ANNUAL REPORT 2019

Industrial Technology Institute

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CHAPTER 01: INTRODUCTION

1.1 Vision, Mission and Quality Policy

Vision

To be a centre of excellence in Scientific and Industrial Research for national development.

Mission

To conduct innovative R&D and provide internationally competitive technical services to accelerate industrial development for the benefit of the people of Sri Lanka.

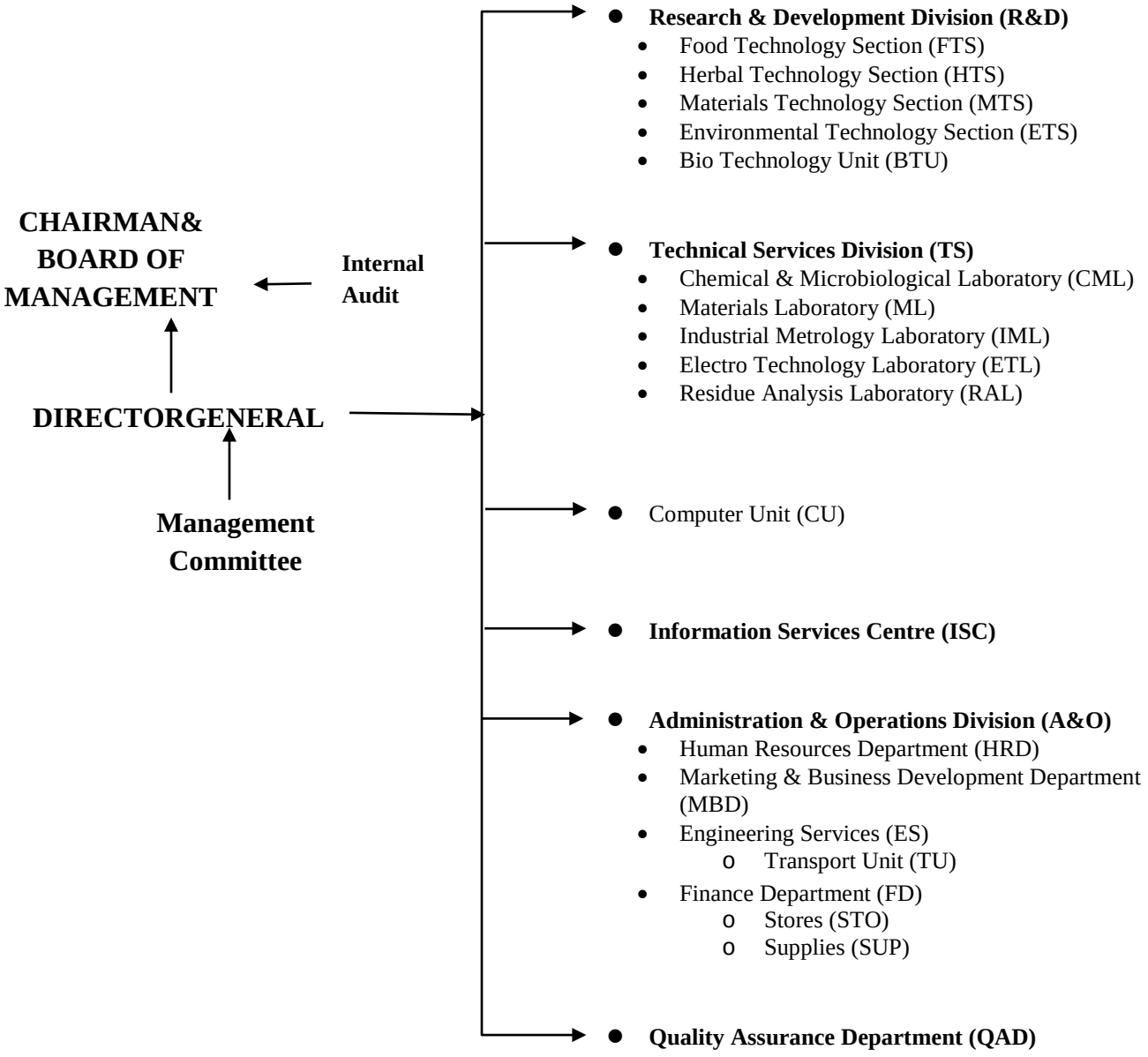
Quality Policy

The top management of the Industrial Technology Institute is unreservedly committed to professional practices, in compliance with the ISO/IEC 17025:2017and ISO 9001:2015standards as well as the National Quality Policy and to the quality of its activities in serving customers through continual development by establishing and reviewing quality objectives.

The standard of services is never being compromised and the entire staff of the institute endeavors to achieve the highest level of customer satisfaction through maintaining Quality Management Systems (QMS) and providing independent and unbiased factual data to its customers in accordance with the stated methods and customer's requirements.

All ITI staff is competent with the quality documentation and implemented policies and procedures in their work and is therefore committed to continually improving the effectiveness of the QMS.

1.2 Organizational Structure



CHAPTER 02: STRATEGIC PERFORMANCE

2.1 Chairman's Message

I consider it an honour to have served as the Chairman of ITI in the year 2019. Coming from the information technology (IT) industry my mission was to drive Industry 4.0 to meet the next generation industrialization demands.

ITI is an institute with immense skills and capability to develop unique technologies in the food, herbal, material industries amongst providing high end testing, environmental services across industries. I consider myself to have been privileged to be able to contribute to such a distinguished establishment that comprises of country's top scientists, technologists to bring in a business perspective and a commercialization mindset for the organization to be beyond an R&D institute and be a profitable venture.

The capability of the organization is nothing less from contributing to the development of science, research and development and commercialization to the highest standards with the world's leading accreditations that would bring about value addition to local crops and their production with the ability to cater to the world market.

During the year 2019 even with the unforeseen and unfortunate incident of the Easter bomb attack, ITI was able to up its turnover by over 10 million rupees. We were successfully able to do two major technology transfers, nutritious scone with low added sucrose to Cargills Quality Confectioneries (Pvt) Ltd and Ezy rice, an instant rice which was an innovative development with physically treating locally grown rice grains for Keells Food Products PLC. At the same time there were many low-cost technology transfers that were done to uplift and sustain SME's across all ITI offerings.

It has to be commended the material department of ITI by then has developed a clay filter that would eradicate CKD during which time we tried to enhance the product and make it available across the country in hospitals, schools, universities, to other public places and even to the private sector in ornamental forms to consume naturally purified water. Along with Taprobane International Ltd. took on the challenge of developing and transferring of coir pith-based material and it's application products.

The breakthrough project during my tenure which I'm humbly proud to have been a part of is the alcoholic kithul beverage (sparkling sweet toddy) and kithul trickle with Agri Deshiya (Pvt) Ltd., todate the highest valued project carried out by ITI.

While I'm thankful to the Hon. minister Sujeewa Senasinghe for my appointment we also had a dynamic board comprising of members from the private sector who contributed much for uplifting the standards of ITI.

We looked into minute details of all employees by supporting the welfare society not only to support the staff but also to help them at times of need particularly one instance being organizing a stage drama to fund a medical need of a staff member.

