial applications. India is exporting castor oil and some 1st level castor derivatives only. However, most high value products and derivatives from this oil are being produced outside the country like Sebacic Acid, Polyols and Nylon. There is a need for performing value addition of castor oil towards

producing high value products/derivatives with existing demand in the country.

Accordingly, a study has been undertaken to cover various issues related to high value derivatives/products mainly from sebacic acid including technologies for production, their status, major issues and challenges being faced, environmental friendly technology options, institutional capabilities and recommendations. The report is under preparation.

b) Bioceramics

More than 15 crore Indians suffer from knee problem and around four crores need knee replacement. Yearly around one lakh and twenty thousand knee replacement surgeries are performed in India, besides, seventy thousand hip replacement surgeries. With increasing average age, this number is set to grow further. The estimated Indian market size of the knee replacement is of Rs.850 crores and expected to grow rapidly. It has been estimated that around 70 percent of the requirement is currently met through imports. Some of the critical technological areas which require attention are: state-of-the-art designing approach, controlled and precise traditional machining and advanced coating techniques.

In view of the emerging requirement of bio implants and heavy dependence on imports, the study is taking a look at the current national capability for producing such implants, identify the gaps in our competency and accordingly draw a plan for prioritized R&D. The study is being carried out in close association with CSIR- CGCRI. A draft of the study report has been prepared and circulated to Study Steering Committee

3.4 Bioprocess & Bioproducts Programme

The programme aims towards carrying out systems studies in the field of bioprocess &

bioproducts and supporting R & D in specific niche areas. Under the Program, several specialized reports had been published and technology development projects were supported in the areas of biotransformation & enzymatic processes for API, nutraceuticals, phyto-chemicals, value-added bioproducts, bio-energy & biofuels, etc.

3.4.1 Studies Completed

a) Spatial Information System on Biomass Potential from Crop Residues Over India Using Geospatial Techniques' with National Remote Sensing Centre, Hyderabad

The district wise estimated surplus biomass assessed by IARI was used to disaggregate at 1 km grid level to produce spatial map of surplus biomass and bioenergy potential. The spatial information system of biomass potential from crop residues (BHUVAN-JAIVOORJA), developed under this project, is an effective tool to assess the availability of biomass and land resources along with logistics support from user defined fetch area. A web portal named BHUVAN-JAIVOORJA facilitates planning/establishment of tailor made biomass /biofuel/biomass plants for better utilization of surplus biomass resources. The geo portal was inaugurated on February 10, 2020, by Dr V K Saraswat, Hon'ble Member, S & T, NITI Aayog and Chairman-TIFAC.

The geo portal displays spatial distribution of crop specific bioenergy potential from its residue, spatial distribution of the total bioenergy potential from the selected crop residues, spatial map of the growing areas of the selected crop and spatial clusters or zones of high bioenergy potential from crop residues. The portal also highlights the Land Use Land Cover (LULC) map, major rivers and surface water bodies, administrative boundaries, road network, online visualization, annotation, delineation, spatial query module to draw a Point of Interest (POI) over the map, delineate

a fetch area and calculate amount and type of biomass available from the area and nearest town/railway station/petrol pump along with map and statistics of LULC over the fetch area.

b) Characterisation of Major Agro-Residues Biomass in India with CSIR-IIP-Dehradun & CSIR-NIIST- Thirvananthapuram from available secondary sources

The major objective included collating information from secondary sources on the defined parameters for all the identified crops from each of the different agro-climatic zones of our country. Data collected is catalogued, statistically analysed and organised into a searchable database for each parameters.

The study has created a database of 195 samples including rice straw (75 Samples) wheat straw (21), Corn Stover (4), Sugar cane bagasse (16) Cane trash (5), Cotton stalk (34), Pigeon pea (6), ground nut (7), mustard (4) castor (6), rice husk (13) and wheat husk (3). The final meeting of the Study Steering Committee was convened on June 11, 2019 and the study is nearing completion.

c) Mapping of appropriate technologies based on local biomass for conversion to biofuel

Characterisation and raw material specific technologies for conversion to biofuels would be mapped under this report. The report would complement the earlier report on biomass characterization.

3.4.2 Detailed Project Report for Launching a Mission on Seaweed

Seaweeds, macroscopic marine algae are source of nutrition, rich in protein, vitamins and minerals. Around 10,000 species exists worldwide, of which India possess 844 species. Out of global seaweeds production of ~30 Million Tonnes valued at USD 11.7 billion, China produces ~50%, Philippines ~30%,

followed by Indonesia, whereas India's share is mere ~0.01-0.02%.

However, India having a coastline of nearly 7500 kms and an Exclusive Economic Zone (EEZ) of nearly 2.17 million km² has a huge untapped potential of seaweed farming and at the same time employment opportunities. There is also a substantial scope to convert raw material into value added products. Looking at the immense potential of seaweeds towards its contribution to national economy, employment generation & positive impact on environment, a Mission oriented towards technology development is planned to be launched. Accordingly, preparation of DPR for the proposed Mission has been undertaken.

The DPR would cover potential and status of current farming, mapping of conducive area

for cultivation and technologies of seaweed products. The DPR will also cover regulatory issues, processing & packaging technologies, identification of broad project support required in terms of policy support. It will also estimate the budgetary support for launching & executing the Mission. The preparation is underway.

3.4.3 Mapping of Technologies for Value-Addition of Seaweeds

To supplement the information for DPR, a study has been initiated to cover current status of seaweed processing/ value-addition in India, explore seaweed value-addition technologies developed in India, analyze the trends in development of seaweed value-addition technologies and also bring out the developmental efforts. The study is in progress.

4.0 INTERNATIONAL LINKAGES

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 Initiative

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 studies have been completed during 2019-20:

- a) **Study on Development and Application of GAINS-City Model for Indian Cities** by National Environmental Engineering and Research Institute (NEERI), Nagpur

The study aimed to develop a modified version of the GAINS-Asia model for major Indian urban areas such as Delhi and Kolkata.

GAINS Delhi policy analysis model reveal current sources of pollution that threaten the health of Delhi’s citizens. It details out how to make use of the model for potential policy interventions that could effectively reduce environmental pollution and resulting health impacts in the coming years.

Although a few measures taken up by the government on transport sector alone were somewhat effective in reducing a single source Pollution, their effects have quickly been offset by total growth of population and economic activity. In addition, local measures alone will hardly be sufficient to achieve low PM concentrations as primary as well as secondary particles are imported from outside the region. In fact, promoting emission control measures upwind can be the most cost-effective way for tackling pollution. Therefore, significant improvements can only be expected with a comprehensive approach, tackling all these major sources.

GAINS-City will help urban planners to assess practical policy options for controlling urban air pollution that simultaneously maximize reductions in greenhouse gas emissions and minimize adverse health impacts due to air pollution. GAINS models would also suggest the alternate and cost affective technologies to improve the health and reduce the emission. It can be extended to the rest of the country and can be used by the policy makers to plan meeting the INDC commitments.

The report has been released on TIFAC Foundation Day held on February 10, 2020.

- b) **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

In this study, an attempt has been made to create a foundation to conserve available biodiversity and encourage sustainable agricultural practices across different regions in various agroclimatic zones of Karnataka. The present study attempted to understand agro-biodiversity, its change and its direct and indirect impacts at a micro level. Three regions from three different agro-climatic zones were explored for the study. The study indicated that the tradition of conserving the traditional seed varieties was no more a habit of the farmers. When subsidy on hybrid varieties was provided, more farmers preferred to buy seeds rather than store their seeds. This was especially true for small land holders who did not have the means to store seeds. Presence of local gene banks for the conservation of the seeds

at the village level could be a good option to ensure the conservation of agro-biodiversity at the village level. It highlighted how traditional landraces managed to survive in a few regions while were totally lost from other regions. It also highlighted how a few varieties managed to survive over a time while others ceased to exist. The reasons for both the loss of varieties and existence of other varieties could be an interesting study.

Another important aspect highlighted was the need to protect and improve soil health. Indiscriminate use of fertilizers by the farmers is affecting local soil health directly and local water resources indirectly.

The report was released on TIFAC Foundation Day held on February 10, 2020.



Experiment Layout for the Study on Conservation of Agrobiodiversity and Ecosystem Management: A Study in Indian Agroclimatic Zones

4.1.3 Other Activities

The interaction with IIASA is helping building 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.

South Asia has shown tremendous progress in the last four decades in food production and availability, yet a quarter of the world's hungry and 40% of the world's malnourished children and women live there. Further improving agricultural productivity is thus imperative, and a recent collaboration between IIASA and the International Crops Research Institute for the Semi-Arid Tropics in Hyderabad identified options for improving crop yields in the rain-fed systems of the semi-arid tropics.

The India-IIASA collaboration has resulted in the publication of approximately 222 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.

4.1.4 Fresh MoU with IIASA

Recognizing the mutual benefits of scientific collaboration in a broad field of activities of global concern and interest, Technology Information, Forecasting and Assessment Council (TIFAC), an autonomous body under the Department of Science and Technology (Govt. of India) has entered into the MoU with International Institute for Applied Systems Analysis (IIASA), Laxeburg, Austria as a full member. TIFAC would represent India as

National Member Organization on the IIASA Governing Council.

The objective of the MoU is to obtain India's membership in IIASA and create a favorable conditions for joint research and collaborations in developing models, scenarios and tools on various socio-economic sectors as stated in the objectives for determined period, implementation of joint activity results in the India & International Institute for Applied Systems Analysis (IIASA) and exchange of ideas, information and technologies for joint use by both the Parties. The collaboration between the Parties within the frames of the MoU will be fulfilled by means of the following:

- a. Indian scientists will work at IIASA on issues of mutual concern and interest on the Institute's research agenda and programs.
- b. IIASA will organize several relevant activities in India (e.g., workshops, conferences, seminars, etc.) on the issues of mutual interest on ongoing research activities at the Institute.
- c. Indian scientists will participate in scientific events at IIASA or events organized by IIASA outside India/Austria (e.g., workshops, conferences, seminars, etc.), in accordance to mutual concerns and interests.
- d. There would be exchange of scientific and other information between IIASA and TIFAC.
- e. Short-term stays, seasonal contracts, sabbaticals, and full- and part-time assignments would provide a range of opportunities for Indian researchers to work at IIASA and develop more productive and impactful partnerships.

The MoU was signed by Prof. Pradeep Srivastava, Executive Director, TIFAC on behalf of the Indian side and Albert van Jaarsveld,

Director General and Chief Executive Officer, IIASA on behalf of the IIASA side on 19th March, 2020.

India's SDG Goal have many commonalities to IIASA Initiative of TWI 2050 and there exist many opportunities for India-IIASA collaborations which could help the policy makers achieve the aforesaid goals for the cross sectoral analysis. The following research areas have been identified for future collaboration as offering the greatest potential for India's membership of IIASA considering addressing interests of policymakers and researchers in India.

- Digital India and the Sustainable Development Goals
- India's National Clean Air Action Program
- Disaster and Climate Resilience in the Indian Subcontinent
- India Energy Model
- NEXUS - An Integrated Solution to Water, Energy, Land and Ecosystem Security

4.2 International Collaborations

China

On the invitation from Chinese Academy of Sciences and Technology for Development (CASTED) and the Shanghai Institute for Science of Science (SISS), Ms. Jancy Ayyaswami, Scientist F delivered a talk on 'Emerging trends in Indian Manufacturing Industry- Perspective for 2035' at the Pujiang Innovation Forum-2019: International Science, Technology and Innovation Think tank Forum organized in Shanghai during May 3-4, 2019. TIFAC also participated in the Panel discussion on 'Vision and Path in the coming 15 years' in the forum. As a spinoff, CASTED has expressed interest to partner with TIFAC for foresight activities in Asia.



TIFAC Scientist delivering talk and participating in the panel discussion at the Pujiang Innovation Forum-2019 in Shanghai(May 2019)

Russia

A collaborative project with Higher School of Economics, Moscow, Russia, has been initiated towards undertaking an analysis of existing scientific & technological capability, capacity, competency, trends and demands of the S&T needs of India & Russia in identified priority sectors which can be jointly addressed through collaboration by both the countries. The MoU to be signed between two countries is under finalization. The Project will engage the two key agencies on both sides namely: TIFAC from India and The Institute for Statistical Studies and Economics of Knowledge – ISSEK, Higher School of Economics (HSE), Russia. In this context, Dr Gautam Goswami, Head, TV 2035

delivered a talk on “Long Term Technology Foresight in India – A Case Study” in IX Annual International Academic Conference on Foresight & STI Policy during November 21st-22nd, 2019 in HSE, Moscow, Russia.



Delivering talk in the IX Annual International Academic Conference on Foresight & STI Policy at Moscow

India-US Science and Technology Agreement

TIFAC assisted DST in concluding negotiation with US on S&T Cooperation including IPR annex; which was signed in August 2019.

5.0 EVENTS

5.1 India International Science Festival (IISF) 2019

The IISF is the largest science event in the world. The 5th IISF 2019 was held during 5th – 8th November, 2019, at Science City, Kolkata. The theme for the year 2019 IISF was “**RISEN India-Research, Innovation and Science Empowering the Nation**”. The mega event was jointly organized with the support of Ministry of Culture, Gol, DRDO, Ministry of Defence, Gol, AICTE, CSIR, India, ISRO, Vigyan Prasar, Delhi, ICMR and ICAR. The IISF 2019 comprising 28 side events were organized at multiple venues like, Vishwa Bangala Convention Centre, Science City, Satyajit Ray Film and Television Institute (SRFTI), Indian Institute of Chemical Biology (IICB), Bose Institute, Salt lake and the Westin, Rajarhat.

The festival was inaugurated by Hon'ble Prime Minister, Shri Narendra Modi via video conferencing. His message highlighted that

the very purpose of this festival is to connect the common man with science. Science should not just be inventive but also innovative and research not is just influential but also inspiration. Research and study should not confine to laboratories only, the output must be communicated to the society at large. He also urged the scientists present to think ways in which science could be utilised to make people's daily lives easier. He further said that the way forward should be 'Long-Term Benefit and Long Term Solutions' while keeping in mind international standards and regulation. The inaugural session was also attended by ministerial delegates from Myanmar, Bhutan, Nepal and Bangladesh

Union Minister for Science and Technology, Earth Sciences and Health and Family Welfare, Dr Harsh Vardhan said that a platform like IISF is an opportunity to bridge the gap and bring science and technology closer to the public for wider awareness.



Dr Harsha Vardhan, Hon'ble Union Minister for Science & Technology, Prof Ashutosh Sharma, Secretary DST and other dignitaries during the release of DST-TIFAC posters on 'Policy on Scientific Social Responsibility (SSR)' at IISF-2019, Kolkata

The following thematic events were conducted during the festival:

- Global Indian Scientists and Technocrats Meet
- Overseas Ministers and Diplomats Conclave
- States Science and Technology Ministers' Conclave (SSTMC)
- Young Scientists' Conference
- Student Science Village – Mega Science Hub “Pradhan Mantri Saansad Adarsh Gram Yojana”
- North East Students' Conclave
- women scientists and entrepreneurs conclave
- National Science Teachers' Congress
- New Age Technology Show
- Industry-academia conclave
- New Age Technology Show
- Science and Technology Media Conclave
- Students' Engineering Model Competition
- Face to face with new frontier in science
- Agricultural scientists' meet
- Health research conclave
- Vigyanika: international science literature fest
- International science film festival of India
- National social organisation & institutions meet
- Mega science, technology and industry expo

TIFAC participated in the mega science, technology & industry expo and exhibited its achievements & potential through posters, brochures & reports during the event. The stall also exhibited two (2) products namely, “UF Ceramic membrane with module/filter unit for fluid (water purification, oil, waste water, dairy etc.) filtration application” and “Automated Dosa making Machine” developed by the companies M/s. Need Innovations Ltd., Kolkata & M/s. Dosamatic Machine, Bengaluru respectively supported under TIFAC-SIDBI Srijan programme. The stall was visited by the eminent dignitaries & scientists including Dr Harsh Vardhan, Hon'ble Minister of Science & Technology and Prof Ashutosh Sharma, Secretary, DST.