In a world of much debate on gender equality, majority of ITI's senior scientists and the management comprises of females. Dr. Radhika Samarasekara, being appointed as the first DG/CEO in April 2019, while Dr. Ilmi Hewajulige, Dr. Iresha Kottegoda, Ms. Manori Wijemanna Eng. Ms. Ramya Wijesekara, Dr. Menuka Arawwawala and Ms. Himashi Karunaratne are amongst many who shouldered the responsibilities of ITI.

In the forefront Dr. Pathmasiri Ranasinghe, Dr. Ruwan Weerasinghe, Dr. Sudharshana Somasiri, Dr. Neville Amunugama, Mr. M N A Mubarak, Mr. Ruwan Chandima, Mr. Dineth Samarawickrama and Mr. Anura Sooriyarachchi are to name a few who worked closely towards the true vision of the institute along with their teams. Further Ms. Rohini De Silva for the wellbeing of the ITI staff chaired the grievance committee and impartiality evaluated and reported the true findings and solutions. I cannot forget Mr. Upul Pushpakumara the outgoing Acting DG who guided and imparted his knowledge to me.

Last but not least with the greatest confidentiality stood by me and supported was Ms. Ayesha Dias, my confidential secretary and Mr. Dushantha Pushparaj my driver, all of who I greatly consider to be a part of my success as the chairman of ITI.

Amal Dias
Chairman

2.2 Director General's Message

For more than 64 years, the Industrial Technology Institute (ITI), Successor to the Ceylon Institute of Scientific and Industrial Research (CISIR) has been solving numerous challenges through Science, Technology and Innovations and promoting industrial development through Research and Development, Consultancy, Technology Transfer, Training and internationally competitive Testing and Calibration Services for the economic development of the country. Until November 2019, the Institute functioned under the Ministry of Science, Technology and Research and the Ministry of Higher Education, Technology and Innovation thereafter.

This Annual Report provides the Action Plan for 2019; a summary of ITI activities, performance highlights and outcomes against the planned objectives; and our contribution and delivery of quality services to the Government, the Industries, Non-Governmental Organizations and the Community at large during 2019.

First and foremost, I appreciate the invaluable guidance and advice received from the ITI Board of Management. Second, I am very grateful to the ITI staff and Colleagues who handled day-to-day operations as well as special assignments with deep commitment, dedication, collaborative spirit and adopting a multidisciplinary approach to work. If not for the unstinted support and cooperation of these constituents, ITI would not have been able to meet its targets in tumultuous times caused by the macroeconomic conditions that prevailed in 2019.Under difficult circumstances, we managed to deliver excellent and impactful science and technology and innovation to the nation.

In 2019 we continued to focus on Science and Technology and Innovation in areas that are aligned with government priorities and industrial demand while facilitating the transition of research and commercialization of research outcomes.

During the year, ITI undertook more than 18,000 services including testing, technology transfers, consultancy, contract projects, and training and worked with more than 10,000 customers, including Sri Lankan Industries, International Corporates, and over 1000Small to Medium Enterprises (SMEs). Some of our most significant collaborations included the interaction with the Commission on Science & Technology for Sustainable Development in the South (COMSATS), the United Nations Industrial Development Organization (UNIDO), the World Association of Industrial and Technological Research Organization (WAITRO), International Network for Bamboo and Rattan (INBAR), Yunnan Rural Science and Technology Service Center and Yunnan Agricultural University in Kunming in China, Korean Intellectual Property Office (KIPO), Korea Institute of Public Administration (KIPA), International Development Research Center (IDRC) Canada, and United Nations Development Programme (UNDP).

Technology Transfers

Two major technology transfers were completed through agreements. They covered technology transfers for(a) nutritious scone, a low added sucrose, ready-to-serve flatbread prepared using local ingredients such as mung, corn, dried fruits, and sesame seeds with exclusive rights to Cargills Quality Confectioneries (Pvt) Ltd.; and (b) Instant Rice, an innovative product developed using locally grown rice grains to be fully cooked in 5 minutes to Keells Food Products PLC. Instant rice was launched with four flavours by Keells and is now available in the consumer market. In addition, license agreements were signed to continue the KASPER technology for the production of Kithul activation and sap production enhancing reagent with APIC Agro Pvt Ltd. and with the Industrial Development Board (IDB) to engage the service of IDB to market the KASPER product through IDB network.

Two Non-Disclose Agreements were signed for technologies of alcoholic Kithul beverage, sweet toddy and modified coir pith base material and its application products with Agri Deshiya (Pvt) Ltd. and Taprobane International, respectively.

ITI also continued to provide technologies to build up/promote Micro Enterprises (MEs) and SME engagement in rural industrial promotion, especially through Vidatha Centres and Vidatha Entrepreneurs.

Research and Development and Innovation

We consider it a privilege to serve the Nation through outstanding research, technology and innovation. As the government-owned leading national and the largest scientific R&D organization, ITI continues to deliver our core objective of the delivery of technology innovation for the entire nation working in collaboration with the Government, research network, industry, and universities, both in Sri Lanka and globally.

In 2019, sixty-three ongoing R&D projects were designed based on industry and consumer demand and these projects covered the areas of food, health, biotechnology, material, environment, natural resources, metrology, electrotechnology and future industries. ITI successfully addressed technical issues and provided solutions to the industry and society.

Many technologies were developed through these projects for commercialization including food products such as horse gram-based products, Kithul-based products, cereal-based products, and medicinal plant-based herbal drugs, natural fragrances, extracts and essential oils using microwave hydro-diffusion and gravity technology which have the potential to be used in cosmetic and food industry, bio-pesticides, purified graphite, graphene, reduced graphene oxide and graphite composites and modified clay with minerals for removal of hardness and other contaminants from water.

Under the ‘Rata Wenuwen Ekata Hitimu project, along with Presidential Secretariat, ITI conducted technology awareness programmes at different locations in the country including Jaffna, Mullaitivu, Batticaloa and Monaragala.

Technical Services

Following the hands-on experience and successes of ITI in testing services, in2019 we have continued to deliver its internationally recognized accredited technical services across the span of ITI's deep domain expertise to the local industries and governmental organizations to enhance the industrial growth in the country. These delivered services were in the areas of chemical, water, food, cosmetics, pharmaceuticals, trace level environmental contaminants, such as pesticide residues, heavy metals and mycotoxins and herbal drugs, materials, lubricant and petroleum oil, packaging, microbiology and for national metrology infrastructure. Through the provision of technical services to many national entities and projects, ITI actively participated in disseminating its innovative technology. During the year under review, ITI assisted to upgrade the industries engaged in food processing with current technology and undertook troubleshooting in conflict-affected areas in the Northern Province. As per the new regulation of the Government on labelling food products with colour codes for sugar, salt and fat content, ITI tested more than 500 samples at clients’ requests.

ITI also conducted more than 200 services in various disciplines of Environmental Science and Technology including ambient air quality and stack emission monitoring using the ITI mobile laboratory, air pollution control and mitigation, wastewater treatment, solid waste management, water quality studies, hazardous waste management, environmental impact assessments during 2019.Noise and vibration assessment studies including measurements, mitigation, prediction, and acoustic modelling services were provided to power and energy, road, highways, rail, industry and shipping sectors in the country.

Quality Infrastructure

The Institute continued with the ISO 9001:2015 Quality Management System Certification for Research & Development Division and Information Services Center.

ITI’s existing laboratory quality management system ISO/IEC 17025:2005 was converted to ISO/IEC17025:2017 Laboratory Quality Management System for Technical Services Division and more than 500 testing parameters are accredited by the Sri Lanka Accreditation Board (SLAB) for chemical, food, and water, wastewater, cosmetics, materials (cement, rubber and ceramics), microbiological parameters, chemical residues, metal residues and industrial noise and vibration measurements. Industrial Metrology Laboratory continued ISO/IEC17025:2017Laboratory Quality Management System for mass, dimensions, volume, electrical, force, pressure and temperature measurements and measurement traceability to SI units through Korea Research Institute of Standards and Science (KRISS), South Korea and

Physikalisch-Technische Bundesanstalt (PTB), Germany and National Metrology Institute, Thailand.

The ITI received ISO/IEC 17043: 2010 Accreditation for Proficiency Testing (PT) by SLAB in 2019 and it is the first and only Sri Lankan laboratory to sustain this status. ITI is capable of conducting PT programmes in water microbiology, food microbiology, and chemical and physical testing for cement.

Infrastructure Development

The progress of megaprojects of the UNIDO-funded Packaging Testing Laboratory, government-funded Petroleum and Lubricant Testing Laboratory and National Pharmaceutical Laboratory and China government-funded China-Sri Lanka joint Biotechnology Laboratory of ITI were slow due to various policy inconsistencies of the previous years. However, I provided leadership and guided these entities to establish collaborations during the said period.

Under the MOU signed with the Ministry of Science & Technology (MOST) China and the Ministry of Higher Education Research Sri Lanka, ITI signed the framework agreement with Yunnan Rural Science and Technology Service Center and Yunnan Agricultural University in Kunming in China. ITI received the equipment grant value of USD 600,000 for the China Sri Lanka Joint Laboratory on Biotechnology to undertake R&D on special plant resources (Tea, Cinnamon and Moringa) and their industrial applications under this framework agreement in 2019. In order to finish the Biotechnology laboratory, ITI signed an agreement with the local construction company for the finishing of the China-Sri Lanka Joint Biotechnology Laboratory at Modern Research and Development Complex (MRDC), Malabe.

ITI initiated the establishment of a reference and testing laboratory for Living Micro-Organisms with the assistance of FAO through the Ministry of Mahaweli Development and Environment at the Biotechnology Unit. During the year ITI also established the facility for thermal process validation of canned food and low moisture processed food operations according to US FDA regulations at the Food Technology section at MRDC Malabe.

Symposiums, Seminars and Meetings

The 4th ITI Biennial Research Symposium was held under the theme “Excellence in Science, Technology and Innovation for Sustainable development” from 17th – 18th December 2019 at the ITI’s newly established MRDC, Malabe. The Honorable Minister, of Higher Education, Technology and Innovation Dr Bandula Gunawardena graced the inaugural ceremony as the Chief Guest and the Honourable State Minister of Technology and Innovation, Thilanga Sumathipalaas the Guest of Honour. Dr S M Junaid Zaidi, Executive Director of COMSATS graced the occasion as a Special Guest. At the symposium, 40 research papers were presented disseminating and sharing the knowledge they gained by research carried out at ITI. The

outstanding performance of ITI Scientists and Engineers was appreciated and felicitated during the awards ceremony and nearly 30Researchers received awards and certificates.

Awards, Patents, Publications and Recognitions

ITI Scientists won two Gold medals at the Presidential Awards Ceremony organized by Sri Lanka Inventors Commission. Two first places and a certificate of commendation were secured for the SLCARD Awards for excellence in Agricultural research organized by the Sri Lanka Council for Agricultural Policy. The SUSRED (Support Scheme for Supervision of Research Degrees) Award organized by the National Science Foundation of Sri Lanka was also won by a Scientist at ITI.

During 2019, 31 research articles were published in refereed journals and two book chapters were written for international publishers. In addition, one patent was obtained while applications were filed for 10 local patents during the year.

Human Resource Development

Sixty-six staff including Research Scientists, Engineers, Research Technologists and Confidential Secretary, Senior Legal Officer, Senior Stores Officer, Marketing Officer and Management Assistants were recruited in 2019. Two Research Scientists and three Research Technologists resigned, while 4 Research Technologists retiredin 2019.The Institutional cadre was increased to 440 with the approval for an additional cadre for Petroleum and Lubricant Testing Laboratory and National Pharmaceutical Laboratory. During the year under review, one scientist obtained her PhD while two scientists completed their Master's in Analytical Chemistry.

Financial Performance

A capital grant of Rs 121 Mn and an allocation of Rs 225 Mn were received in2019. These funds were utilized to purchase high-end equipment for Research and Development and Technical Services to generate more income through new technology development and testing services. During the year, by completing the procurement process utilizing Rs 207 Mn out of Rs 225 Mn, ITI was able to record its financial progress as 92%. ITI also received Rs 250 Mn in 2019 as a recurrent grant for compensating Personnel Emoluments and recurrent expenses of the Institute.

The Institute’s income has increased from Rs 324 Mn in 2018 to Rs 335 Mn in 2019, while the recurrent expenditure increased from Rs 552 Mn to Rs 589 Mn during the same period. The income/recurrent expenditure ratio showed a slight decrease from 52.4% to 51.7%. The Institute generated a high percentage of its income from testing and calibration services which contributed 63% (Rs 192 Mn) of the generated income while income from technology transfer, training programs including technology training, customized services and contract projects remains around 37%. Income from contracts and consultancy services showed an increase from Rs 52Mn in 2018 to Rs 85 Mn in 2019. Revenue from technology transfer doubled in 2019 compared to

2018 and stood at Rs 7.51 Mn. The performance-based incentives were paid to the staff for the 16th consecutive year as the Institute achieved an overall income target set for the year.

I am confident that ITI will endure for the next century as we evolve and continuously adapt to the changing environment. I look towards a more involved role for ITI in shaping and guiding Sri Lanka's economic recovery in the near future. These Annual Report showcased the initiatives launched by the ITI in adapting and responding to the changing environment to meet its objectives and deliver targeted services for a better future for all citizens in Sri Lanka.

Acknowledgements

Chairman and the Board of Management, Management Committee, Staff, Clients, line Ministry and Donator Agencies.