IISF-2019 Mega Science, Technology & Industry Expo, Kolkata

About 20,000 delegates participated in IISF-2019, Kolkata including delegates from different countries, Science and Technology Ministers from different States of India, Government officials, representatives from NGOs, scientists, technocrats, science writers, teachers, journalists, students, craftsmen, farmers and others. From TIFAC also many scientists had participated as invited speakers in technical sessions.

5.2 107th Indian Science Congress

Indian Science Congress is the India's largest annual gathering of scientific luminaries from the countries across the world. Every year several Nobel Laureates bring laurels to the Indian Science Congress with their thought

provoking and inspiring talks. The 107th session of Indian Science Congress was held at University of Agricultural Sciences, GKVK Campus, Bangalore, Karnataka during January 03-07, 2020. This year the science congress focussed on the theme '**Science & Technology: Rural Development**'.

Like every year, TIFAC had participated in the 107th Indian Science Congress. Dr Gautam Goswami, Head and Scientist Technology Vision 2035, delivered the Plenary Talk on "**Technology vision 2035: A Technology Perspective for India's Development**". Ms Mukti Prasad, Scientist-C delivered a talk on **Technology Vision 2035 Roadmap report on ICT** as an invited speaker. TIFAC had also put up a stall and showcased its activities through posters, displaying TIFAC publication and reports.



Dr G Goswami delivering Planery Talk in 107th Indian Science Congress



Ms Mukti Prasad delivering invited talk in 107th Indian Congress

5.3 TIFAC Foundation Day 2020

TIFAC celebrated the 33rd Foundation Day on February 10, 2020. The year 2020 was very special to TIFAC as it recognized and celebrated the realization of TIFAC’s document on Technology Vision 2020 prepared in the year 1995. TIFAC on this occasion revisited memory lanes with luminaries of the Science and Technology establishments in the country by engaging in discussions on Vision for India beyond 2020.



Secretary DST addressing the delegates on 33rd Foundation Day in the presence of Dr V K Saraswat, Chairman GC

It is pertinent to remember and revisit TIFAC’s journey where it brought together thousands of academic and industry experts as well as stakeholders from the government and civil societies to build a vision for a developed India under the leadership of former President Dr APJ Abdul Kalam, the then Chairman-TIFAC. The Technology Vision 2020 document was the first mega technology vision exercise in India which led to a set of 17 documents, including sixteen technology areas and one on services. In more than 25 years of its service to the nation, it has delivered a number of technology assessment and foresight reports. TIFAC has prepared the Technology Vision 2035, capturing the aspirations of Indians which was released by Prime Minister Shri Narendra Modi in the 103rd Indian Science Congress, Mysuru in 2016.

TIFAC also exhibited some of the innovative products developed under SRIJAN programme. The exhibition was inaugurated by Dr V K Saraswat, Hon’ble Member-NITI Aayog and Chairman-TIFAC. There was a special address by Dr YS Rajan Former ED, TIFAC during the conference.

Dr Rajan delivered the Foundation Day lecture and shared TIFAC’s experience of preparing and implementing TV 2020. He had also discussed genesis of other programmes of TIFAC. The following web portal and reports

were release, the description of which was presented by the concerned TIFAC scientists:

S. No.	Releases	Short Presentation by
1.	Web Portal “Spatial Information System of Biomass Potential from Crop Residues”	Ms. Nirmala Kaushik, Scientist F
2.	“Technology Road Map on Water”	Dr Gautam Goswami, Head TV2035
3.	“GAINS Model for Indian Cities”	Ms Sangeeta Baksi, Scientist F

On its foundation day TIFAC also had a panel session on “**Making India Non-Fossil Fuel Based Economy**”. The session was chaired by Dr V K Saraswat & other experts included Prof Ashutosh Sharma, Secretary, DST, Dr Y S Rajan, Former ED, TIFAC; Dr P S Goel, Professor NIAS, Shri Santanu Chowdhury, Director, NRSC, Hyderabad and Shri R Saha, Former Advisor DST and Director PFC.

Dr Saraswat pointed out that as far as non-fossil fuel are concerned, coal is the main ingredient for energy generation in India. He added that if coal is going to be the main



Release of TIFAC Reports and Portal

energy source, technology is required for clean coal technology. Dr Saraswat highlighted many sources of energy and said that bioenergy is emerging in a big way because India is a large biomass producer. He further added that India has huge geothermal resources, particularly in the Himalayan region. The current use of this

resource in India very low, but institutes and industry are working on this technology. He emphasized that “Hydrogen economy will also come up, but we have to solve the problems of technology in hydrogen storage, transportation, and production economically”.



Panel discussion

Professor Sharma mentioned that “India has coal, but it does not have other resources such as petroleum and gas and hence one need to figure out how to improve use of coal in terms of emission, pollution control, power generation efficiency, advanced ultra-supercritical technology, gasification of coal and such forward-looking solutions”. Prof Sharma further pointed out that fusion technologies would be an ultimate problem solvers. There is already

a big fusion reactor in the solar system, Sun and therefore the solar energy in all different forms could be utilised. Dr P S Goel and Shri R Saha also shared their experience of handling energy related issues during the discussion.

A short film on TIFAC prepared in association with Vighyan Prasar was released and screened on the day. It is available at: <https://tifac.org.in/index.php/2-uncategorised/917-short-film-on-33rd-foundation-day>



An exhibition was also organised to highlights of TIFAC supported Projects achievements



Recognising 25 Years of service, Shri T Chandrasekhar, Scientist-F was felicitated by Dr V K Saraswat, Chairman TIFAC along with other dignitaries with a certificate of appreciation.

5.4. Vigilance Awareness Week

In compliance with directives of CVC and DST, Vigilance Awareness Week 2019 was observed during October 28 - November 02, 2019, to spread awareness about vigilance matters. This awareness week campaign affirms our commitment to promotion of integrity and probity in public life through citizen participation. The awareness week with them on "Integrity- A way of life" began with administering pledge to all the employees of TIFAC. A lecture by Shri Sethu Ramalingam, Ex-Faculty-ISTM was organized for all staff members of TIFAC.

5.5. Swachhata Day

TIFAC had observed Swachhata Hi Seva (SHS) during September 17-October 02, 2019. TIFAC had initiated various programme for spreading Swachhata Hi Seva in TIFAC and its surrounding. The theme identified for observing SHS was '**Plastic Waste Management**'. An attractive banner was designed and prepared for display during the SHS.

The Swachhata Pakhwada was formally launched by Shri Sanjay Singh, Executive Director (Officiating) TIFAC. The pledge on Swachhata was taken by all the employees of TIFAC. To spread awareness among TIFAC



employees towards the theme of Swachhata Hi Seva, a debate competition was organized on the topic "Technology is essential to achieve Zero Plastic Waste". About 25 participants had attended the debate competition.

A lecture was organized on the topic "Emerging Trends in Governance in India: Swachhata Hi Seva & other initiatives" by Prof Sujit Pruseth, Asst. Professor, Indian Institute of Public Administration (IIPA), New Delhi.

For inculcating innovative/ creative thinking in the school kids, TIFAC had organized the training programme on "**Utilization of Plastic Waste Material**" for the student of SDMC Primary Boys School, Qutab Institutional Area, Katwaria Sarai. Two groups were created, class I to class III as Group A & class IV to class V as Group B. About 150 school kids had participated in the training programme. Best three students from each group were given certificates and prizes.



6.0 HUMAN RESOURCE DEVELOPMENT

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 implemented the Internship Scheme during 2013-2019. During the current year, seven (7) students went through internship under the guidance of

different TIFAC scientists. This included four (4) students who joined earlier, and three (3) who joined during the current year as the last batch of the student interns under this programme. Five (5) students completed their internship project during the year. Topics on which student interns worked during the year 2019-20 are:

Completed Internship Studies

SI No	Name of Student Interns	Topic
1.	Chandana Ronad	Comparative Analysis of Emerging Vehicle Technologies in Indian Context - Part I: (Supervised by Sh Arghya Sardar, Scientist F)
2.	D Sai Nikhil Reddy	Web based automation tool for Horizon Scanning; (Supervised by Sh T Chandrasekhar, Scientist F)
3.	Akanksha Ujala Dean	Assessment of biomass energy potential in India: (Supervised by Mrs Nirmala Kaushik Scientist F)
4.	Vatsala Kakkar	Assessment of biomass energy potential in India: (Supervised by Mrs Nirmala Kaushik Scientist F)
5.	Zubiya Ahsan	Impact Assessment of Mission REACH : A Mission under Umbrella Scheme on Technology Vision 2020: (Supervised By Sh S K Muneshwar, Scientist B)

Ongoing Internship Studies

SI No	Name of student interns	Topic
1.	Bhagyashree J Balde	Modeling of Energy Demand and Delivery Systems for Transport Sector (Part I: Dynamic Wireless Power Transfer System): (Supervised by Sh Arghya Sardar, Scientist F)
2.	Suraksha Hirani	Modeling of Energy Demand and Delivery Systems for Transport Sector (Part II: Integration of Solar PV Systems): (Supervised by Sh Arghya Sardar, Scientist F)
3.	Sudha Singh	Traditional Foods – A Technology Perspective: (Supervised by Dr D Majumdar, Scientist F)

6.2 Papers in Refereed Journals/ Books/ Book Chapters

- Pradhan S, Goswami G. India's second Biennial Update Report: five key takeaways; Current Science, Vol. 117, No. 12, 25 December 2019.
- Bhagyshree J Balde, Arghya Sardar; Electric Road system With Dynamic Wireless charging of Electric buses; 2019 IEEE Transportation Electrification Conference (ITEC-India); DOI: 10.1109/ITEC-India48457.2019.ITECINDIA2019-251.
- Niranjan Roy, Shubhadeep Roychoudhury, Sunil Nautiyal, Sunil Agarwal and Sangeeta Bakshi, Socio-economic and Eco-biological Dimensions in Resource use and Conservation-Strategies for Sustainability published in Environmental Science and Engineering, 28 January, 2020
- Rupali Handa and Sangeeta Bakshi, CCUS: A climate-friendly approach to India's \$5 trillion economy, Down to Earth, 26 February 2020.

6.3 Technical Papers Published/Presented

Title of the paper Published/ Presented	Name of Journal/Conference/ symposium/workshop	Name of Scientist/ Officer
Intelligent Transport System - A tool towards sustainable mobility- An Indian Perspective	14th INDIACOM 2020 International IEEE Conference on Computing for Sustainable Global Development held on 12th - 14th March, 2020, at Bharati Vidyapeeth, New Delhi	Ms Mukti Prasad, Scientist C and Dr. Gautam Goswami, Scientist F
Biomass & Bioenergy Assessment Potential -TIFAC Initiatives	Global Summit on ' <i>Waste to Energy & Biofuels and Waste Management Series of Summits – 2020</i> ' during January 30, 2020, New Delhi	Ms Nirmala Kaushik, Scientist 'F'
Towards formulation of National Seaweed Mission: TIFAC Initiatives'	3 rd India-International Seaweed Expo & Summit ISES 2020, January 31, 2020, Chennai.	-do-
Geospatial Information System for Assessment of Bioenergy potential of India'	3 rd EU-India Advance Biofuel Conference, March 3 rd - 4 th , 2020, New Delhi	-do-

6.4 Participation in National and International Conferences/ Seminars/Symposia/ Workshops/ Meetings

Name of the event	Name of Scientist/ Officer
Meeting organized by the Office of the Principal Scientific Adviser on 'Electric Road' technologies, developed by RISE, Sweden, in the context of EV bus fleet in the Indian on June 27, 2019.	Shri Arghya Sardar, Scientist-F
Meeting organized by the Office of the Principal with RISE, Sweden, towards piloting Electric Road Systems in India 24th September 2019	-do-
Second Meeting of the Consultative Group on Future Transportation held on October 15, 2019, at Prithvi Bhavan, New Delhi and made a presentation on "Opportunistic Charging for EV Buses to extend range of operation and promote EVs for urban bus transit".	-do-
Meeting of FICCI Taskforce on Future of Mobility held on 25 November 2019 at New Delhi	-do-
Interactive meeting with the Japanese experts on "Hydrogen Economy" organized by the Office of the Principal Scientific Adviser on March 04, at New Delhi.	-do-
Conference on Sustainable Energy and Livelihoods - SDG 7 for SDG 8 during 26-27th April 2019, at Indian Institute of Management (IIM) Bangalore	Ms Sangeeta Bakshi, Scientist-F
14th Annual Convention on Right to Information Act, 2005 on 12th October, 2019, at Vigyan Bhavan, New Delhi	-do-
Conference on 'Fueling the Maritime Sector: IMO 2020 Regulations & Beyond' on July 23, 2019, New Delhi.	Ms Nirmala Kaushik, Scientist 'F'
Bio-Energy Summit 2019 with a major theme on 'Farm 2 Fuel: Building India's Bio-Economy' on September 23, 2019, New Delhi	-do-
One Day National conference on 'Cleaner Mobility, Beyond 2020', held on 11th Nov, 2019, organized by SIAM, New Delhi.	Ms Nirmala Kaushik, Scientist -F and Ms Mukti Prasad, Scientist -C
Conference on 'Future Fuels of Transportation' on January 29, 2020, New Delhi.	-do-
National Seminar on Technology Intervention to Eradicate Malnutrition in India" organized by All India Food Processor's Association on 5th March 2020, at Pragati Maidan, New Delhi.	Dr Debabrata Majumder, Scientist-F
13th International Special Economic Zone Investment Summit organized by ASSOCHAM on 4th December 2019, at Hotel Le-Meridien, New Delhi.	-do-
Conference on Indian Agriculture – Agenda for Inclusive Growth organized by ASSOCHAM on 19th September 2019, at Hotel The Park, New Delhi.	-do-

Name of the event	Name of Scientist/ Officer
Exhibition Cum Workshop on Technologies in Food Processing “Developed by CSIR” organized by ASSOCHAM on 9th August 2019, at Hotel Hyatt Regency, New Delhi.	-do-
29th Sectional Committee meeting for Quality Management Sectional Committee, MSD 2 on 23rd August 2019, at Bureau of Indian Standard (BIS), New Delhi.	-do-
3 rd International Symposium on Marine Ecosystems Challenges and Opportunities (MECOS3) during January 07-10, 2020, at Central Marine Fisheries Institute (CMFRI), Kochi.	Dr. P. K. Anil Kumar, Scientist-C
3 rd India International Seaweed Expo and Summit- 2020 (IISES- 2020) during January 30-31, 2020, at National Institute of Ocean Technology (NIOT), Chennai.	-do-
One day conference on India Gas Infrastructure Conference 2019 (IGIC 2019) organized by FICCI on 5th December, 2019, New Delhi.	Ms. Mukti Prasad, Scientist ‘C’
The conference on “Future Fuels of Transportation” held on 29th January, 2020: organized by FICCI, New Delhi.	-do-

6.5 Number of Talks in Radio and TV/ Science Communication Programmes etc.

- Arghya Sardar participated in a discussion on Electric Mobility in a Vigyan Prasar programme telecasted on DD Science on 18 July 2019.

6.6 Invited Lectures

Ms. Jancy Ayyaswamy, Scientist-F

- Invited by the Shanghai Institute for Science of Science (SISS) to deliver a talk on ‘Emerging trends in Indian Manufacturing Industry- Perspective for 2035’ at the Pujiang Innovation Forum-2019: International Science, Technology and Innovation Think tank Forum organized in Shanghai during May 3-4, 2019. The forum was jointly hosted by the Chinese Academy of Sciences and Technology for Development (CASTED)

Dr Gautam Goswami, Scientist ‘F’

- Delivered a talk on ‘Climate Change Mitigation and Adaptation Technologies for the Agriculture Sector’ in the National Workshop on Capacity Building of Farmers on Tools, Techniques and Applications of Weather Forecasting at NCCSD, Ahmadabad, Gujarat on 06th July, 2019.
- Delivered a lecture on ‘Technology Vision 2035’ at Women Scientist Training, New Delhi on 16th August, 2019
- Delivered a Key Note Address on ‘Technology Vision For Transforming Agriculture to Agribusiness – A Way Forward’ at Agritex 2019 at Hyderabad on September 05-07, 2019.
- Presentation made on “Scientific Social Responsibility” in the India International Science Festival (IISF), Kolkata on November 05-07, 2019; at Kolkata.
- Delivered Plenary Talk in the 107th

Indian Science Congress, University of Agricultural Sciences, GfVK, Bangalore on January 07, 2020.

- Delivered P T Bhaskara Memorial Lecture on 'Climate Change Mitigation and Adaptation Technology Needs for India in fulfilling NDC commitments' in the 25th Kerala Science Congress on 25th January, 2020, at Yuvakshetra Institute of Management Studies, Palakkad, Kerala.
- Actively participated in the round table meet on "Re-Structuring Agriculture -The New Road Map for 2020-30" on 4th February 2020, organized by National Council for Climate Change Sustainable Development and Public Leadership (NCCSD).

Shri Arghya Sardar, Scientist-F

- Made a presentation on "Urban Infrastructure: TIFAC Activities" at the Symposium on Infrastructure Development and Management for Future Smart Cities organized by IIT Kharagpur at Kolkata during 17-18 April 2019.
- Participated in Panel Discussion during the Industry Conclave on e-Mobility organized by C-DAC, Thiruvananthapuram in association with Ministry of Electronics and Information Technology (MeitY) on 24th September 2019, at Bengaluru.
- Made a presentation on "Electric Mobility in India – R&D Perspectives " at seminar on 'Energy –Opportunities and

Challenges" organized by Asian College of Science and Engineering on 5th & 6th March 2020.

- Made a presentation on "Electric Public Transport Buses – Sustainable Options for India " at the National Conference on 'Sustainable Electric Mobility' held on 7th and 8th March at Pune during Pune Auto Expo.
- Made a presentation on "Demonstration and Validation of Opportunity Charging of Electric Buses" at the workshop on Opportunity Charging organized by the Office of the Principal Scientific Adviser on 05 February 2020.

Ms Sangeeta Baksi, Scientist-F

- Participated in a panel discussion on "Creating an Enabling Policy Environment for Scaling Energy Driven Productive Applications" in the Conference on Sustainable Energy and Livelihoods - SDG 7 for SDG 8 during 26-27th April 2019, at Indian Institute of Management (IIM) Bangalore.

Ms Mukti Prasad, Scientist 'C'

- Delivered a key note presentation during NuGen Mobility Summit-2019 held during 27th-29th Nov, 2019, under the session on "Connected Vehicle", organized by ICAT, Manesar.
- Delivered a talk on Technology Vision 2035 Roadmap report on ICT during the 107th Indian Science Congress held during 3rd-7th Jan, 2020, at University of Agricultural Sciences, Bengaluru.

7.0 INFRASTRUCTURE AND RESOURCES

7.1 Library

TIFAC Library, a knowledge centre facilitates and fosters the flow of the scientific and technical information. During the period, TIFAC Library continued to strengthen its holdings by procuring scientific books, reports, journals and magazines as per the requirement of TIFAC. Eleven scientific/technical books, reports were procured during the year, raising the total holding of TIFAC Library to 2518. In addition,

21 nos. of scientific/technical journals, magazines were subscribed in TIFAC Library. Relevant scientific and technical information published in the newspapers/magazines were also provided to the scientists during the year.

7.2 National Knowledge Network (NKN)

During the year, TIFAC continued to make use of the connectivity to the National Knowledge Network (NKN). This provides TIFAC a 100 mbps line for internet connectivity.

7.3 E-Resources

TIFAC continued subscribing E-resources, through the National Knowledge Network Consortium (NKRC), a joint consortium of DST and CSIR. An anti-plagiarism software iThenticate was subscribed as this was not made available through NKRC and to be made available to all the scientists within TIFAC.

7.4 TIFAC Information Interfaces

During the report year, the Resource Cell continued maintaining the in-house TIFAC Website (<https://tifac.org.in>). The feature of Google Translation was added to the website. The TIFAC publication section was updated

regularly and reports published during the period are made available on TIFAC website. The 'user data capture' feature has been added to enable tracking the number of reports being downloaded along with the user's database. The website also facilitated servicing of queries received from the users. TIFAC website also provided new hyperlinks to other Government Department web portals. The feature of customized screen size reduction according to the user's gadget was also incorporated. The Joomla version was upgraded from 3.9.1 to 3.9.19.

Periodic update on technology information was covered in TIFAC Facebook & Twitter account (URLs given below) which was appreciated and liked by several users.

- www.facebook.com/tifac.dst.16
- www.twitter.com/TIFAC4

Both these media were instrumental in keeping people updated about the various TIFAC events, activities, advertisements and schemes. The Web statistics data of TIFAC website (<https://tifac.org.in>) was more than 3 lakhs.

7.5 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 workshops were organised for the benefit of employees. The Hindi Pakhwada was organised in September 2019. TIFAC employees participated in seven different competitions and were given certificates and cash prizes.

8.0 Internal Complaints Committee

8.1 Internal Complaints Committee on Sexual Harassment of Women in the Workplace (Prevention, Prohibition and Redressal)

The Sexual Harassment of Women at Workplace (SHWW) (Prevention, Prohibition and Redressal) Act, 2013 executed to ensure right to workplace equality and safe working environment for women.

TIFAC is compliant to the SHWW Act 2013 and has an Internal Complaints Committee (ICC) since 2014, responsible for receiving and looking into the complaints of sexual harassment, if any and also to make sure a safe and secure work space for its women staff. TIFAC also fulfils the requirements of Section 21(1) of the SHWW (Prevention, Prohibition and Redressal) Act, 2013, which

includes; creating awareness about the SHHW act among the employees of TIFAC by placing the posters on the various prominent places of the premises with sufficient information about the members of the ICC as well as objective and consequences of SHWW act, conducting awareness workshop/ surveys etc.

Online survey of women staff of TIFAC was conducted as a follow up of the recommendations of the awareness workshop and ICC meeting held during October, 2018, in TIFAC. The survey aimed to create awareness about the act and also to make sure that every woman in the organization is safe and secure. In compliance with Section 21(1) of the Act, the annual report (Annexure-I) sent to the District Officer, South Delhi and Head AI cell, Department of Science and Technology (DST).

Annexure -I

Number of complaints received	Nil
Number of complaints disposed-off	Nil
Number of cases pending for more than 90 days	Nil
Number of awareness programmes or workshops against sexual harassment conducted for employees	1* (in the form of online survey)
Number of orientation programmes attended by/organised for ICC	1**
Number of meetings of ICC	1 (11th ICC meeting held on 19th Dec, 19)
Nature of action taken by the employer	Not Applicable

*A new initiative of conducting an online survey with an aim to provide safe environment to the women staff of TIFAC was commenced.

** One day training programme on Prevention of Sexual Harassment at workplace organized by CII at India Habitat Centre (IHC), Delhi on 13th September, 2019

9. 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, 2020 and the Statement of Income and Expenditure Account for the year then ended, and a summary of significant accounting policies and other explanatory information.
2. In our opinion and to the best of our information and according to the explanations given to us, the aforesaid Society financial statements give the information required 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 Society as at March 31, 2020, and Excess of Income over Expenditure for the year ended on that date.

Basis for Opinion

3. We conducted our audit in accordance with the Standards on Auditing (SAs). Our responsibilities under those Standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the

Society in accordance with the Code of Ethics issued by the Institute of Chartered Accountants of India together with the ethical requirements that are relevant to our audit of the financial statements under the provisions of the Act and the Rules there under, and we have fulfilled our other ethical responsibilities in accordance with these requirements and the Code of Ethics. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Management's Responsibility for the Financial Statements

4. 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, financial performance of the Society in accordance with the accounting principles generally accepted in India. This responsibility also includes maintenance of adequate accounting records for safeguarding of 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; and design, implementation and maintenance of adequate internal financial controls, that were operating effectively for ensuring the accuracy and completeness of the accounting records, relevant to the preparation and presentation of the financial statement that give a true and fair view and are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Society's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Society or to cease operations, or has no realistic alternative but to do so.

The Management is also responsible for overseeing the Society's financial reporting process.

Auditor's Responsibility

5. Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with SAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with SAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement

resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Society's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However future events or conditions may cause the Society to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial Statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

Materiality is the magnitude of misstatements in the financial statements that, individually or in aggregate, makes it probable that the economic decisions of a reasonably knowledgeable user of the financial statements may be influenced. We consider quantitative materiality

and qualitative factors in (i) planning the scope of our audit work and in evaluating the results of our work; and (ii) to evaluate the effect of any identified misstatements in the financial statements.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

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 31st March 2020 and Excess of Income over Expenditure for the year ended on that date subject however to:

- a) Non recognition of various loans, amounting to Rs. 44.38 crores, given to various parties under various projects from the year 1992 to 2005 as Assets of the society in the Balance Sheet (Note No. 9 of Notes on Accounts of the Balance Sheet)
- b) Non allocation of housekeeping, electricity, security services, water and horticulture expenditure between NECTAR and TDB for which the amount is unascertained. (Note No.5 of Notes on Accounts of the Balance Sheet).
- c) Non recognition of an amount of Rs. 48,067/- recoverable from

Smt. Sangeeta Nagar (Scientist E) as per Para 17 of the Audit Report dated 06/07/2018 of office of the Directorate General of Audit, Scientific Departments, A.G.C.R. Building, I. P. estate, New Delhi-110092 and corresponding rectification of Schedule of Fixed Assets.

- d) Non recognition of excess payment of hospitalisation expenses paid to Crosslay Remedies Ltd. (Max Healthcare) at the request of Mr. T. Chandrasekhar (Scientist E) against Bill No. VAIC74338 dated 22/11/2018 amounting to Rs. 14,090/- in the books of accounts of the society.
- e) Non recognition of Rs. 2.28 lakhs as delegation fees recoverable from the delegates of workshop organized by PFC division of the society from 12th January, 2017 to 14th January, 2017.
- f) 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.
- g) The society is not maintaining inventories of publication of its reports.
- h) Non recognition of an amount of Rs. 69,730/- recoverable from Mr.Vibhu Mushran, Scientist G, against excess transport allowance paid to him from 1.03.2014 to 30.11.2014, as per Para no. 8 of Part 1 of Internal Audit Report of DST for the period 1-4-2016 to 31-3-2018.
- i) It has been observed that "IPIRTI, Bangalore", an institute to whom a grant of Rs.1,84,000/- was released

- on 11.08.2017, has not submitted Utilisation Certificate of this grant till the date of audit.
- j) Housekeeping contract which was given for a period of one year at all inclusive rates which has been upward revised during the period of the contract. The TIFAC has also reimbursed the payment for EPF & ESI for the staff of the contractor over and above the amount for which contract was allotted to him.
 - k) TDS has been deducted on the payment basis in some cases instead of on the provisions.
- 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. The society does not have any pending litigations which would impact its financial position for the year.
 - 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: 31.07.2020
Place: Delhi

For Shiv Tibrewal & Co.
Chartered Accountants
Firm Registration No. 011391N

(S.K. Tibrewal)
Partner
M. No. 080098
UDIN: 20080098AAAACM7247

TECHNOLOGY INFORMATION FORECASTING AND 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.
- 6(b) Action regarding recovery of dues from NECTAR and Technology Development Board (TDB) is ongoing. Opinion noted for compliance in future.
- 6(c) The matter is under examination.
- 6(d) Noted for compliance and action in this regard is being initiated.
- 6(e) The workshop was organized by PFC and DRDO with both contributing towards the project. DRDO have already contributed the amount which has been adjusted towards the expenditure incurred under the workshop and the remaining amount held amounting to Rs.2.28 lakhs was to be adjusted as PFC contribution. Now the matter is being put up to the competent authority of TIFAC for approval for adjusting the balance amount of Rs.2.28 lakhs as part of PFC divisions contribution.
- 6(f) Noted for compliance as per instruction contained in Rule 213(3) of GFRs.
- 6(g) Noted for future compliance. Matter is being taken up.
- 6(h) The matter related to payment of transport allowance to Mr Vibhu Mushran, Scientist G promoted under FCS has been referred to DST for opinion/decision.
- 6(i) The matter has been informed to the concerned division at TIFAC for informing the institute to submit the Utilization Certificate for the grant released by TIFAC for clearing the para.
- 6(j) The matter has been noted and in future contracts awarded to the agencies it has been specifically written that EPF & ESI paid will be all inclusive of the contract.
- 6(k) Few bill pertaining to Transporters for the month of March 2020 was submitted by the Parties in the month of June 2020 due to COVID-19 which was not considered as provision as the balance sheet for the F.Y 2019-20 has already been prepared.

**Technology Information, Forecasting and Assessment Council, (TIFAC)
Balance Sheet as at 31.03.2020**

Schedule	Current Year			Previous Year			Total	TIFAC	PFC	WSS	Total
	TIFAC	PFC	WSS	TIFAC	PFC	WSS					
CORPUS / CAPITAL FUND AND LIABILITIES											
1	35,85,92,437.61	-45,85,739.55	-3,10,574.96	34,74,12,364.17	60,27,990.15	-23,29,554.73	35,11,10,799.59				
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
7	19,45,83,976.46	55,86,875.00	85,44,933.00	20,87,15,784.46	42,62,838.00	52,80,871.00	23,02,75,569.78				
Total	55,31,76,414.07	10,01,135.45	82,34,358.04	56,24,11,907.56	1,02,90,828.15	29,51,316.27	58,13,86,369.37				
Assets											
8	4,39,09,201.97	3,38,020.00	1,33,821.40	4,43,81,043.37	4,67,673.00	2,23,035.40	4,91,64,660.37				
9	13,87,68,800.00	0.00	0.00	13,87,68,800.00	0.00	0.00	13,66,34,800.00				
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
11	37,04,98,412.10	6,63,115.45	81,00,536.64	37,92,62,064.19	38,30,35,472.98	27,28,280.87	39,55,86,909.00				
Miscellaneous Expenditure											
(to the extent not written off or adjusted)											
Total	55,31,76,414.07	10,01,135.45	82,34,358.04	56,24,11,907.56	1,02,90,828.15	29,51,316.27	58,13,86,369.37				
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 Shiv Tibrewal & Co.
Chartered Accountants
FRN NO. : 011391N

sd/-
Shiv Kumar Tibrewal
Partner
Membership No.080098
Date : 31.07.2020
Place : New Delhi

sd/-
Accounts Officer
TIFAC

sd/-
Incharge (Fin. & Admn.)
TIFAC

sd/-
Executive Director
TIFAC

Technology Information, Forecasting and Assessment Council, (TIFAC) Income & Expenditure Account for the Year Ended 31.03.2020