Dr J K R R Samarasekera
Director General /Chief Executive Officer, ITI

2.3 Action Plan

Objective: To conduct innovative R & D and provide internationally competitive Technical Services to accelerate industrial development for the benefit of the people of Sri Lanka					
No.	Measures/Outcome	Key Performance Indicator	Target	Actual	Comments
Preliminary Outcome					
1	Increase the number of Industries	No. of new industries established/ upgrades	11	13	Achieved
2	Increase commercialization of technology	No. of technologies commercialized	11	12	Achieved
		Revenue generated from Royalties Rs. (Mn)	2	1.1	Not Achieved
3	Increase customer satisfaction	On-time delivery, quality, cost, complaints etc. %	100	96	Not Achieved
4	Improve financial performance	Revenue Rs. (Mn)	316	335	Achieved
		Expenditure recovery ratio %	56	57	Achieved
		Revenue growth rate %	15	5.2	Not Achieved
Outputs					
1	Increase access to new technology to the industry	No. of projects completed	12	7	Not Achieved
		Revenue generated through TT	5	7.5	Achieved
		No. of project technologies transferred	42	45	Achieved
2	Increase access to a technological solution to the industry	No. of new test services offered to industry	24	35	Achieved
		No. of persons training completely	200	220	Achieved
		No. of consultancies to conduct surveys and monitor environmental pollution	46	216	Achieved
		No. of technological testing[1]/ calibration services conducted	18,000	17,978	Not Achieved
		Income generated through technological services[1] (as a % of total income generated through all sources)	90	100	Achieved

		a. Services to local industry %	95	100	Achieved
		b. Services to overseas industries %	5	0	Not Achieved
		No. of overseas training/consultancies/technical services completed.	20	5	Not Achieved
		No. of ISO 17025 accredited testing/measurement labs/areas*	500	508	Achieved
		No. of ISO 9001:2015 QMS certified research labs/support sections*	5	5	Achieved
		No. of CRMs/RMs developed/ PT disseminated - QAD	10	5	Not Achieved
3	Increased access to new knowledge on technology	No. of officers facilitated for academic qualification (PhD/MPhil)	6	7	Achieved
		No. of officers facilitated for Professional qualification	6	3	Not Achieved
		No. of Research papers published in refereed journals	25	39	Achieved
		No. of scientific Communications	80	113	Achieved
[1] Technological Services = testing/calibration, training and consultancy services					
* include continuing accreditation					
T = Target A = Actual					

CHAPTER 03: GOVERNANCE & REMUNERATION

3.1 Board Matters

The Industrial Technology Institute (ITI) Board of Management is vested with the administration, management and control of affairs of the institute and thus approves the mission, strategy, goals, operating policies and priorities for the Institute and monitors compliance with policies and achievement against objectives.

3.2 Board of Management

The Minister in charge of Science, Technology and Research appoints the Board members for a term of three years. The Board comprises a Chairman, the Director General of the ITI, the Secretary to the Ministry of the Minister in charge of the subject of Finance or his nominee, the Chief Executive of a lending institution funding technology transfer and technology development, and not more than five other members appointed by the Minister from among scientists, technologists and industrial entrepreneurs. All members of the ITI Board other than the Director General are non-executive members. The ITI Board which presently comprises 08 members as follows meets monthly.

as at 8th December 2019

Chairman

Mr. Amal R Dias

Members

Dr. Radhika Samarasekara Director General	Mrs. D Nandanie Samarawickrema
Mr. K G Pradeep Pushpakumara	Mr. Indika de Zoyza
Prof. Ramanee Wijesekera	Mr. M A J L Rathnawardhana
Mr. Suresh Fernando	Dr. Nishantha Nanayakkara

3.3 Management Committee

The Director General with the assistance of the Management Committee manages the organization. The Management Committee comprises 3 Additional Director Generals, 12 Technical Senior Deputy Directors, 3 Administrative Senior Deputy Directors, Chief Engineer and Chief Internal Auditor. The Technical Senior Deputy Directors are appointed on 3-year contracts and once the term is over new/reappointments will be done with panel interviews.

The committee conducts monthly committee meetings chaired by the Director General, who is responsible for the execution of the organization's strategy and reports to the Board of management.

as at 31st December 2019

Director General
Dr. J K R R Samarasekera

Additional Director General, Research & Development
Dr. Ilmi G N Hewajulige

Additional Director General, Technical Services
vacant

Additional Director General, Administration & Operation
Mr. K A S P Kaluarachchi

Research & Development	Technical Services
Dr. Ilmi G N Hewajulige Senior Deputy Director (Covering) Food Technology Section	Dr. H P P S Somasiri Senior Deputy Director Chemical & Microbiological Laboratory
Dr. P Ranasinghe Senior Deputy Director Herbal Technology Section	Dr. W M S Wijesinghe Senior Deputy Director Industrial Metrology Laboratory
Dr. Iresha Kottegoda Senior Deputy Director Materials Technology Section	Dr. Eng. R M Weerasinghe Senior Deputy Director, Electro Technology Laboratory
Eng. N A T D Gunasekara Senior Deputy Director Environmental Technology Section	Eng. A T M Adikari Senior Deputy Director Materials Laboratory
Dr. R M Dharmadasa	Mr. M N A Mubarak

Senior Deputy Director
Bio-Technology Unit

Senior Deputy Director
Residual Analysis Laboratory

Administration & Operation

Ms. Hiranthi Kathriarachchi
Senior Deputy Director
Administration & Human Resources

Eng. A S Arachchi
Chief Engineer
Engineering Services

Mr. LaleenGunaratne
Senior Deputy Director
Finance Department

Ms. Manori Wijemanne
Senior Deputy Director
Marketing & Business Development

Quality Assurance Department
Ms. Sajeevika Perera
Senior Deputy Director

Information Services Centre
Ms. Purnima Jayasinha
Senior Deputy Director

Internal Audit
Chief Internal Auditor
(Vacant)

3.4 Internal Audits

Internal Audit is an independent appraisal function within the ITI, for the review of activities as a service to all levels of Management. It is a control which measures, evaluates and reports upon the effectiveness of internal controls, and financial and non-financial performance as a contribution to the efficient use of resources within the organization. According to the Organizational Structure of the Institute, the Internal Audit functions under the Chairman and directly reports to the Chairman of the Institute.

The annual function of the Internal Audit is based on the Annual Internal Audit Programme with the recommendations/approval of the Audit Committee to be approved by the Board of Management of the Institute, which has to be subsequently approved by the Chief Accounting Officer of the Line Ministry for implementation. In addition to the audit assignments lined up in the Audit Programme, Internal Audit has to carry out special investigations into suspected fraud or any other special assignments entrusted by the Chairman, Board of Management or the Director General of the Institute from time to time.

Further, the Internal Audit Department has to review and evaluate internal control systems for all activities of the entity, review performance at regular intervals for cost-effectiveness and to eliminate wasteful expenditure etc., liaise with external auditors and coordinate in replying to audit reports/audit inquiries of the Auditor General, follow-up action based on the audit findings,

ascertain whether statutes, regulations, rules and circulars are being complied with, review financial statements to ensure compliance with Accounting Standards, review the implementation of recommendations/directives of the Audit Committee and Board of Management.

Three Audit Committees were held in the year 2019 at ITI. The audit Committee made the recommendation to the Board of Management along with the minutes, to facilitate taking corrective measures/remedial action on the matters reported. The Head of the Internal Audit has participated in four Audit & Management Committees held at the Line Ministry in the year under review.

3.5 Remuneration

Salary
The salary for the staff of the organization is based on the Department of Management Services circular. An annual increment is granted after an evaluation by the Head of the Section.

Other Benefits
Executive officers enjoy the financial benefits entitled to public-sector professionals; Professional Allowance, Communication Allowance, Research Allowance for Researchers and Transport Allowance for higher management. The Medical Allowance of Rs. 6000, Performance-based Intensives and the PF 380 for meeting the financial targets are entitled to the entire staff. These perks motivate the employees of ITI. Unutilized medical leave is reimbursed at the end of the year and a percentage of the medical insurance scheme is borne by the Institute.

Chapter 04: Performance Highlights

4.1 Technology Transfers

Two major technology transfers were completed through agreements during the review year. They covered technology transfers for (a)Nutritious Scone, low-added sucrose, ready-to-serve flatbread with exclusive rights to Cargills Quality Confectioneries (Pvt) Ltd.; and (b) Instant Rice, an innovative product developed using locally grown rice grains to Keells Food Products PLC.

Technology transfer of nutritious scone, low-added sucrose, ready-to-serve flatbread

The technology for the Nutritious Scone, a flatbread developed with the objective of formulating a healthy nutritious ready-to-serve product prepared using local ingredients was transferred to Cargills Quality Confectioneries (Pvt) Ltd. The scone is incorporated with high protein mung, soybean flour, corn and wheat flour, milk powder, dried fruits, sucrose, sesame seeds, and other bakery improvers and is a nutritious food, especially for children.

Technology transfer of instant rice and commercialization as EZY RICE

The technology of quick-cooking rice grains/instant rice products was developed by ITI and transferred to Keells Food Products PLC. Locally grown normal rice grains were physically treated in an innovative method to be fully cooked within 5 minutes. The water absorption rate of rice grains has been increased by this technology without adding any chemicals. Different spicy formulations are added to the quick-cooking rice grains and this instant rice was commercialized as EZY RICE product with four flavours. The product was launched by Keells in September 2019 and is now available in supermarkets and retail stores getting popular as an easy way to taste a rice meal.

License agreement on KASPER technology

A license agreement was signed to continue the KASPER technology for the production of Kithul activation and sap production enhancing reagents with APIC Agro Pvt Ltd for three years. An additional license agreement was signed to continue with the Industrial Development Board (IDB) to engage the service of IDB to market the KASPER product through the IDB network as the sole distributor throughout the country.

Non-Disclosure Agreement for technology on Kithul beverage, sweet toddy

A Non-Disclosure Agreement was signed for the technology of alcoholic Kithul beverage, sweet toddy with Agri Deshiya (Pvt) Ltd for the local and international market. Kithul sweet toddy was developed from pure Kithul sap with its authentic taste and its health benefits. This product meets all international quality standards and product profile requirements for high-end export markets and will be a potential functional beverage for the export market.

Memorandum of Understanding for technology transfer of modified coir pith

A Memorandum of Understanding was signed with Taprobane International Ltd. to transfer the technology of modified coir pith base material and its application products.
ITI also continued to provide technologies to build up/promote Micro Enterprises (MEs) and Small and Medium Enterprises (SMEs) engagement and Start Ups, especially in rural industrial promotion through Vidatha Centres and Vidatha Entrepreneurs. During the review year, more than 50technologies were transferred to the above Entrepreneurs. Technologies were also transferred through training to Teachers of the National Institute of Education. Among the technologies transferred such as ready-to-serve drinks, osmotically dehydrated fruits, herbal cosmetics and Home care products including liquid detergents had a high demand. Under the 'Rata Wenuwen Ekata Hitimu project, along with Presidential Secretariat, ITI conducted technology awareness programmes at different locations in the country including Jaffna, Mullaitivu, Batticaloa and Monaragala.

4.2 Research, Development and Innovation

As the government-owned leading national and the largest scientific R&D organization, ITI continues to deliver our core objective of the delivery of technology innovation for the entire nation working in collaboration with the Government, research network, industry, and universities, both in Sri Lanka and globally.
In 2019, sixty-three ongoing R&D projects were designed based on industry and consumer demand and these projects covered the areas of food, health, biotechnology, material, environment, natural resources, metrology, electrotechnology and future industries. ITI successfully addressed technological issues of more than 500 and provided solutions to the industry and society. Many technologies were developed through these projects for commercialization including food products such as horse gram-based products, Kithul-based products, cereal-based products, and medicinal plant-based herbal drugs, natural fragrances, extracts and essential oils using microwave hydro-diffusion and gravity technology which have the potential to be used in cosmetic and food industry, bio-pesticides, purified graphite, graphene, reduced graphene oxide and graphite composites and modified clay with minerals for removal of hardness and other contaminants from water and bee honey quality detection kit.

4.2.1Technology Development

BeeHoney Quality Detection Kit
A simplified, rapidlow-costbee honey quality detection test kit which supportsFarmers to test the quality of bee honey at the fieldlevel was developed. In Sri Lanka, the quality of bee honey depends on various factors such as storage time, temperature, adulteration, and moisture content. An effective and rapid qualitative technique is therefore required for the detection of adulteration, sugar, and hydroxymethylfurfural (HMF) at the field level. The Sri Lanka

Standards Institute mandates that honey for human consumption should meet SLS 464:2016 standards. The current protocol of quality testing performed in laboratories is time-consuming and also Farmers face difficultiesin sample shifting. The developed rapid test kit provides a reliable and cost-effectivequality screening of bee honey in a shorter time and ensures that honey is a product of high quality.

Method development for noise dose testing

Exposure of employees to the high noise levelina production environment in manufacturing industries is not allowed according to WHO guidelines. Therefore, the noise exposure levels have to be monitored in manufacturing companies for industrial noise control and to take safety measures to protect employees. Noise exposure measuring is a time-consuming task.ITI has developed a rapid method to measure the noise dose in industries for occupational noise exposure. The newly developed method was tested and validated by performing measurements in a leading manufacturing company.

Improvement of thermal conductivity of rubber

The performance of solid tires has to be improved with low rolling resistance and high wear resistance to remain in the competitive global market. The rubber has to composite correctly to optimize the abrasion resistance, traction and rolling resistance. A project was initiated to improve the thermal conductivity of rubber using graphite. Composites were prepared using graphite/ rubber and were characterized. A rubber/graphite nano-composite with high thermal conductivity and good mechanical properties at optimized composition was developed. Negotiations with the industry for mechanical property testing are in progress.

Converting natural quartz to solar-grade silicon

Value addition to locally available natural resources such as minerals is unprecedented which will provide a way to earn a vast amount of foreign exchange for the country. The ITI has initiated an advanced research project to convert natural quartz to solar-grade silicon, a value-added product. During the review year, some requirements for the last phase have been completed to start the electrochemical reactions that will enable the extraction of solar-grade silicon.

Production of high-quality graphene-based material

Graphite is a valuable natural resource available in the country, currently being exported at a low price mainly as a raw material or with minor value addition. During the review year, mass-scale synthesis of reduced graphene oxide and graphite oxide from graphite as value-added products was continued using different new methods which were patented.

Development of MI Temperature tunnel control system

In the first phase temperature tunnel development project, the temperature monitoring system was developed, installed and commissioned. The system was monitored and some changes were carried out for smooth functionality. Under phase two of the project, the development of the temperature gradient control system, a separate controlling system was designed to drive two industrial fans to remove heated air inside the tunnel and reduce the temperature.

Development of SMART vending machine

On a request by an engineering company, ITI undertook to upgrade a normal tea and coffee vending machine to a SMART vending machine. The SMART vending machine with the capability of issuing beverages by itself and updating its supplies status online to a remote server. Under this project, the entire semi-automated machine has to be refurbished and redesigned the automatic cup dispensing system and cup filling system with the necessary controlling systems. The system is now under the construction stage. Further work has to be carried out to link the system with the SMART payment gateway and link to the common logistic network.