Income	Schedule	Current Year				Previous Year			
		TIFAC	PFC	WSSS	Total	TIFAC	PFC	WSSS	Total
Income from Sales / Services	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grants / Subsidies	13	16,04,96,000.00	0.00	4,50,00,000.00	20,54,96,000.00	17,09,23,000.00	2,00,00,000.00	3,00,00,000.00	22,09,23,000.00
Fees / Subscriptions	14	1,400.00	0.00	0.00	1,400.00	240.00	0.00	0.00	240.00
Income from Investments	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Income from Royalty, Publication etc	16	10,350.00	0.00	0.00	10,350.00	21,640.00	0.00	0.00	21,640.00
Interest Earned	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Income	18	39,03,663.00	25,000.00	21,246.00	39,28,663.00	18,09,907.00	1,63,602.00	13,31,465.00	33,04,974.00
Increased/(Decrease) in stock of Finished Goods and Works-in-Progress	19	0.00	0.00	+	0.00	0.00	0.00	0.00	0.00
Refund from Projects	20	33,10,500.00	0.00	0.00	33,10,500.00	70,67,326.64	0.00	0.00	70,67,326.64
Total (A)		16,77,21,913.00	25,000.00	4,50,21,246.00	21,27,46,913.00	17,98,22,113.64	2,01,63,602.00	3,13,31,465.00	23,13,17,180.64
Expenditure									
Establishment & Other Administrative Expenses	21	13,89,44,973.56	1,01,29,210.70	4,25,35,452.23	19,16,09,636.49	16,67,68,158.03	1,28,71,766.69	3,46,64,752.04	21,43,04,676.76
Expenditure on Grant, Subsidies etc	22	1,19,70,802.00	3,79,866.00	3,77,600.00	1,27,28,268.00	1,21,97,877.00	4,12,697.00	3,33,688.00	1,29,44,262.00
Interest	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation (Net Total at the Year end)	8	56,26,064.00	1,29,653.00	89,214.00	58,44,931.00	60,79,559.50	2,00,544.00	1,43,441.60	64,23,545.10
Total (B)		15,65,41,839.56	1,06,38,729.70	4,30,02,266.23	21,01,82,835.49	18,50,45,594.53	1,34,85,007.69	3,51,41,881.64	23,36,72,483.86
Balance being excess of Income over Expenditure (Expenditure over Income)		1,11,80,073.44	-1,06,13,729.70	20,18,979.77	25,85,323.51	-52,23,480.89	66,78,594.31	-38,10,416.64	-23,55,303.22
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 Shiv Tibrewal & Co.
Chartered Accountants
FRN NO. : 011391N

sd/-

Shiv Kumar Tibrewal
Partner
Membership No.080098
Date : 31.07.2020
Place : New Delhi

sd/-
Accounts Officer
TIFACsd/-
Incharge (Fin. & Admn.)
TIFACsd/-
Executive Director
TIFAC

**Technology Information, Forecasting and Assessment Council, (TIFAC)
Schedules Forming Part of Balance Sheet as at 31.03.2020**

Schedule 1 - Corpus / Capital Fund										
	Current year			Previous Year			Total	WSSS	PFC	Total
	TIFAC	PFC	WSSS	TIFAC	WSSS	PFC				
Opening Balance (General)	17,74,12,364.17	60,27,990.15	(23,29,554.73)	18,26,35,845.06	14,80,861.91	(6,50,604.16)	35,11,10,799.59	14,80,861.91	18,34,66,102.81	18,34,66,102.81
Opening Balance (SIDBI Revolving Fund)	17,00,00,000.00			17,00,00,000.00			17,00,00,000.00			17,00,00,000.00
Total Opening Balance (A)	34,74,12,364.17	60,27,990.15	(23,29,554.73)	35,26,35,845.06	14,80,861.91	(6,50,604.16)	35,11,10,799.59	14,80,861.91	35,34,66,102.81	35,34,66,102.81
Amount Given to SIDBI in 2010-2011 (B)										-
Excess of Income over Expenditure (Expenditure over Income)(C)	1,11,80,073.44	(1,06,13,729.70)	20,18,979.77	(52,23,480.89)	(38,10,416.64)	66,78,594.31	25,85,323.51	(38,10,416.64)	(23,55,303.22)	(23,55,303.22)
Total Closing Balance (A)+(B)+(C)	35,85,92,437.61	(45,85,739.55)	(3,10,574.96)	34,74,12,364.17	(23,29,554.73)	60,27,990.15	35,36,96,123.10	(23,29,554.73)	60,27,990.15	35,11,10,799.59

**Technology Information, Forecasting and Assessment Council, (TIFAC)
Schedules Forming Part of Balance Sheet as at 31.03.2020**

Particulars	Current Year			Previous Year			TOTAL
	TIFAC	PFC	WSSS	TIFAC	PFC	WSSS	
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 Liabilities : NIL							
Schedule 7 - Current Liabilities And Provisions :							
A) Current Liabilities							
1. Sundry Creditors : a) For Goods							
CGHS (Sh.Rajani Kanth Gupta) Ex. Registrar	2,550.00	-	-	2,550.00	-	-	2,550.00
URDIP Pune (WSSS)	-	-	11,164.00	11,164.00	-	-	11,164.00
TIFAC	-	25,52,772.00	-	25,52,772.00	-	-	25,52,772.00
Alaka Chakraborty	46,648.00	-	-	46,648.00	-	-	46,648.00
2. Statutory Liabilities							
a) Others : TDS Payable (Sub Total (B) of Annexure -8)	11,30,171.00	9,147.00	3,282.00	11,42,600.00	1,19,965.00	1,361.00	9,46,033.00
3. Other Current Liabilities							
State Cheque	-	-	-	-	25,000.00	-	25,000.00
IIT-TIFAC Maintenance (Provisions)	63,70,000.00	-	-	63,70,000.00	-	-	63,70,000.00
Grant : Global Technology Watch Group (GTWG) (Annexure 10)	20,18,218.00	-	-	20,18,218.00	-	-	20,18,218.00
Grant : Interdisciplinary Cyber Physical Systems (ICPS)(Annexure 10)	11,54,094.00	-	-	11,54,094.00	-	-	11,54,094.00
Nationalsteering Committee on Tech Need Assessment (TNA) for Habitat Sector (MOEF&CC)	12,98,371.70	-	-	12,98,371.70	-	-	12,98,371.70
Grant : Technology Assessment of Start ups for Tax Exemption (Annexure 10)	6,09,478.00	-	-	6,09,478.00	-	-	6,09,478.00
Grant : Assessment of Government of India's Gender Mainstreaming Programs for Women in Science (Annexure 10)	13,41,524.00	-	-	13,41,524.00	-	-	13,41,524.00
Grant : Detail project report for National Mission on Quantum Technology & Application (NM-QTA) (Annexure 10)	5,00,000.00	-	-	5,00,000.00	-	-	5,00,000.00
Grant : Database of Technologies for Management of Municipal Solid Waste (Annexure 10)	2,75,000.00	-	-	2,75,000.00	-	-	2,75,000.00
Retirement Benefit (Prof. Prabhat Ranjan)	4,04,679.00	-	-	4,04,679.00	-	-	4,04,679.00
Bharat Kosh (Govt)	2,44,80,596.00	1,29,528.00	6,46,876.00	2,52,57,000.00	3,83,974.00	6,18,433.00	4,10,12,182.00
DRDO's Workshop Expenses	-	3,31,823.00	-	3,31,823.00	3,31,823.00	-	3,31,823.00
WIPO's Workshop Expenses	-	14,728.00	-	14,728.00	14,728.00	-	14,728.00
Training of Trainers Programme	-	15,714.00	-	15,714.00	15,714.00	-	15,714.00
UNIDO Workshop	-	6,94,288.00	-	6,94,288.00	6,94,288.00	-	6,94,288.00
Expenses Payable (Sub Total (A) of Annexure - 8)	2,15,44,048.76	16,97,430.50	78,33,611.00	3,10,75,090.26	2,66,21,297.15	45,78,667.00	3,37,66,352.15
CPF	1,76,100.00	65,190.50	-	2,41,290.50	33,641.00	-	54,961.00
GPF	17,000.00	-	-	17,000.00	-	-	17,000.00
GSLIS	20,166.00	-	-	20,166.00	1,063.00	-	20,736.00
4 (a) Uspent Balance of Running Projects	3,03,139.00	76,254.00	-	3,79,393.00	5,34,149.00	76,254.00	6,10,403.00
4. (b) Due to DST (Uspent Balance Amount in Respect of Old Projects) (List enclosed in Notes to Accounts at S.No7)	9,56,919.00	-	-	9,56,919.00	2,53,36,009.93	-	2,53,36,009.93
5.EMD/ Security Deposit (TIFAC) of (Annexure - 9)	6,88,784.00	-	50,000.00	7,38,784.00	6,93,784.00	-	7,43,784.00
6. Superannuation / Pension/Gratuity	7,09,79,624.00	-	-	7,09,79,624.00	6,37,34,895.00	-	6,37,34,895.00
7. Accumulated Leave Encashment	6,02,66,866.00	-	-	6,02,66,866.00	5,03,26,298.00	-	5,03,26,298.00
Total (A+B)	19,45,83,976.46	55,86,875.00	85,44,933.00	20,87,15,784.46	22,07,31,860.78	42,62,838.00	23,02,75,569.78

**Technology Information, Forecasting and Assessment Council (TIFAC) (REGULAR)
Schedules Forming Part of Balance Sheet as at 31.03.2020**

(Amount – Rs)

SCHEDULE 8-FIXED ASSETS	GROSS BLOCK				DEPRECIATION			NET BLOCK		
	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	11,78,50,000.00	-	-	11,78,50,000.00	9,35,85,730.13	24,26,427.00	9,60,12,157.13	2,18,37,842.87	2,42,64,269.87
e) Interior work of TIFAC Building	10.00	5,25,68,157.00	2,44,224.00	-	5,28,12,381.00	3,57,32,391.58	16,95,790.00	3,74,28,181.58	1,53,84,199.42	1,68,35,765.42
3. PLANT MACHINERY & EQUIPMENT : Fire Alarm System at TIFAC Building & Fire Extinguishers	15.00	12,22,121.00	1,92,255.00	-	14,14,376.00	8,88,834.54	65,530.00	9,54,364.54	4,60,011.46	3,33,286.46
4. VEHICLES										
5. FURNITURE & FIXTURES	10.00	29,37,875.60	9,000.00	-	29,46,875.60	17,88,479.92	1,15,390.00	19,03,869.92	10,43,005.68	11,49,395.68
6. OFFICE EQUIPMENT	15.00	2,74,39,268.58	3,53,203.00	-	2,77,92,471.58	2,24,13,344.75	7,94,660.00	2,32,08,004.75	45,84,466.83	50,25,923.83
6(A) OFFICE EQUIPMENT (Ext. Proj)	15.00	-	6,780.00	-	6,780.00	-	509.00	509.00	6,271.00	-
7. COMPUTER/PERIPHERALS	40.00	1,13,81,428.28	21,334.95	-	1,14,02,763.23	1,09,87,643.57	1,61,781.00	1,11,49,424.57	2,53,338.66	3,93,784.71
7 (A) COMPUTER/PERIPHERALS (Ext. Proj)	40.00	11,38,913.00	-	-	11,38,913.00	6,75,697.00	1,85,287.00	8,60,984.00	2,77,929.00	4,63,216.00
8. ELECTRIC INSTALLATIONS										
9. LIBRARY BOOKS	100.00	58,04,966.55	2,34,517.05	-	60,39,483.60	57,96,656.55	1,80,690.00	59,77,346.55	62,137.05	8,310.00
10. TUBEWELL & W.SUPPLY										
11. OTHER FIXED ASSETS										
TOTAL OF CURRENT YEAR		22,03,42,730.01	10,61,314.00	-	22,14,04,044.01	17,18,68,778.04	56,26,064.00	17,74,94,842.04	4,39,09,201.97	4,84,73,951.97
PREVIOUS YEAR		21,71,98,778.01	31,43,952.00	-	22,03,42,730.01	16,57,89,218.54	60,79,559.50	17,18,68,778.04	4,84,73,951.97	5,14,09,559.47
B. CAPITAL WORK IN PROGRESS										

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

	F.Y 2018-2019	F.Y 2019-2020
Assets (External Projects)	Comp.	Office Equip.
Under GTWG Project		
Under ICPS Project	86,700.00	
Under INSPIRE Project		
Under DIPP Project		
NM-QTA		6,780.00
Total	86,700.00	6,780.00

Technology Information, Forecasting and Assessment Council (TIFAC)
Patent Facilitating Center (PFC)
Schedules Forming Part of Balance Sheet as at 31.03.2020

(Amount – Rs)

SCHEDULE 8-FIXED ASSETS	Rate of Depreciation	GROSS BLOCK				DEPRECIATION			NET BLOCK	
		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	-	-	-	-	-	-	-	-	-
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	6,960.00	4,104.00	11,064.00	36,936.00	41,040.00
6. OFFICE EQUIPMENT	15.00	2,29,159.00	-	-	2,29,159.00	48,743.00	27,062.00	75,805.00	1,53,354.00	1,80,416.00
7. COMPUTER/PERIPHERALS	40.00	4,16,180.00	-	-	4,16,180.00	1,69,963.00	98,487.00	2,68,450.00	1,47,730.00	2,46,217.00
8. ELECTRIC INSTALLATIONS		-	-	-	-	-	-	-	-	-
9. LIBRARY BOOKS	100.00	-	-	-	-	-	-	-	-	-
10. TUBEWELL & W.SUPPLY		-	-	-	-	-	-	-	-	-
11. OTHER FIXED ASSETS		-	-	-	-	-	-	-	-	-
TOTAL OF CURRENT YEAR		6,93,339.00	4,04,939.00	-	6,93,339.00	2,25,666.00	1,29,653.00	3,55,319.00	3,38,020.00	4,67,673.00
PREVIOUS YEAR		2,88,400.00	4,04,939.00	-	6,93,339.00	25,122.00	2,00,544.00	2,25,666.00	4,67,673.00	2,63,278.00
B. CAPITAL WORK IN PROGRESS		-	-	-	-	-	-	-	-	-

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

**Technology Information, Forecasting and Assessment Council (TIFAC)
Women Scientist Scholarship Scheme (WSSS)
Schedules Forming Part of Balance Sheet as at 31.03.2020**

(Amount – Rs)

SCHEDULE 8-FIXED ASSETS	GROSS BLOCK				DEPRECIATION			NET BLOCK		
	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	-	-	-	-	-	-	-	-	-
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	4,79,573.00	-	-	4,79,573.00	2,56,537.60	89,214.00	3,45,751.60	1,33,821.40	2,23,035.40
8. ELECTRIC INSTALLATIONS										
9. LIBRARY BOOKS	100.00	-	-	-	-	-	-	-	-	-
10. TUBEWELL & W.SUPPLY										
11. OTHER FIXED ASSETS										
TOTAL OF CURRENT YEAR		4,79,573.00	-	-	4,79,573.00	2,56,537.60	89,214.00	3,45,751.60	1,33,821.40	2,23,035.40
PREVIOUS YEAR		4,01,827.00	77,746.00	-	4,79,573.00	1,13,096.00	1,43,441.60	2,56,537.00	2,23,035.00	2,88,731.00
B. CAPITAL WORK IN PROGRESS										

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

**Technology Information, Forecasting And Assessment Council, (TIFAC)
Schedules Forming Part of Balance Sheet as at 31.03.2020**

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)	13,87,68,800.00			13,87,68,800.00	13,66,34,800.00			13,66,34,800.00
Total	13,87,68,800.00	-	-	13,87,68,800.00	13,66,34,800.00	-	-	13,66,34,800.00

**Technology Information, Forecasting and Assessment Council, (TIFAC)
Schedules Forming Part of Balance Sheet as at 31.03.2020**