Biodiversity and technological potential of micro-flora from Selected Sri Lankan dairies

Microbial diversity of dairy environments presents an enormous, largely unexploited genetic and biological pool that could be utilized for the recovery of new strains. Preserving and controlling the microbiological quality of raw milk is a worldwide concern, however, only a few studies have examined the bacterial biodiversity of raw milk and many questions exist as to their role in health and disease. A study was initiated to investigate the microbial diversity of raw milk produced in Sri Lankan dairies.The beneficial microorganisms with functional and industrial potentials isolated and identified from this study have laid the foundation for the establishment of Sri Lanka's first depository of authentic dairy microbial cultures for research and industrial applications within the Food Technology Section of the ITI.

4.2.2 Technology ready for transfer

Home composter to compost biodegradable food waste within a day

A system to manage biodegradable waste at the domestic level will be an effective solution to manage food waste at home. With the objective of developing a system to biodegrade kitchen waste, a home composter has been fabricated. The composter can compost waste within 24 hrs.

The C/N ratio, organic matter content, moisture content and pH of the produced compost are the acceptable level of quality compost. The scaling up of technology has been completed and waiting for commercialization. Fabricating an attractively designed lightweight customer-orientated commercial machine is the next focus of the project.

Nutritious food products from Horse gram

Horse Gram (*Macrotyloma uniflorum*) an underutilized legume has been identified as very nutritious in screening for functional properties of legumes. It is rich in protein, fibre, minerals and resistant starch and also has a low glycemic index and anti-oxidant properties. Six products; horse gram-based granola bar, horse gram-based nutritious instant porridge, horse gram-based nutritious instant powdered drink, horse gram-based all-purpose flour, horse gram-based nutritious drink (RTS) and horse gram-based nutritious flakes mix were developed. The proximate composition and dietary fibre content of six products had been carried out and the products are available for commercialization.

Olu seeds incorporated food products

'Olu' (*Nymphaea pubescens* Willd) is a plant grown in water and the seeds are used traditionally in the preparation of porridge. Seeds are rich in nutrients and high in dietary fiber, which helps the digestive system and lowers cholesterol levels. The two products, a healthy/low-calorie nutrient-rich food bar with puffed olu seeds and olu seed flour incorporated instant string hopper flour mixture had been developed. The nutrition and bioactive properties of the products were evaluated and the technology is available for commercialization.

Anti-inflammatory gel formulation using a bioactive plant extract

The anti-inflammatory gel formulation has been formulated incorporating a bioactive leaf extract of curry leaves (*Murraya koenigi*), a highly valued multi-potential plant having several medicinal properties. The ethanol extract of leaves of *Murraya koenigi*has shown promising *in vitro* anti-inflammatory activities with respect to arachidonate-5-lipoxygenase and xanthine oxidase enzyme inhibitory activities together with pronounced antioxidant activities. The gel formulation also showed acceptable physicochemical and organoleptic properties with high microbial purity. The gel formulation containing ethanol extract of *M. koenigii* may be claimed as an anti-inflammatory/antioxidant skin gel that can be introduced to the healthcare industry.

Plant extracts and essential oils using Microwave Hydro-diffusion and Gravity microwave technology

Microwave Hydro diffusion and Gravity (MHG) is a combination of microwave heating and earth gravity at atmospheric pressure. It is a new green technique for the extraction of flavour, fragrance, pigments, essential oils and aroma compounds, antioxidants and other metabolites with a unique flavour and fragrance properties from medicinal and aromatic plants, fruits, vegetables and mushrooms,

The total extracts prepared through microwave technology include Strawberry fruit extract, Watermelon fruit extract, Tomato extract, Pineapple fruit extract, Ginger extract, Vanillin rich extract from vanilla bean waste, Sweet Jak fruit extract, Anoda fruit extract, Jamson fruit extract, Onion extract, Catechin rich tea extract from fresh tea leaves, Banana fruit extract, Fragrant

extracts from lime, orange and pineapple peels.Essential oils and aromas extracted through microwave technology include Cinnamon bark and leaf oil, Betel leaf oil, Holy Basil leaf oil, Allspices leaf oil, Citrus oils, Ginger oil, Tea aroma from black tea, and Sweet jak fruit fragrance from sweet jak fruit waste.

The extracts enriched with flavors, pigments and fragrances and essential oils obtained using microwave extraction technology were identified as bioactive ingredients having the potential to be incorporated into cosmetic and food products.

Development of Natural Agricultural Pest Control Agents (NAPCA) using Sri Lankan-grown medicinal and aromatic plant extracts for the control of sucking agricultural pests

Sap-sucking insects (plant hoppers, leafhoppers, mealy bugs, aphids, whiteflies, thrips etc.) cause serious damage to crops amounting to 40% to 100% yield loss. The use of conventional agrochemicals for the control of these insects causes several negative impacts such as environmental pollution, disturbance of biological pathways and on human health. Therefore, ITI has developed an environmentally friendly, safe, cost-effective medicinal plant-based green product as an alternative solution for the control of sucking pest species damaging crops. The product is formulated using Sri Lankan medicinal and aromatic plant extracts. This product is suitable for both home gardens and farmers practising commercial organic farming. The product technology is available for transfer to the industry.

4.3 Developments in Technical Services

ITI represents Global Assessment of Laboratories analysing Mercury

As a part of the UN Environment Chemicals and Health Branch project on "Development of a plan for global monitoring of human exposure to an environmental concentration of mercury", a mercury laboratory survey was carried out to collect information on available capacities of laboratories analysing mercury worldwide. The residue Analysis Laboratory of ITI obtained the opportunity for the first time in Sri Lanka to participate in the First Round of the UN Environment Global Assessment of Laboratories analysing Mercury on this global Assessment proficiency testing showed the capacity of quantifying mercury species in biotic and abiotic samples. The results of this pilot assessment will serve as critical background information that will assist the UN Environment Program in understanding the capacity and performance of laboratories around the world that can analyse mercury.

New Testing Services

During the review year, more testing services were initiated expanding the scope of testing services to assist the industry and export market; quantification of extractable chemical dialkyl-dithiocarbamate, thiuram and mercapto-benzothiazole accelerators in natural rubber latex, nitrile gloves using colourimetric/spectrophotometric procedures, pesticide residues analysis in spices using LC-MS-MS, pesticide residues analysis in water using GC-MS-MS, analysis of veterinary

antibiotics, analysis of glyphosate residues in soil, aflatoxins in tea, cereals and spices, HPLC method for quantitative and qualitative analysis of synthetic antioxidants in frying oils.

4. 4 Infrastructure Development

Establishment of Genetically Modified Organism testing facility

The use of Genetically modified organisms (GMOs) is always debatable and most countries have established regulatory frameworks. Therefore, ITI developed a rapid, reliable and efficient method to detect GMOs. ITI is the only government Institute in Sri Lanka which has expertise in the identification of GMOs in food samples, based on real-time PCR. Testing can be performed on plant-based fresh or processed foods.

Identifying the above capabilities, ITI has been selected to establish a reference laboratory for Genetically Modified Organisms / Living Micro-Organisms (GMO/ LMO) with the assistance of the Food and Agriculture Organization (FAO) through the Ministry of Mahaweli Development and Environment.