Particulars	Current Year					Previous Year				
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL		
Schedule 10 - Investments - Others : NIL										
Schedule 11 - Current Assets, Loans, Advances Etc										
1. Sundry Debtors :										
a) Debts outstanding for a period exceeding six months	2,70,000.00	2,22,775.00	-	4,92,775.00	2,70,000.00	2,22,775.00	-	4,92,775.00		
2. Cash Balances in Hand (including Cheques / Drafts and Imprest) (Under TIFAC Account)										
	79,048.00	3,293.00	12,367.00	94,708.00	8,720.00	5,804.00	5,849.00	20,373.00		
3. Bank Balances :										
Union Bank of India : Deposit Accounts (Short Term deposits) (Annex-7)	21,72,54,220.00	-	-	21,72,54,220.00	26,56,61,885.00	-	-	26,56,61,885.00		
Union Bank of India : Flexi Deposit Account (Annex - 7)	5,00,000.00	-	-	5,00,000.00	20,00,000.00	-	-	20,00,000.00		
Accrued Interest (Accrued Interest) (Annexure 7)	56,17,476.00	-	-	56,17,476.00	73,57,932.00	-	-	73,57,932.00		
On Savings Accounts	14,14,16,592.10	1,63,697.45	76,31,100.64	14,92,11,390.19	10,37,60,963.98	93,32,235.15	1,97,699.87	11,32,90,899.00		
B) Loans, Advances and Other Assets :-										
1. Loans:										
a) Staff Loan (Under TIFAC Account) (Annex-1)	7,85,893.00	-	-	7,85,893.00	5,64,314.00	1,02,825.00	-	6,67,139.00		
Advance : Franking Machine	-	-	-	-	10,359.00	-	-	10,359.00		
Advance : DAVP	1,77,581.00	2,65,780.00	1,51,562.00	5,94,923.00	15,38,056.00	42,572.00	21,00,117.00	36,80,745.00		
Advance : M/s Balmer Lawrie & Co. Ltd.	1,12,476.00	-	-	1,12,476.00	1,12,476.00	-	-	1,12,476.00		
Advance : Chennai Centre-Kiran IPR	-	-	-	-	-	-	1,45,000.00	1,45,000.00		
Advance : Pune Centre Kiran IPR	-	-	-	-	-	-	2,00,000.00	2,00,000.00		
Advance : CSIR-Central Glass & Ceramic Research Institute	8,550.00	-	-	8,550.00	-	-	-	-		
Grant : Scientific Social Responsibility (SSR) Policy (Annexure 10)	2,07,000.00	-	-	2,07,000.00	-	-	-	-		
Security Deposit	8,403.00	-	-	8,403.00	9,203.00	-	-	9,203.00		
Prof. Prabath Ranjan	-	-	-	-	4,28,510.00	-	-	4,28,510.00		
Salary Recoverable (Dr Aruna)	-	-	-	-	-	10,875.00	-	10,875.00		
Sundry Debtor : PFC	25,52,772.00	-	-	25,52,772.00	-	-	-	-		
Womens Day & Certificate Distribution Ceremony & International Womens Day (10 Batch)	-	-	2,92,576.00	2,92,576.00	-	-	-	-		
TDS Receivable from Income Tax Department (DIPP)	1,40,400.00	1,972.00	-	1,42,372.00	1,40,400.00	1,972.00	-	1,42,372.00		
Interest Accrued from Union Bank of India (on Savings Bank Account)	13,68,001.00	5,598.00	12,931.00	13,86,530.00	11,72,654.00	1,04,097.00	79,615.00	13,56,366.00		
Total (A) + (B)	37,04,98,412.10	6,63,115.45	81,00,536.64	37,92,62,064.19	38,30,35,472.98	98,23,155.15	27,28,280.87	39,55,96,909.00		

**Technology Information, Forecasting And Assessment Council, (TIFAC) (Regular)
Schedules Forming Part of Income & Expenditure for the year ended 31.03.2020**

Schedule 12 - Income From Sales / Services : NIL									
Schedule 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)	6,92,93,000.00		4,50,00,000.00	11,42,93,000.00	5,39,62,000.00	2,00,00,000.00	3,00,00,000.00	10,39,62,000.00	
b) Grant in Aid (Non-Plan)				-				-	
c) Grant in Aid (Plan) Capital Assets	29,79,000.00			29,79,000.00	27,87,000.00			27,87,000.00	
d) Grant in Aid (Salary)	8,82,24,000.00			8,82,24,000.00	11,41,74,000.00			11,41,74,000.00	
Total	16,04,96,000.00	-	4,50,00,000.00	20,54,96,000.00	17,09,23,000.00	2,00,00,000.00	3,00,00,000.00	22,09,23,000.00	

**Technology Information, Forecasting And Assessment Council, (TIFAC) (Regular)
Schedules Forming Part of Income & Expenditure for the year ended 31.03.2020**

Schedule 14 - Fees / Subscriptions									
Particulars	Current Year				Previous Year				TOTAL
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL	
Award for Nari Shakti				-					-
RTIA Questions	1,400.00			1,400.00	240.00			240.00	240.00
Total	1,400.00	-	-	1,400.00	240.00	-	-	240.00	240.00

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 31.03.2020**

Schedule 16 - Income from Royalty, Publication Etc.									
Particulars	Current Year				Previous Year				
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL	
1) Income from Royalty				-					-
2) Sale of Publications	10,350.00			10,350.00	21,640.00			21,640.00	
3) Other (Specify)				-					-
Total	10,350.00	-	-	10,350.00	21,640.00	-	-	21,640.00	21,640.00

**Technology Information, Forecasting And Assessment Council, (TIFAC) (Regular)
Schedules Forming Part of Income & Expenditure for the year ended 31.03.2020**

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)				-				-	
2. On Savings Accounts				-				-	
Interest from Savings Bank (General)	-			-	-			-	
Interest from Savings Bank Salary Account	-			-	-			-	
Interest from Savings Bank Flexi Account	-			-	-			-	
3. On Loans :				-				-	
a) Employees (LTA, Scooter , Car, tour, LTC, HBA and Computers)	-			-	-			-	
b) Others (Interest from Income Tax and Projects)	-			-	-			-	
4. Interest on Debtors and Other Receivables (TIFAC-SIDBI Revolving Fund)				-				-	
Total	-	-	-	-	-	-	-	-	
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 31.03.2020**

Particulars	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
1. Miscellaneous Income								
Other Receipts	1,32,758.00			1,32,758.00	3,81,824.00			3,81,824.00
Other Income (UNIDO's Workshop)				-		80,712.00		80,712.00
Other Income (TOT's Workshop)				-		82,890.00		82,890.00
Leave Salary & Pension Contribution	1,45,253.00			1,45,253.00				-
Licence Fee : Dr Prabhat Ranjan	2,56,416.00			2,56,416.00				-
Transport Recovery (Prof. Prabat Ranjan)	7,32,892.00			7,32,892.00				-
Stale Cheque (Written Back)	1,59,600.00	25,000.00	21,246.00	2,05,846.00				-
Transport Recovery (Sh Sanjay Singh)	2,01,742.00			2,01,742.00				-
Maintenance of Building (SETS)	33,840.00			33,840.00				-
Maintenance of Building (Technology Development Board)	19,08,655.00			19,08,655.00				-
Excess Provision in Advertisement Expenses (Written Back) DAVP				-	12,85,618.00		13,31,465.00	26,17,083.00
2. Income Accrued and Received on Running Projects								
Overhead : Interdisciplinary Cyber Physical System				-	1,42,465.00			1,42,465.00
Overhead : Assessment of Government of India's Gender Mainstreaming Programs for Women in Science	8,343.00			8,343.00				
Overhead : Scientific Social Responsibility (SSR)	3,24,164.00			3,24,164.00				
Total	39,03,663.00	25,000.00	21,246.00	39,49,909.00	18,09,907.00	1,63,602.00	13,31,465.00	33,04,974.00

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

**Technology Information, Forecasting and Assessment Council, (TIFAC) (Regular)
Schedules Forming Part of Income & Expenditure for the year ended 31.03.2020**

Schedule 20 - Refund from Projects, (TIFAC Regular Account)									
Particulars	Current Year				Previous Year				TOTAL
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL	
Home Grown Technology (Annex-2)	19,60,500.00	-	-	19,60,500.00	31,27,530.64	-	-	31,27,530.64	31,27,530.64
Advanced Composites Programme (Annex-2)	6,00,000.00	-	-	6,00,000.00	35,00,326.00	-	-	35,00,326.00	35,00,326.00
Sugar Technology Mission (Annex-2)	7,50,000.00	-	-	7,50,000.00	4,39,470.00	-	-	4,39,470.00	4,39,470.00
Total	33,10,500.00	-	-	33,10,500.00	70,67,326.64	-	-	70,67,326.64	70,67,326.64
Schedule 21 - Establishment & Other Administrative Expenses									
Particulars	Current Year				Previous Year				TOTAL
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL	
Establishment Expenditure(Annex 3)	11,97,18,714.76	75,69,159.00	29,07,036.00	13,01,94,909.76	13,37,68,161.15	75,36,614.00	14,93,064.00	14,27,97,839.15	14,27,97,839.15
Administrative Expenses (Annex 4)	1,92,26,258.80	25,60,051.70	3,96,28,416.23	6,14,14,726.73	3,29,99,996.88	53,35,152.69	3,31,71,688.04	7,15,06,837.61	7,15,06,837.61
Establishment & Administrative Expenditure (Vision 2020) (Annex-6)	-	-	-	-	-	-	-	-	-
Total	13,89,44,973.56	1,01,29,210.70	4,25,35,452.23	19,16,09,636.49	16,67,68,168.03	1,28,71,766.69	3,46,64,752.04	21,43,04,676.76	21,43,04,676.76
Schedule 22 - Expenditure on Grants, Subsidies Etc									
Particulars	Current Year				Previous Year				TOTAL
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL	
Grants given to Institutions/Organisations	-	-	-	-	-	-	-	-	-
Project Expenditure (Annex - 5)	64,37,316.00	3,79,866.00	3,77,600.00	71,94,782.00	95,50,449.00	4,12,697.00	3,33,688.00	1,02,96,834.00	1,02,96,834.00
Project Expenditure (Vision 2020)(Annex-6A)	54,96,649.00	-	-	54,96,649.00	22,14,012.00	-	-	22,14,012.00	22,14,012.00
Project Expenditure (Vision 2035) (Annex-6&6A)	36,837.00	-	-	36,837.00	4,33,416.00	-	-	4,33,416.00	4,33,416.00
Total	1,19,70,802.00	3,79,866.00	3,77,600.00	1,27,28,268.00	1,21,97,877.00	4,12,697.00	3,33,688.00	1,29,44,262.00	1,29,44,262.00
Schedule 23 - Interest : NIL									

SCHEDULE FORMING PART OF THE ACCOUNTS FOR THE YEAR ENDED 31.03.2020

SCHEDULE 24

A. 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 respective agreements is accounted for on receipt basis.
7. In cases where the projects are executed by other institutions, all disbursement of grants irrespective of its utilization by them for projects are treated as expenditure during the Financial Year in which the grant is released.
8. Total expenditure is not bifurcated into plan and non-plan expenditure in the financial statements of the society.
9. Regular Grants in the form of General Grants, Salary Grants and Capital Assets Grants are treated as income of the society of the year in which it is received and regular expenditure are treated as expenditure during the year and unspent portion of the Grants received for specific projects are shown as liabilities.

B. Changes in accounting policies.

1. From the accounting policy no.7 referred above the following extracts have been deleted “and assets if any created/purchased by the beneficiaries, out of the said disbursements to the projects, are not accounted for as assets in the books of accounts of the society.” However, it does not have any impact on the financial results of the society.
2. In the accounting policy no.9, referred above, the following extracts “and grants received for specific projects are shown as liabilities and amount spent against them are shown as Assets.”, will be substituted by the following extracts: “and unspent portion of the Grants received for specific projects are shown as liabilities.”With effect from dt.01.04.2018.

As per our report of even date annexed herewith

For SHIV TIBREWAL & CO.

Chartered Accountants

FRN: 011391N

sd/-

**S.K. TIBREWAL
(Partner)**

MRN: 080098

sd/-

**Accounts Officer
TIFAC**

sd/-

**Incharge (Fin. & Admn.)
TIFAC**

sd/-

**Executive Director
TIFAC**

Date: 31.07.2020

Place: New Delhi

SCHEDULE FORMING PART OF THE ACCOUNTS FOR THE YEAR ENDED 31.03.2020

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 (DST), Ministry of Science and Technology, separate accounts for these projects have not been maintained.
2. Other current liabilities include amount refundable to DST 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.	MSEB-Ash Utilisation/ Management	6,00,094.00
2.	MPSEB use of Fly Ash in Agriculture Development Thermal Power Plants, Sarni	3,56,825.00
	Total	9,56,919.00

3. 'Sundry Debtors' under the head Current Assets, Loans and Advances include Rs.2,70,000/- as amount recoverable from Shree Chitra Tribunal Institute for Medical Science and Technology, an 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 Society and distributed at a cost are not accounted for as Stock in hand at the end of the year.
5. NECTAR & 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 NECTAR and TDB is being charged for current year so far since the bill from IIT has not been received so far.
6. 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.
7. In view of there being no taxable income under Income tax Act, 1961 as per section 1023(c) applicable to the concern, no provision for Income Tax has been considered necessary.

8. FOREIGN CURRENCY TRANSACTIONS (Amount Rs.)

8.1 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

8.2 Expenditure in foreign currency:		
a) Travel	Rs.2,31,284/-	Rs.4,95,499/-
b) Remittances and Interest Payment to Financial Institutions/ Banks in Foreign Currency		
c) Patents Filing abroad	Nil	Nil
	Rs.9,03,609/-	Rs.2,38,574/-
d) Other expenditure:		
- Commission on Sale	Nil	Nil
- Legal and Professional Expenses	Nil	Nil
- Miscellaneous Expenses	Nil	Nil

8.3 Earning:		
Value of Exports on FOB basis	Nil	Nil

8.4 Remuneration to Auditors: (inclusive of applicable taxes)		
- Audit Fees	Rs.1,10,000/-	Rs. 1,10,000/-
- Taxation matters	Nil	Nil
- Consultancy Charges	Nil	Nil
- Certification	Nil	Nil
- GST Payable	Rs.19,800/-	Rs.19,800/-

9. The Society had 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 the society. At the time of their respective disbursements, these loans had not been recognized as loans and advances and hence do not reflect in the assets side of the balance sheet of the society. The details are given as follows :-

Name of the Project	Overdue upto 3 years	Overdue more than 3 years	Total
Home Grown Technology	0.00	167046195.36	167046195.36
Advanced Composite Programme	0.00	135008293.00	135008293.00
Sugar Technology Unit	0.00	26479118.00	26479118.00
Fly Ash Utilization	0.00	11834000.00	11834000.00
Agriculture and Agro Food Sector	0.00	10625000.00	10625000.00
Targeted Programme in other Important Areas	0.00	92765000.00	92765000.00
Total	0.00	443757606.36	443757606.36

10. CPF Trust Account collects money from the staff of TIFAC as well as from TIFAC as employer and invests this amount in Fixed Deposits of Nationalized Banks on which interest is 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. Which results in difference of interest earned & interest paid amount. During the Financial Year 2019-20 there was a deficit of Rs. 3,17,707.76 with the CPF Trust due to difference in interest provided on the balance of employees and interest earned on deposits with the Nationalised Banks and the same to be recovered from the TIFAC.
11. An amount of Rs.48,059.44 has been shown as depreciation written back on the laptop misplaced by Scientist E, (Ms Sangeeta Nagar) in the F.Y 2009-2010 but the depreciation was being claimed till F.Y. 2017-18. The amount is now shown as recoverable from her.
12. An amount of Rs.2,52,57,000/- has been transferred to Bharat Kosh Account, earned as Interest against deposits with Nationalised banks for the years 2019-20.
13. Previous year's figures have been regrouped/rearranged wherever found necessary to make them comparable with current year figures.
14. The Grant has been given on the basis of utilisation certificate issued by the Institute to which the project has been given only.
15. In case of Housekeeping contract which was awarded for a period of 1 year the rates have been upward revised during the period of the contract as per the terms of contract. The TIFAC has reimbursed the payment for EPF & ESI on the staff of the contractor over and above the all-inclusive contract allotted to him as per the Govt. Statutory dues.
16. The TDS has been deducted on the payment basis in some cases.