Establishment of a cell culture laboratory and implement standard operational procedures (SOP)

Cell culture refers to laboratory methods that enable the growth of eukaryotic or prokaryotic cells in physiological conditions and are useful in pathological studies, genetic manipulation and production of vaccines etc. A cell culture laboratory facility was established and cell-based techniques and relevant research activities were designed and optimized according to the given guidelines. Plant extracts and purified fractions were tested for anticancer activity using MTT cell cytotoxicity assay, neutral red and crystal violet cell viability assays, identification of dsDNA by Hoechst staining, and Caspase 3/7 assay. Rhabdomyosarcoma bone cancer and MCF 7 breast cancer cell lines were used for the above assays.

Establishment of a facility for thermal process validation of canned food and low-moisture processed food operations

The canned/bottled products and processed food industry in Sri Lanka is one of the emerging and lucrative industries in terms of production, consumption, export and growth prospects. These products; low acid canned foods, acidified foods and heat-processed low moisture foods have potential health risks due to intrinsic characteristics and therefore, need to be preserved using thermal processing.

To establish a safe food business in the country, process authority with standardized methods and facilities for validation of the control measures according to the US Food & Drug Administration regulatory (FDA) is essential. Estimation of the thermal process time is becoming increasingly complicated due to numerous technology/product/package combinations and surrogates such as microorganisms, particles, or substances that could be used to overcome the above issues.

Since ITI act as process authority for establishing scheduled processes for canned/bottled products and processed food expanded its capacity by establishing a facility to validate the thermal process used to control the target microorganisms in the local food industry.

4.5 Contributions to National Issues

Recommendation on safe fruit ripening technology

At the request of the Presidential Secretariat ITI undertook an R&D project to select the most suitable fruit ripening techniques to be used by fruit vendors. The effect of selected fruit ripening techniques used by the vendors such as smoking, ethephon spray, dip treatments and exposure to ethylene gas liberated from ethaphone were studied in relation to quality change, organoleptic properties and harmful residues on the surface and inside the fruit. Expose to ethylene gas liberated from ethephon was identified and recommended as the safe method for fruit ripening.

Monitoring of Mercury pollution in Puttalam Lagoon

Sediment in lagoons is regularly contaminated because lagoons are the natural sites of contaminants due to extensive human activities and the end reservoir of contaminants transported by rivers and urban runoff. Contaminants such as metals thus end up in sedimentsand accumulate over time up to levels which can become hazardous to the surrounding environment.

The project was initiated for the identification of pollution of Puttalam lagoon water, sediment and fish with Hg and other toxic heavy metals to address the national issue.

4.6 Contributions to National Projects

Upgrading existing food industries/entrepreneurs by introducing technology know-how

The International Labour Organization (ILO) with the Local Empowerment through Economic Development (LEED) project, invited ITI to offer its food technology services for the upgradation of selected micro, small and medium enterprises (MSMEs) in Jaffna, Kilinochchi and Vavuniya. The LEED project is aimed to reduce poverty with sustainable job creation for men and women in conflict-affected areas in the Northern Province of Sri Lanka with the assistance of public and private partnerships. Accordingly, ten SMEs were selected by ILO to access constraints in terms of technology and food safety management which hinders the performance and competitiveness in the open market. A team of ITI officers visited the industries to survey the current process technologies, and food safety management aspects used and had discussions with the entrepreneurs to consolidate their knowledge. ITI will be offered capacity development in training, new product development, product designing, facility layout designing based on food safety guidelines and suitable packaging.

Noise barrier design for outer central expressway

Kadawatha interchange and the road extension to Muthurajawela are to be connected to the Katunayake expressway under the Outer Central Highway (OCH) Section 3 project. ITI was assigned to design noise barriers for the Kadawatha interchange and to identify a 2 km stretch in the Muthurajawela area on OCH. The noise barriers were proposed in the direction of Muthurajawela and for the Central expressway entrance and noise, barrier specifications were developed to select suitable noise barriers.

Design of a sound insulation system for Audiology rooms AYATI Project

The AYATI Centre of the Ragama Hospital is a national centre of excellence to provide multidisciplinary care for children with various disabilities. This initiative of the public-private venture will address a burning national issue prevailing in the country. The Centre will consist of a fully equipped Audiology testing facility with several audiology testing laboratories.

The ITI was invited to carry out the soundproofing design with multiple insulation levels varying from 20dB to 11dB. Based on on-site investigations, ITI achieved the task of designing specified soundproofing levels. Currently, the project is in the implementation stage.

Analysis of food products for traffic light colour coding

Consumption of food with high sugar, salt and fat are one of the main factors for non-communicable diseases in Sri Lanka. With the aim of making consumers aware of the nutritional value, the Government made it mandatory to indicate the sugar, salt and fat content in the food product using traffic light colour codes; red, yellow and green for high, medium and low levels, respectively.ITI issued more than 500 test reports for food products for colour coding at the request of industries.

Evaluation of microbiological quality of sediment from Beira Lake

The Beira lake is situated in the city of Colombo giving a scenic beauty to the city as well as controlling flooding in the area. The water of the lake is polluted due to various activities and a Beira lake restoration project was initiated to clean and develop the lake. The ITI was invited to test the sediments for unfamiliar microbes, which may harm the ecosystems at landfilling sites selected for the dumping of the sediments. The assignment was completed successfully and recommendations were given to Land Reclamation and Development Corporation (LRDC) on the suitability of sediment for landfilling.

4.7Technology for Human welfare and Socio-economic upliftment

Enhancing the nutritional status of people by introducing healthy food products

Jak, pumpkin, banana and fish are food with high nutritional values which faced high postharvest losses during the recent past due to high yields and lack of proper value chain management.

Developing healthy food products/meal plans utilizing these agricultural products would immensely help to sustain the food and nutritional security of the country. Also, functional food ingredients from these could conquer common Non-Communicable Diseases.
The project was initiated to develop quality value-added products with market and supply chain management and to increase awareness of the importance of the nutritional value of jak, pumpkin, banana and fish. The innovative value-added products developed will contribute to full fill the nutritional gaps of the local community while increasing foreign exchange through exports.

Nutritional instant porridge as a supplementary food for the management of diabetic mellitus and cholesterol

Non-communicable diseases such as diabetes and cholesterol are very common in society and proper diet and exercise are the best way to control the disease. A nutritional instant porridge using locally available herbs; *Cassia auriculata* (Ranawara), *Coccinia grandis* (Kowakka), *Murraya koenigii* (Karapincha) and Vernonia *cinerea* (Monarakudumbia) and cereal is being developed. Different ratios of plant powder were evaluated for the antioxidant activity to obtain the highest antioxidant-active mixture and accordingly two porridge mixtures were prepared. The sensory evaluation, antioxidant activities, lipid assay for extracts, heavy metal analysis and micronutrients were carried out.

Anti-Nutritional factors (ANFs) and activity of bioactive proteins in locally grown edible legume varieties

Grain legumes are an excellent source of protein, carbohydrates and fiber and provide many essential vitamins and minerals. The important nutritional data of edible locally grown Sri Lankan legume varieties were studied and data were published. The presence of many anti-nutritional factors; protease inhibitors and bio-active compounds like angiotensin I-converting enzyme (ACE) inhibitors are reported. Protease inhibitors such as trypsin and chymotrypsin have been reported to be capable of reducing the incidence of certain cancers and have potent anti-inflammatory properties. The ACE inhibitor is associated with reducing hypertension. Since data for ANFs and bio-active proteins in local legume varieties are not available, the present study was initiated to develop a systematic database for the above components.
During the review year, anti-amylase activity in cooked seeds and trypsin inhibitory activity in raw and pressure-cooked seeds of 11 legume varieties were evaluated.