17. Schedules 1 to 24 are annexed to and form an integral part of the Balance Sheet as at 31.03.2020 and the Income and Expenditure Account for the year ended on that date.

As per our report of even date annexed herewith

For SHIV TIBREWAL & CO.

Chartered Accountants

FRN: 011391N

sd/-

S.K. TIBREWAL
(Partner)

MRN: 080098

sd/-

Accounts Officer
TIFAC

sd/-

Incharge (Fin. & Admn.)
TIFAC

sd/-

Executive Director
TIFAC

Date: 31.07.2020

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 Bakshi	2,37,600.00			2,37,600.00	2,88,000.00			2,88,000.00
C) Car Advance				-				-
Sh.T.Chandrasekhar	60,300.00			60,300.00	71,100.00			71,100.00
Sh.Deep Prakash	16,000.00			16,000.00	70,000.00			70,000.00
Sh.Yashwant Dev Panwar	75,600.00			75,600.00		97,200.00		97,200.00
D) Leave Travel Concession				-				-
Sh. Ujjwal Kumar				-	8,100.00			8,100.00
E) Tour Advance				-				-
Sh.Sajid Mubashir	81,042.00			81,042.00	81,042.00			81,042.00
Dr Gautam Goswami				-	822.00			822.00
Sh T Chandrasekhar	40,000.00			40,000.00				-
Sh Anil Kumar Rai	15,650.00			15,650.00				-
F) Scooter Advance				-				-
Sh.Dalip Kumar	-			-	11,000.00			11,000.00
Sh.Mahipal Singh Rawat	-			-	3,000.00			3,000.00
Sh.Surender Kumar	2,000.00			2,000.00	14,000.00			14,000.00
G)Computer Advance				-				-
Sh.Sanjay Sundriyal	-			-	7,000.00			7,000.00
Sh.Anil Kumar Rai	-			-	5,000.00			5,000.00
Sh Deep Prakash	59,375.00			59,375.00				-
Sh Deep Kumar	62,500.00			62,500.00				-
Sh Ravi Dutt	43,000.00			43,000.00				-
Sh S K Muneshwar	69,950.00			69,950.00				-
Sh.Yashwant Dev Panwar				-		5,625.00		5,625.00
Sh Kunwar Singh				-	1,250.00			1,250.00
Sh.Bishram Bhakta				-	1,000.00			1,000.00
Sh.Dalip Kumar	-			-	3,000.00			3,000.00
H) Advances				-				-
Sh Ravindra Kumar, AMT	15,000.00			15,000.00				-
Sh Ajay Kumar Diwakar	5,000.00			5,000.00				-
Sh Anoop Aswal	2,876.00			2,876.00				-
Total	7,85,893.00	-	-	7,85,893.00	5,64,314.00	1,02,825.00	-	6,67,139.00

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 :								
Manufacture of Nutan Himveer Bukhari	3,10,000.00			3,10,000.00	7,00,000.00			7,00,000.00
Manufacture of 3,4 Dichloroaniline using Solvent Free Separation Technology	16,50,500.00			16,50,500.00				-
Recovery of Cobalt from Zinc Waste				-	4,50,000.00			4,50,000.00
Developing, Designing & Manufacture				-	6,44,306.00			6,44,306.00
Commercialisation of Xierconium Nitride Coating using PVD Technique				-	13,00,000.00			13,00,000.00
Development & Marketing of 64 bit Parallel Co				-	33,224.64			33,224.64
Sub Total (A)	19,60,500.00	-	-	19,60,500.00	31,27,530.64	-	-	31,27,530.64
(B) Advanced Composites Programme								
Development of Composite Modular Acoustic Enclosure	6,00,000.00			6,00,000.00	4,50,000.00			4,50,000.00
Development of Composite Sky Bus Coaches				-	7,26,972.00			7,26,972.00
Jute Composite Components For Footwear				-	23,23,354.00			23,23,354.00
Sub Total (B)	6,00,000.00	-	-	6,00,000.00	35,00,326.00	-	-	35,00,326.00
(C) Sugar Technology Mission								
Cane Separation System				-	2,55,000.00			2,55,000.00
Low Pressure Extraction System (LPE)	7,50,000.00			7,50,000.00				-
Short Retention Clarifier				-	1,84,470.00			1,84,470.00
Sub Total (C)	7,50,000.00	-	-	7,50,000.00	4,39,470.00	-	-	4,39,470.00
Total (A) + (B) + (C) + (D)+(E)	33,10,500.00	-	-	33,10,500.00	70,67,326.64	-	-	70,67,326.64

Annexure 3 Establishment Expenditure (TIFAC Regular)

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
a) Salaries								
Salary - Consolidated	7,31,63,807.00	50,35,623.00		7,81,99,430.00	6,81,96,446.00	47,27,831.00		7,29,24,277.00
Salary Arrear (01.01.2016 to 30.09.2018)	3,23,865.00	10,32,813.00		13,56,678.00	19,29,211.00	6,60,518.00		25,89,729.00
Salary Arrear 30% (01.10.2018 to 31.03.2019)				-	1,74,21,813.00	17,15,462.00		1,91,37,275.00
Salary Arrear 30% (01.04.2019 to 31.01.2020)	74,07,079.00	7,43,078.00		81,50,157.00	11,82,419.00	1,33,488.00		13,15,907.00
Internship Scheme	4,70,229.00			4,70,229.00	5,99,679.00			5,99,679.00
Project Associates				-	3,61,226.00			3,61,226.00
b) TIFAC Contribution to New Pension Scheme								
	55,68,998.00			55,68,998.00	59,45,112.00			59,45,112.00
c) Contribution to Provident Fund								
	44,47,385.76	6,81,504.00		51,28,889.76	18,67,512.15	2,38,502.00		21,06,014.15
d) Others (Specify)								
Consultancy Fee (Others)	10,34,000.00			10,34,000.00	7,02,070.00			7,02,070.00
Consultancy Fee (Legal)	15,16,968.00			15,16,968.00	14,59,150.00			14,59,150.00
Consultancy Fee (Estt.)	13,26,667.00			13,26,667.00	10,34,107.00			10,34,107.00
Hospitalisation Expenses	2,78,423.00			2,78,423.00	10,39,381.00			10,39,381.00
Medical Expenses	11,14,297.00	22,141.00		11,36,438.00	13,93,329.00	47,313.00		14,40,642.00
Leave Travel Concession	6,49,244.00			6,49,244.00	15,41,673.00			15,41,673.00
Gratuity	88,20,822.00			88,20,822.00	2,43,34,016.00			2,43,34,016.00
Leave Encashment (TIFAC Employees)	3,37,860.00			3,37,860.00	4,81,014.00			4,81,014.00
Encashment of Leave (TIFAC Employees)	1,19,02,605.00			1,19,02,605.00	35,22,304.00			35,22,304.00
Tuition Fee/Children Education Allowance	12,76,465.00	54,000.00		13,30,465.00	7,57,699.00	13,500.00		7,71,199.00
Incentive for Higher Qualification	80,000.00			80,000.00				-
Salary of Staff Training Coordinator			12,89,376.00	12,89,376.00				-
Salary of Accounts Assistant			3,12,180.00	3,12,180.00			2,40,060.00	2,40,060.00
Salary of Data Entry Operator			3,12,180.00	3,12,180.00			2,99,184.00	2,99,184.00
Salary of Training Assistant			3,12,180.00	3,12,180.00			3,01,345.00	3,01,345.00
Salary of Training Coordinator			6,81,120.00	6,81,120.00			6,52,475.00	6,52,475.00
Total	11,97,18,714.76	75,69,159.00	29,07,036.00	13,01,94,909.76	13,37,68,161.15	75,36,614.00	14,93,064.00	14,27,97,839.15

**Annexure 4
Administrative Expenses (TIFAC Regular)**

PARTICULARS	Current Year			Previous Year			TOTAL
	TIFAC	PFC	WSSS	TIFAC	PFC	WSSS	
Repair and Maintenance	14,93,222.00			6,48,766.00	13,806.00		6,62,572.00
Rent, Rates and Taxes				35,200.00			35,200.00
Car hire Charges	6,25,492.00	1,03,815.00	14,503.00	8,62,301.00	1,63,579.00		10,25,880.00
Postage, Telephone and Communication Charges	6,81,437.00	21,771.00		7,32,438.00	50,150.00		7,82,588.00
Printing, Stationary & Printing of Publications	12,69,900.00			13,55,297.00	17,060.00		13,72,357.00
Travelling and Conveyance Expenses	2,11,735.00			1,07,125.00	7,964.00		1,15,089.00
Subscription Expenses	1,03,258.33			46,144.00	2,010.00		48,154.00
Professional Charges	1,28,805.00			3,38,270.00			3,38,270.00
Auditors Remuneration							-
Audit Fee	1,10,000.00			1,10,000.00			1,10,000.00
GST on Audit Fee & Incomet Tax Return	25,200.00			25,380.00			25,380.00
Tear/Water/Opening and Closing of Office	5,72,660.00			6,89,270.00			6,89,270.00
Advertisement and Publicity	15,02,698.00	2,86,297.00	45,53,852.00	7,80,875.00		28,29,297.00	36,10,172.00
Others (Specify)							-
Bank Charges	585.71	612.70	7,126.23	1,322.88	1,072.69		2,395.57
Misc. Office Expenses	5,25,633.76	4,530.00		14,26,015.00	87,381.00		15,13,396.00
Membership Fee	76,641.00			80,712.00			80,712.00
Manpower (Service Provider Agencies)	18,63,845.00			10,32,992.00			10,32,992.00
Maintenance of Vishwakarma Bhavan	63,70,000.00			54,92,259.00			54,92,259.00
Legal Charges	5,03,380.00			4,54,966.00			4,54,966.00
PM Relief Fund (M/s APL PolyFab)	15,000.00						-
Rajabhasha Committee Meeting	94,259.00			86,012.00			86,012.00
Swatch Bharat Mission	25,955.00			21,890.00			21,890.00
Web Portal Services/Applications	8,32,128.00			11,800.00			11,800.00
Filing of Patent		19,78,026.00			48,69,120.00		48,69,120.00
Honorarium to Experts	57,500.00	5,000.00	5,81,846.00	51,500.00	2,500.00	3,18,960.00	3,72,960.00
Housekeeping of TIFAC Building	17,33,067.00			15,00,012.00			15,00,012.00
TIFAC Software Development	4,03,857.00			4,03,857.00			-
Scholarship for Women Scientist						28,20,031.00	28,20,031.00
Scholarship for Women Scientist (10th Batch)			55,22,989.00			2,33,76,359.00	2,33,76,359.00
Scholarship for Women Scientist (11th Batch)			2,61,71,012.00				-
Patent Agents Exam Price (10th Batch)						14,00,000.00	14,00,000.00
TADA for attending Orientation Programme			2,17,132.00			3,17,285.00	3,17,285.00
Orientation Programme			10,83,216.00			13,14,241.00	13,14,241.00
Contingency Refresher for Alumni			1,91,550.00			4,30,670.00	4,30,670.00
Hardware Maintenance and Software			2,00,000.00				-
Overhead			10,85,190.00				-
Web Based ICT Modules						31,928.00	31,928.00
Training Programme on IPR at Meghalaya State Council		1,60,000.00					-
Interest Earned (2017-2018) (Written Back)				1,71,09,450.00	1,20,510.00	3,32,917.00	1,75,62,877.00
Total	1,92,26,258.80	25,60,051.70	3,96,28,416.23	6,14,14,726.73	3,29,99,996.88	53,35,152.69	7,15,06,837.61

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				-				-
Relationship between GDP Growth and Technology Cau				-	7,10,000.00			7,10,000.00
Information & Communication Security and Financial Sector Security				-	9,70,528.00			9,70,528.00
Characterisation of the major Agro-Residue Biomass	3,49,547.00			3,49,547.00	6,63,000.00			6,63,000.00
Securing Individuals, Society and Infrastructure				-	3,99,781.00			3,99,781.00
Estimating Generation and Surplus Amounts of Crops	5,56,041.00			5,56,041.00				-
Study on Natural Resources & Environment Security	3,98,500.00			3,98,500.00				-
Sub-Total (a)	13,04,088.00	-	-	13,04,088.00	27,43,309.00	-	-	27,43,309.00
(b) IIASA - TIFAC Projects/Study/Membership Fee				-				-
IIASA - TIFAC joint Workshop (TIFAC)				-	67,383.00			67,383.00
IIASA-TIFAC : Conservation of Agro-Biodiversity and Ecosystem Management : A Study in Indian Agriclilmatic Condition Sub Zone	5,52,722.00			5,52,722.00				-
IIASA-TIFAC Study on Economics of Conserving Agro Biodiversity & Ecosystem Services : A Study in India	10,00,000.00			10,00,000.00				-
IIASA-TIFAC Study on Climate Change Adaptation App				-	21,72,994.00			21,72,994.00
Sub-Total (b)	15,52,722.00	-	-	15,52,722.00	22,40,377.00	-	-	22,40,377.00
(c) HOME GROWN TECHNOLOGIES								
Project related expenses				-	1,52,280.00			1,52,280.00
Sub-Total (c)	-	-	-	-	1,52,280.00	-	-	1,52,280.00
(d) Technology Foresight for Automotive Research								
Technology Foresight for Automotive Research (TFAR)	1,07,636.00			1,07,636.00	1,03,338.00			1,03,338.00
Sub-Total (e)	1,07,636.00	-	-	1,07,636.00	1,03,338.00	-	-	1,03,338.00

**Annexure-5
PROJECT EXPENSES (TIFAC Regular Account)**

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
(e) Technology Foresight Study in Security Technology				-				-
Technology Foresight study on Security Technologies				-	20,812.00			20,812.00
Sub-Total (f)	-	-	-	-	20,812.00	-	-	20,812.00
(f) Project Related Expenditure								
Meeting Expenditure Meeting (Project Related), Meeting (NITI AAYOG) TIFAC, DST Review Committee Meeting	14,26,805.00	36,874.00		14,63,679.00	11,30,686.00	38,825.00		11,69,511.00
Travelling Expenditure, Travel Abroad, Travel Expenditure (Project Expenditure)	14,14,206.00	2,95,930.00		17,10,136.00	24,09,991.00	1,57,159.00		25,67,150.00
Workshop Expenditure, Workshop :TIFAC/DST ITS Canada), Workshop on CIPC-2016	6,31,859.00	47,062.00	3,77,600.00	10,56,521.00	7,49,656.00	2,16,713.00	3,33,688.00	13,00,057.00
Sub-Total (i)	34,72,870.00	3,79,866.00	3,77,600.00	42,30,336.00	42,90,333.00	4,12,697.00	3,33,688.00	50,36,718.00
Total (a) to (i)	64,37,316.00	3,79,866.00	3,77,600.00	71,94,782.00	95,50,449.00	4,12,697.00	3,33,688.00	1,02,96,834.00

Annexure - 6
EXPENDITURE OF VISION 2020 and Vision 2035

PARTICULARS	Current Year			Previous Year		
	V2020	Vision 2035	TOTAL	V2020	Vision 2035	TOTAL
Establishment & Administrative Expenditure						
Printing, Stationary & Printing of Publications		-	-		3,51,680.00	3,51,680.00
Sub Total (A)	-	-	-	-	3,51,680.00	3,51,680.00
Total (A)	-	-	-	-	3,51,680.00	3,51,680.00

Annexure – 6A
PROJECT EXPENDITURE OF VISION 2020

PARTICULARS	Current Year		Previous Year	
	Vision 2020	Vision 2035	Vision 2020	Vision 2035
	TOTAL		TOTAL	
(a) Targeted Programme in Other Important Area				
MSME Expenses	1,32,149.00		4,27,064.00	-
MSME : Study for Rice Mill Cluster, Lakhisarai, Bihar	1,50,000.00		-	-
MSME : Study on the Brass Metal Cluster	7,12,800.00		-	-
MSME : Study for the Jhula Cluster, Kankaiyaganj, Nalanda, Bihar	3,06,900.00		-	-
MSME : Study for the Apparel Manufacturing Cluster, West Bengal	9,25,000.00		-	-
MSME : Study for the Sal/Arcanut Leaf Plate Manufacturing Cluster, Bishnupur, Bankura, West Bengal	8,95,000.00		-	-
MSME : Study for the Katkhal Sital Pati Cluster, Hailakandi, Assam	7,32,000.00		-	-
MSME : Study for the Fisheries and Food & Spices Cluster, Manipur	5,00,000.00		-	-
MSME : Study for the Chanapatana Toys Cluster, Ramnagar District, Karnataka	7,50,000.00		-	-
MSME Study for Agriculture Implement Cluster, Noorsarai, Nalanda Bihar	3,06,900.00			
MSME : Internship Scheme Stakeholder Interaction Meeting	85,900.00		7,16,573.00	-
MSME : Study for the Banarasi Silk Saree, Cotton Saree			3,60,000.00	-
MSME : Baktawng Wood Carpentry Cluster and Bairabi			5,10,375.00	-
MSME : Study for the Home Textile Manufacturing Cluster			2,00,000.00	-
	54,96,649.00	-	22,14,012.00	-
			22,14,012.00	22,14,012.00

Annexure – 6A
PROJECT EXPENDITURE OF VISION 2020

PARTICULARS	Current Year			Previous Year		
	Vision 2020	Vision 2035	TOTAL	Vision 2020	Vision 2035	TOTAL
(a) Targeted Programme in Other Important Area			-			-
Brainstroming Meeting 2035		36,837.00	36,837.00		17,788.00	17,788.00
Sub-Total (a)	-	36,837.00	36,837.00	-	17,788.00	17,788.00
(b) Project Related Expenditure			-			-
Travelling Expenditure, Travel Abroad, Travel Expenditure (Project Expenditure)			-		63,948.00	63,948.00
Sub-Total (b)	-	-	-	-	63,948.00	63,948.00
TOTAL (a) to (b)	54,96,649.00	36,837.00	55,33,486.00	22,14,012.00	81,736.00	22,95,748.00

**Annexure 7
SHORT TERM DEPOSITS WITH BANKS**

PARTICULARS	Current Year				Previous Year			
	TIFAC	PFC	WSSS	TOTAL	TIFAC	PFC	WSSS	TOTAL
Short Term Deposits								
TIFAC	21,72,54,220.00			21,72,54,220.00	26,56,61,885.00	-	-	26,56,61,885.00
Flexi Account	5,00,000.00			5,00,000.00	20,00,000.00	-	-	20,00,000.00
Accrued Interest	56,17,476.00			56,17,476.00	73,57,932.00	-	-	73,57,932.00
Total	22,33,71,696.00	-	-	22,33,71,696.00	27,50,19,817.00	-	-	27,50,19,817.00

Annexure – 8 EXPENSES PAYABLE

PARTICULARS	Current Year			Previous year			TOTAL	TOTAL
	TIFAC	PFC	WSSS	TIFAC	PFC	WSSS		
Expenses Payables Under TIFAC								
Salary Payable	55,84,266.00	84,371.00	1,36,820.00	51,05,704.00	3,49,007.00	1,24,280.00	58,05,457.00	55,78,991.00
Salary Arrear Payable (01.01.2016 to 30.09.2018)	52,26,549.00	5,14,640.00		1,74,21,813.00	17,15,462.00		57,41,189.00	1,91,37,275.00
Salary Arrear 30% Payable (01.10.2018 to 31.03.2019)	11,82,419.00	1,33,488.00		11,82,419.00	1,33,488.00		13,15,907.00	13,15,907.00
Salary Arrear 30% Payable (01.04.2019 to 31.01.2020)	74,07,079.00	7,43,078.00		81,50,157.00			81,50,157.00	-
Court Loan (Sh.Anil Kumar Rai)	-			8,000.00			-	8,000.00
Consultancy Fee	2,82,500.00			2,73,500.00			2,82,500.00	2,73,500.00
NPS Contribution (Employees)	3,20,653.00			3,21,034.00			3,20,653.00	3,21,034.00
NPS Contribution (Employers)	46,188.00			3,21,034.00			46,188.00	3,21,034.00
CPF Contribution (Employers)	5,93,248.76	39,008.50		7,76,441.15	29,916.00		6,32,257.26	8,06,357.15
Experts Members Payable (Outsiders)(Honorarium)	1,08,000.00	34,562.00		1,42,562.00	55,700.00		1,42,562.00	55,700.00
ITF Delhi (Auditorium & Computer Lab)					33,500.00		-	33,500.00
M/s Rakesh Stamps Manuf. & Supplier	2,180.00						2,180.00	-
M/s Airtel Relationship No.10954184	25,810.00			25,810.00			25,810.00	-
M/s Shiv Tibrewal & Co. (Chartered Accountant)	99,000.00			99,000.00			99,000.00	-
M/s J S Enterprises							-	-
M/s Ashok Travels and Tours	52,974.00	15,909.00	35,630.00	4,65,947.00	61,048.00		1,04,513.00	5,26,995.00
M/s Tej Shrama			10,000.00				10,000.00	-
M/s Kendriya Bhandar	34,356.00			34,356.00			34,356.00	-
M/s Gobind Computers Pvt Ltd.				14,600.00			-	14,600.00
M/s S S Enterprises, New Delhi				40,150.00			-	40,150.00
M/s New VIP Tourist, New Delhi				10,261.00	5,978.00		-	16,239.00
M/s Vishal Taxi Services, New Delhi	63,590.00			68,139.00	4,219.00		63,590.00	72,358.00
M/s Lal Lahiri & Salhotra					3,474.00		-	3,474.00
M/s Holistic Food Centre		16,223.00			1,26,227.00		16,223.00	1,26,227.00
Sh Mahipal Singh Rawat		825.00					825.00	-
Sh Eshwar Vikas, Bangalore				14,057.00			-	14,057.00
M/S Kanhaiya Enterprises	16,236.00						16,236.00	-
M/s S.K.Juneja & Associates (Chartered Accountant)				1,10,000.00			-	1,10,000.00
Income Tax on Audit & Return	31,000.00			31,000.00			31,000.00	31,000.00
GST on Audit Fee	25,380.00			25,380.00			25,380.00	25,380.00
M/s Director, New Delhi HPO, Delhi	891.00			891.00			891.00	2,069.00
M/s Uneecops Technologies Limited, New Delhi				2,346.00			-	2,346.00
M/s Basavaraj Masanagi & Co.				14,160.00			-	14,160.00
M/s Goverdhan Tourist Travels Service			2,884.00	2,884.00			-	-
Indian National Science Academy			5,000.00	5,000.00			-	-
MTNL	3,304.00						-	-
M/s Blue Star Limited	2,80,250.00						-	-
Sh. Yahswant Dev Panwar			820.00				820.00	-
M/s Perfect Traders	34,693.00			32,324.00			34,693.00	32,324.00
M/s VIBA Press Pvt. Ltd., New Delhi				16,800.00			-	16,800.00
M/s Lex Orbis Consulting Pvt. Ltd.					48,369.00		-	48,369.00
M/s Sunil Sharma				5,756.00			-	5,756.00
M/s Anand & Anand		36,000.00					36,000.00	-
M/s Subramaniam & Associates		52,340.00					52,340.00	-
M/s Khurana & Khurana		22,700.00					22,700.00	-
M/s Goverdhan Tourist Travel Service	1,23,482.00	4,286.00					1,27,768.00	-
Orientation Programme							-	-
Scholarship for Women Scientists			68,12,507.00				68,12,507.00	1,80,020.00
TIFAC (Overhead Charges)			8,29,950.00				8,29,950.00	42,74,367.00
M/s Uma Dev & Sons				3,58,363.00			-	3,58,363.00
Sub Total (A)	2,15,44,048.76	16,97,430.50	76,33,611.00	2,66,21,297.15	25,66,388.00		3,07,91,536.26	3,37,66,352.15
TDS Payable	11,30,171.00	9,147.00	3,282.00	8,24,707.00	1,19,965.00		11,42,600.00	9,46,033.00
Sub Total (B)	11,30,171.00	9,147.00	3,282.00	8,24,707.00	1,19,965.00		11,42,600.00	9,46,033.00
Total A+B	2,26,74,219.76	17,06,577.50	78,36,893.00	2,74,46,004.15	26,86,353.00		3,19,34,136.26	3,47,12,385.15

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	1,00,000.00			1,00,000.00	1,00,000.00			1,00,000.00
Earnest Money : Simbhaoli Sugar	3,00,000.00			3,00,000.00	3,00,000.00			3,00,000.00
Sub Total (A)	4,00,000.00	-	-	4,00,000.00	4,00,000.00	-	-	4,00,000.00
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	1,00,000.00			1,00,000.00	-			-
M/s Perfect Traders	5,000.00			5,000.00	5,000.00			5,000.00
M/s Omnitech Automations Pvt Ltd	5,000.00			5,000.00	5,000.00			5,000.00
M/s Vishal Taxi Services. New Delhi	-			-	50,000.00			50,000.00
M/s Dip Technologies 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	10,000.00			10,000.00
M/s Beitek Canadian Water Ltd. (Aquaifina)	5,000.00			5,000.00	5,000.00			5,000.00
New VIP Tourist, New Delhi	-			-	50,000.00			50,000.00
Sh Sai Aqua Logistics	-			-	5,000.00			5,000.00
M/s Uma Devi & Sons	50,000.00			50,000.00	50,000.00			50,000.00
M/s Pan Tech, New Delhi	20,000.00			20,000.00	20,000.00			20,000.00
Security Deposit : 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)	2,88,784.00	-	50,000.00	3,38,784.00	2,93,784.00	-	50,000.00	3,43,784.00
TOTAL A + B	6,88,784.00	-	50,000.00	7,38,784.00	6,93,784.00	-	50,000.00	7,43,784.00

**Annexure 10
External Projects Handled by TIFAC**

PARTICULARS	Current Year										Previous Year									
	GTWG	ICPS	TNA	MSW	DIPP	DST FICCI	NM-QTA	SSR	AGIGMPWS	ICPS	TNA	MSW	DIPP	DST FICCI	NM-QTA	SSR	AGIGMPWS			
Opening Balance from Previous Year	20,58,432.00	12,60,904.00	3,86,255.70	2,75,000.00	6,09,478.00	-	-	-	14,33,300.00	35,89,703.00	6,09,540.00	2,75,000.00	4,21,537.00	20,000.00	-	-	-			
Income Received during the Year																				
Grant Received from Ministries			9,89,215.00				20,00,000.00	35,00,000.00			11,67,273.70		5,01,000.00				14,33,300.00			
Sub Total	20,58,432.00	12,60,904.00	13,75,470.70	2,75,000.00	6,09,478.00	-	20,00,000.00	14,33,300.00	35,89,703.00	17,76,813.70	2,75,000.00	9,22,537.00	20,000.00	-	-	-	14,33,300.00			
Expenditure Incurred																				
Head (Recurring)																				
Research Associates/Manpower/ Consultancy		1,06,810.00	75,000.00					59,931.00	20,25,334.00	8,74,848.00		3,13,059.00								
DPR Steering Committee Meeting							15,00,000.00													
Consultative Meeting/Workshops								17,81,260.00		3,07,252.00										
TADA Expenses of Steering Committee Members (6-7 experts, there to four meeting in three months)								5,75,685.00												
Honorarium for the Advisory Committee (18-20) and Steering Committee Members @4000/- pre sitting per member except TIFAC officials								2,32,000.00												
Printing of DPR	38,214.00																			
Travelling								17,166.00	2,66,713.00	2,04,210.00										
Recurring									1,42,465.00	4,248.00										
Contingency			2,099.00					6,336.00	1,20,352.00											
Meeting expenses of Advisory and Steering Committee Members (Local Transport, Boarding, Lodging, Working Lunch etc)								86,852.00	7,07,039.00											
Consumables																				
Sitting Fee								11,096.00												
Regional Workshop								15,000.00												
Web Portal Development								3,00,437.00												
Multi Function Printer																				
Overhead								8,343.00												
Amount Refunded back to the Institute													20,000.00							
Sub Total	38,214.00	1,06,810.00	77,099.00	2,75,000.00	6,09,478.00	-	15,00,000.00	91,776.00	13,58,618.00	13,90,558.00	2,75,000.00	3,13,059.00	20,000.00	-	-	-	14,33,300.00			
Total	20,18,218.00	11,54,094.00	12,98,371.70	2,75,000.00	6,09,478.00	-	5,00,000.00	13,41,524.00	20,56,432.00	3,86,255.70	2,75,000.00	6,09,478.00	20,000.00	-	-	-	14,33,300.00			

Technology Information, Forecasting & Assessment Council Receipts & Payments for the Period the Year Ended 31.03.2020

	Receipts	Current Year	Previous Year
1	Opening Balances		
	Cash in hand	8,720.00	7,143.00
	Cash in Hand (Under PFC New Account)	5,804.00	5,804.00
	Cash in Hand (Under WSSS New Account)	5,849.00	471.00
	Bank balances		
	In Current Accounts		
	In Deposit Accounts	27,30,19,817.00	25,83,55,171.00
	Short Term Deposite (Flexi Deposit Account)	20,00,000.00	60,00,000.00
	Savings Accounts	10,37,60,963.98	4,56,10,668.47
	Savings Accounts (Under PFC New Account)	93,32,235.15	3,03,561.84
	Savings Accounts (Under WSSS New Account)	1,97,699.87	34,57,906.91
	Advance for Franking Machine	10,359.00	10,359.00
2	Grants Received		
	From Government of India - Plan (TIFAC)	16,04,96,000.00	17,09,23,000.00
	From Government of India - Non Plan (TIFAC)	-	-
3	Interest Received		
	On Bank Deposits (TIFAC)		-
	On Bank Savings (TIFAC)		-
	Loans Advances etc. (Staff advances)		-
	Interest from Income Tax/ Projects		-
	Interest on Debtors & other Receivable (TIFAC-SIDBI Revolving Fund)		-
4	Other Income (Specify)		
	Refund from HGT Project	19,60,500.00	31,27,530.64
	Refund from Advance Composite Programme	6,00,000.00	35,00,326.00
	Refund from Sugar Technology Mission	7,50,000.00	4,39,470.00
	Other Income (Schedule 18)	39,03,663.00	18,09,907.00
	Refund from Fly Ash Utilization Programme		
5	Receipts fro Patent Facilitating Centre		
	Grant in Aid (Under PFC New Account)	-	2,00,00,000.00
	Other Receipts	25,000.00	1,63,602.00
	Interest from Bank (Savings) (Under PFC New Account)		-
6	Receipts for Women Scientist Scholourship Scheme		
	Grant in Aid (Under WSSS New Account)	4,50,00,000.00	3,00,00,000.00
	Other Income	21,246.00	13,31,465.00
	Interest from Bank (Savings) (Under WSSS New Account)		-
7	Other Receipts (Give Details)		
	Nominal Charges for Dissemination of TIFAC Reports		
	Income from Royalty	10,350.00	21,640.00
	Tender for Housekeeping at TIFAC		
	Security Deposit		35,200.00
	RTIA Questions	1,400.00	240.00
	Grant Interdisciplinary Cyber Physical Systems (ICPS)		
	Grant STI Policy Fellowship DST		
	Grant for Science and Hertage Research Initiative (SHRI)		
	Grant : Global Technology Watch Growup		
	Technology Assessment of Start ups for Tax Exemption		5,01,000.00
	Grant CV Raman International Fellowship (DST FICCI)		
	Grant Data Base of Technologies for Management of Muncipal Solid Waste		
	DRDO's Workshop Expenses (PFC)		3,31,823.00
	WIPO's Workshop Expenses (PFC)		14,728.00
	Training of Trainers Programme		15,714.00
	UNIDO Workshop		6,94,288.00
	Advance : Balmar Lawrie & Co. Ltd.		1,31,025.00
	Advance : Current Science Association, Bangalore		40,000.00
		60,11,09,607.00	54,68,32,043.86

Technology Information, Forecasting & Assessment Council Receipts & Payments for the Period the Year Ended 31.03.2020

Receipts	Current Year	Previous Year
National Steering Committee on Tech Need Assessment (TNA) for Habitat Sector (MOEF&CC)	9,89,215.00	11,67,273.70
Grant : Assessment of Government of India's Gender Mainstreaming Programs for Women in Science		14,33,300.00
Grant : Detail project report for Natinal Mission on Quantum Technology & Application (NM-QTA)	20,00,000.00	4,10,12,182.00
Grant : Scientific Social Responsibility (SSR) Policy	35,00,000.00	
Retment Benifit (Prof. Prabat Ranjan)	4,04,679.00	
Bharat Kosh (Govt.) (TIFAC,PFC & WSSS)	2,52,57,000.00	
Amount to be received from PFC to TIFAC	25,52,772.00	
CPF Trust (TIFAC)	1,86,329.50	
GSLIS		
GPF	17,000.00	
Staff Loan	-	7,97,891.00
EMD/Security Deposit (TIFAC) of (Annexure - 9)	1,00,000.00	55,000.00
URDIP Pune (SSWS)		
Payable by SSWS to PFC (Contra)		
Payable by SSWS to TIFAC (Contra)		
Interest Accrued (Under WSSS New Account)		
IIT-TIFAC Maintenance (Provision)	63,70,000.00	
Advance DAVP	30,85,822.00	
Advance : Jawaharlal Nehru Aluminium Research Development		1,60,600.00
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 : IPIRTI, Bangalore		1,84,000.00
Advance : Chennai Centre Kiran IPR	1,45,000.00	
Advance : Pune Centre Kiran IPR	2,00,000.00	
Security Deposit	800.00	
Prof. Prabath Ranjan Recovery (Transport)	4,28,510.00	
Salary Recoverable (Dr Aruna)	10,875.00	
Interest Accrued from Union Bank of India (Savings Bank)	13,56,366.00	
House Rent Recoverable from Prof. Prabat Ranjan		
Debts Outstanding for a period exceeding six months		
Superannuation / Pension/ Gratuity (Provision)	72,44,729.00	2,35,45,754.00
Accumlated Leave Encashment	99,40,568.00	31,66,488.00
Recovery from Assets		-
Total (ii)	6,37,89,665.50	7,16,24,956.70
	66,48,99,272.50	61,84,57,000.56

Technology Information, Forecasting & Assessment Council Receipts & Payments for the Period the Year Ended 31.03.2020

	Particulars	Current Year		Previous Year	
1	Expenses				
a	Establishment Expenses (Schedule 21)	11,97,18,714.76		13,37,68,161.15	
	Add : Opening Expenses Payable	2,37,09,936.00		49,79,143.00	
	Less : Expenses Payable	1,94,00,313.00	12,40,28,337.76	2,37,09,936.00	11,50,37,368.15
b	Administrative Expenses (Schedule 21)	1,92,26,258.80		3,29,99,996.88	
	Add : Opening Expenses Payable	37,36,068.15		22,96,610.00	
	Add : Loss of sale of Fixed Assets	-		-	
	Less : Payables	32,73,906.76	1,96,88,420.19	37,36,068.15	31560538.73
	Less : Loss on Sale of Fixed Assets				
	(Previous year figure does not include obsolescence Expenses in it.)				
c	Expenditure on Grants, Subsidies etc. (As per Schedule 22)		64,37,316.00		95,50,449.00
2	Payments made against funds for various projects				
	Establishment Expenses (Under PFC New Account)	75,69,159.00		75,36,614.00	
	Add : Opening Expenses Payable	21,97,957.00		3,42,451.00	
	Less : Expenses Payable	14,75,577.00	82,91,539.00	21,97,957.00	56,81,108.00
	Administrative Expenses (Under PFC New Account)	29,39,917.70		57,47,849.69	
	Add : Opening Expenses Payable	4,88,396.00		11,25,603.00	
	Less : Expenses Payable	2,31,000.50	31,97,313.20	4,88,396.00	63,85,056.69
	Payments made against funds for various projects				
	Establishment Expenses (Under WSSS New Account)	29,07,036.00		14,93,064.00	
	Add : Opening Expenses Payable	1,24,280.00		91,940.00	
	Less : Expenses Payable	1,36,820.00	28,94,496.00	1,24,280.00	14,60,724.00
	Administrative Expenses (Under WSSS New Account)	4,00,06,016.23		3,35,05,376.04	
	Add : Opening Expenses Payable	44,55,748.00		22,41,906.00	
	Less : Expenses Payable	77,00,073.00	3,67,61,691.23	44,55,748.00	3,12,91,534.04
	Grant Utilisation - Vision 2020	54,96,649.00		22,14,012.00	
	Add : Opening Expenses Payable				
	Less : Expenses Payable		54,96,649.00		22,14,012.00
	Grant Utilisation - Technology Vision 2035		36,837.00		4,33,416.00
	Addition in Fixed Assets				
	Office Equipment		3,53,203.00		27,28,152.00
	Library Book		2,34,517.05		41,611.00
	Furniture & Fixtures		9,000.00		21,537.00
	Computer & Peripherals		21,334.95		2,65,952.00
	Interior Work of TIFAC Building		2,44,224.00		-
	Fire Alarm System at TIFAC Building & Fire Extinguishers		1,92,255.00		-

	Particulars	Current Year	Previous Year
	Computer & Peripherals (Ext. Project)	6,780.00	86,700.00
	Furniture & Fixtures (PFC)		
	Office Equipment (PFC)		3,779.00
	Computer & Peripherals (PFC)		4,01,160.00
	Computer & Peripherals (WSSS)		77,746.00
3	Other Payments (Specify)		
	Earnest Money /Security Deposit	1,05,000.00	
	Stale Cheques (TIFAC,PFC & WSSS)	2,05,846.00	1,09,064.00
	Advance DAVP		34,45,664.00
	Salary Recoverable (Dr Aruna)		10,875.00
	National Steering Committee on Tech Need Assessment (TNA) for Habitat Sector		13,90,558.00
	Advance : Balmer Lawrie & Co Ltd.		
	Advance : Jawaharlal Nehru Aluminium Research Development		
	Advance : Akash Health Care Private Limited		
	Advance : Ishwar Charitable Trust (ICARE Eye Hospital)		
	Advance : Forest Research Institute, Dehradun		
	Advance : OPIRTI, Bangalore		
	Advance : Current Science Association, Bangalore		
	Advance : Shanti Gopal Hospital		
	Advance : Chennai Centr - Kiran IPR		1,45,000.00
	Advance : Pune Centre Kiran IPR		2,00,000.00
	CV raman International Fellowship (DST FICCI)		20,000.00
	Database of Technologies for Management of Muncipal Solid Waste		
		20,82,04,759.38	21,25,62,004.61

Technology Information, Forecasting & Assessment Council Receipts & Payments for the Period the Year Ended 31.03.2020

Particulars	Current Year	Previous Year
Global Tecnology Watch Group	38,214.00	13,58,618.00
Interdisciplinary Cyber Physical System (ICPS)	1,06,810.00	23,28,799.00
National Steerign Committee on Tech Need Assessment (TNA) for Habitat Sector (MOEF&CC)	77,099.00	
Technology Assessment of Start Ups for Tax Exemption		3,13,059.00
Grant : Assessment of Government of India's Gender Mainstreaming Programs for Women in Science	91,776.00	
Grant : Detail project report for Natinal Mission on Quantum Technology & Application (NM-QTA)	15,00,000.00	
Grant : Scientific Social Responsibility (SSR) Policy	37,07,000.00	
Bharat Kosh (Govt.) (TIFAC, PFC & WSSS)	4,10,12,182.00	
Amount to be paid by PFC to TIFAC	25,52,772.00	
TIFAC-SIDBI Revolving Funds)	21,34,000.00	17,14,800.00
CPF Turst		13,27,514.95
GSLIS	570.00	1,700.00
Unspent Balance of Running Projects	2,31,010.00	2,83,723.00
Due to DST (Unspent Balance Amount in respect of Old Projects)	2,43,79,090.93	3,95,745.00
IIT-TIFAC Maintenance (Provisions)	63,79,785.00	87,24,679.00
Advance : CSIR Glass & Ceramic Research Institute	8,550.00	
Womens Day & Certificate Distribution Ceremony & International Womens Day (10th Batch)	2,92,576.00	
Staff Loan	1,18,754.00	
Ms. Sangeeta Nagar : Recovery of Laptop		-
Sh T Chandrasekhar (TDS Recovery)		-
Sh Sanjay Singh (Transport Recovery)		-
Depreciation (Written Back)		-
TDS Receivable from Income Tax Department (DIPP)		52,072.00
Permal Wallage Pvt. Ltd		3,000.00
Interest Accrued From Union Bank of India (Savings Bank of India)	13,86,530.00	10,49,838.00
Closing Balance		
Cash in Hand	79,048.00	8,720.00
Cash in Hand(Under PFC New Account)	3,293.00	5,804.00
Cash in Hand(Under WSSS New Account)	12,367.00	5,849.00
Cash at Bank	14,14,16,592.10	10,37,60,963.98
Cash in Bank (Under PFC New Account)	1,63,697.45	93,32,235.15
Cash in Bank (Under WSSS New Account)	76,31,100.64	1,97,699.87
Short Term Deposite	22,28,71,696.00	27,30,19,817.00
Short Term Deposite (Flexi Deposit Account)	5,00,000.00	20,00,000.00
Franking Machine	-	10,359.00
Total (ii)	45,66,94,513.12	40,58,94,995.95
Total (i) + (ii) = (B)	66,48,99,272.50	61,84,57,000.56

INDEPENDENT AUDITOR'S REPORT

The Trustees
TIFAC Contributory Provident Fund Trust
New Delhi

Report on the Financial 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, 2020.
2. In our opinion and to the best of our information and according to the explanations given to us, the aforesaid Trust financial statements give the information required 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 March 31 for the year ended on that date.

Basis for Opinion

3. We conducted our audit in accordance with the Standards on Auditing (SAs). Our responsibilities under those Standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Trust in accordance with the Code of Ethics issued by the Institute of Chartered Accountants of India together with the ethical requirements that are relevant to our audit of the financial statements under the provisions of the Act and the Rules there under, and we have fulfilled our other ethical responsibilities in accordance with these requirements

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

Management's Responsibility for the Financial Statements

4. 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, financial performance of the Trust in accordance with the accounting principles generally accepted in India. This responsibility also includes maintenance of adequate accounting records for safeguarding of 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; and design, implementation and maintenance of adequate internal financial controls, that were operating effectively for ensuring the accuracy and completeness of the accounting records, relevant to the preparation and presentation of the financial statement that give a true and fair view and are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Trust's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either

intends to liquidate the Trust or to cease operations, or has no realistic alternative but to do so.

The Management is also responsible for overseeing the Trust's financial reporting process.

Auditor's Responsibility

5. Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an Auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with SAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with SAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Trust's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However future events or conditions may cause the Trust to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial Statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

Materiality is the magnitude of misstatements in the financial statements that, individually or in aggregate, makes it probable that the economic decisions of a reasonably knowledgeable user of the financial statements may be influenced. We consider quantitative materiality and qualitative factors in (i) planning the scope of our audit work and in evaluating the results of our work; and (ii) to evaluate the effect of any identified misstatements in the financial statements.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

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 31st March 2020 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;

Place: New Delhi
Dated: 31.07.2020

For Shiv Tibrewal & Co.
Chartered Accountants
Firm Registration No. 011391N

(S.K. Tibrewal)
Partner
M. No. 080098
UDIN: 20080098AAAACN4680

Contributory Provident Fund of TIFAC Statement of Affairs as on 31st March, 2020

Previous Year as on 31.03.2019	Particulars	Current Year as on 31.03.2020	Previous Year as on 31.03.2019	Particulars	Current Year as on 31.03.2020
	Employees Contribution				
3,17,92,235.00	Opening Balance	3,57,65,412.00	28,52,495.41	Union Bank of India S/b A/C	1,15,56,576.24
35,30,135.00	Add: Received during the year	52,46,237.50	5,20,330.00	Special deposit with RBI	5,20,330.00
25,52,203.00	Add: Interest Accrued During the Year	30,32,116.00	5,42,19,457.44	Short Term deposit with UBI including interest accrued thereon Less Bank Charges	5,78,50,118.44
3,78,74,573.00		4,40,43,765.50	6,59,216.00	Flexi Deposit- UBI	6,81,834.00
21,09,161.00	Less: Paid during the year	13,35,816.00		Loan/ Advances to staff members	
3,57,65,412.00		4,27,07,949.50	25,950.00	Shri Arghya Sardar	41,900.00
3,08,161.00	Add: Employees Subscription for the m/o March 2020	2,86,470.50	4,77,170.00	Receivable from TIFAC account of Employer	5,55,840.00
3,60,73,573.00	Total (A)	4,29,94,420.00		& Employee Contribution for March, 2020	
	TIFAC Contribution				
2,16,71,730.00	Opening Balance	2,31,49,385.00	6,37,348.15	Receivable from TIFAC account difference in interest earned & paid by the CPF Trust	3,17,707.76
15,71,992.00	Add: Received during the year	41,04,088.50			
17,65,189.00	Add: Interest Accrued During the Year	18,32,075.44			
2,50,08,911.00		2,90,85,548.94			
18,59,526.00	Less: Paid during the year	8,25,032.00			
2,31,49,385.00		2,82,60,516.94			
1,69,009.00	Add: Employer Subscription for the m/o March 2020	2,69,369.50			
2,33,18,394.00	Total (B)	2,85,29,886.44			
5,93,91,967.00	Total (A+B)	7,15,24,306.44	5,93,91,967.00	Total	7,15,24,306.44

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

For Shiv Tibrewal & Co.
Chartered Accountants
FRN : 011391N

sd/-
Shiv Kumar Tibrewal
Partner
Membership No.080098
Date : 31.07.2020
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 31.03.2020

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) through 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 is 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 31.03.2020 there was a deficit of Rs.3,17,707.76 with the CPF which has been shown as recoverable from TIFAC Rs.3,17,707.76.
4. Previous year's figures have been regrouped/rearranged wherever found necessary to make them comparable with current year figures.

As per our report of even date attached herewith
 For Shiv Tibrewal & Co.
 Chartered Accountants
 FRN: 011391N

Sd/-
 CA. S. K. Tibrewal
 (Partner)
 MRN: 080098
 Date: 31.07.2020
 Place: New Delhi

sd/-
 Accounts Officer
 TIFAC

sd/-
 Incharge (Fin. & Admn.)
 TIFAC



**TECHNOLOGY INFORMATION,
FORECASTING AND ASSESSMENT COUNCIL (TIFAC)**
(An autonomous body of Department of Science & Technology, Govt. of India)

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www.tifac.org.in