Frying conditions on safety and quality aspects of food

Deep-fat frying causes the oxidative and hydrolytic degradation and polymerization of the frying oil leading to numerous byproducts such as free fatty acids, alcohols, cyclic compounds, dimers and polymers. It has been identified some byproducts in used oil have adverse effects on human health. Therefore, it is important to understand the factors affecting the deterioration of frying oil and to monitor the quantity of product of decomposition for ensuring the quality of fried foods.

Few branded frying oils commonly available and used in households and industrial cooking were tested for peroxide value, iodine value, moisture, free fatty acid content, saponification value/unsaponifiable matter, viscosity, Lovibond color, anisidine value, thiobarbituric acid value, fatty acid profile/trans fat based on AOAC, ISO, AOCS standard methods.
The data generated in the research can be utilized as a baseline survey to evaluate the frying oil quality, safety and authentication.

Pesticide residue and aflatoxin contamination in tea sold in the Sri Lankan market

Sri Lanka is the third-largest exporter and the fourth-largest producer of tea in the world. Increased consumer demand for tea has led to the high usage of pesticides to combat tea pests. A survey was conducted by ITI to evaluate the extent of exposure of the consumer to pesticide residues and aflatoxins from the consumption of tea from the local market.

The study revealed despite the presence of pesticide residues and aflatoxin contamination, the low extraction efficacy of the pesticide residues and aflatoxins to the infused tea and the thermal degradation during the infusion contamination lie below the levels detrimental to health, rendering the investigated tea safe for consumption.

Development of health foods and herbal medicine from *Moringa oleifera*

The product development with extracts of different plant parts of *Moringa olifera* to facilitate the establishment of new business enterprises/start-ups resulted in producing a herbal tea and a chewable table. During the reviewed year, formulation optimization for burn cream, laxative mixture, anti-inflammatory ointment, anti-inflammatory spray and wound healing cream incorporated with *Moringa olifera* extract was completed.

Surface sterilization of Spices using non-thermal processes

Spices get contaminated with bacteria and moulds during their long journey from the time of harvesting to the table. Two sanitation methods, ethylene oxide fumigation and irradiation are used to overcome these contaminations. The irradiation process, which uses ionizing energy to destroy bacteria, moulds and other tiny insects, is a better method as the physico-chemical and sensory properties of the spices remain the same even after irradiation. The research was initiated to optimize the Cold Plasma/UV process parameters for destroying microbial contamination on the surface of selected spices. During the review year, vacuum cold plasma treatment under variable voltage using an advanced vacuum cold plasma treater was studied and promising results for black pepper seed and powder were obtained.

Development of a database on nutritional, chemical, molecular and morphological characteristics of selected traditional and widely consume rice varieties in Sri Lanka

There are many traditional and more than 60 new improved rice varieties available in the country. However, only limited studies have been conducted in the country on nutritional,

chemical, molecular and morphological characteristics of traditional and improved rice varieties and a project initiated with the objective to develop a database on nutritional, chemical, molecular and morphological characteristics of selected traditional and widely consuming improved rice varieties of Sri Lanka. During the reviewed year, sixteen rice varieties collected from Rice Research and Development Institute, Batalagoda were analyzed for moisture, total fat contents and fatty acid profiles using the GC-FID method. Under seed chemical parameters six rice varieties were tested for phenol test.

4.8 New Initiatives

Value-added products from selected underutilized fruits

The objective of this study was to prepare healthy foods including juices/drinks from underutilized fruits using advanced technology of pasteurization followed by hot filling to minimize the destruction of bioactive components and nutrients and to retain the quality of the product.

Spray-dried powder-based product development from fruits, vegetable juices and yam pulps

The objective of this study was to develop carrier agent parameters to control stickiness, anti-caking and drying agents to produce free-flowing fruit/vegetable juice powders which have high consumer demand in the market. Further to improve the nutritional properties of selected spray-dried powders by encapsulation techniques and to carry out surface modification of selected spray-dried powders to improve the quality of the final product.

Chemical residues in bovine milk and their public health concern in Sri Lanka

The objective of this study was to establish an internationally accepted analytical test method for qualitative identification and quantitative measurement of veterinary antibiotic, pesticide and mycotoxin residues in bovine milk produced by medium and large-scale farms in Sri Lanka to generate baseline data to profile risks associated with the consumption of locally produced milk.

Development of functional beverage from waste whey

The objective of this study was to develop value-added functional beverages utilizing waste whey from the local dairy bio-processing industry.

Development of plant-based fungicide formulation to control anthracnose disease

The objective of this study was to develop a plant-based fungicide from extracts of *Aloe vera* (Komarika), *Zyzguym cumini* (Ma dan) and *Senna allata* (AthThora) to control anthracnose disease in mango and papaya.

Studies on new varieties of Cinnamon

The objective of this study was to study the chemical, nutritional and functional health benefits of Sri Wijeya and Sri Gemunu, high yielding Cinnamon varieties developed in Sri Lanka and investigate endemic Ceylon cinnamon for its Physico-chemical parameters, bio activity and DNA sequencing.

Heath products from underutilized bioactive medicinal plants

The objective of this study was to develop value-added heath products incorporating underutilized bioactive medicinal plants to address life style diseases in Sri Lanka.

Temperature-resistant lubricant from local graphite

The objective of this study was to fabricate a low-cost graphite-based composite electrode for electrochemical applications (at high-temperature) as a value addition to local minerals

Graphite-based composite electrode for electrochemical applications

Graphite-based electrodes made-up using of organic binders usually fail due to the instability of the polymeric binders against high temperatures. Therefore, the majority of existing graphite-based electrodes are restricted to low-temperature electrochemical applications.

Electrodes stable at High temperatures

The objective of this study was to develop a graphite-clay based composite-electrodes stable at high temperatures without incorporating any additional binders.

Low-cost bio-degradable plastic film for polythene shopping bags

The objective of this study was to develop a process to produce a comparatively low-cost biodegradable plastic film to be used in lunch sheets and shopping bags.

Wastewater treatment plant for the Graphene production process

The objective of this study was to design a production process equipment and wastewater treatment plant for the Graphene production process.

4.9 Collaborations

ITI continued its long-standing collaborations and joint programs with the Commission on Science & Technology for Sustainable Development in the South (COMSATS), the World Association of Industrial and Technological Research Organization (WAITRO), the International Bamboo & Rattan Organization (INBAR), United Nations Industrial Development Organization (UNIDO), Food and Agriculture Organization of the United Nations (FAO), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), International Development Research Centre (IDRC),United Nations Development Programme (UNDP), Ministry of Science and Technology of China, International Centre for Chemical Biological Sciences, University of

Karachi, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the University of Toledo, USA.

India – Sri Lanka collaboration on non-thermal sterilization of food

Collaboration between ITI and the Indian Institute of Chemical Technology in studies of surface sterilization of spices using a non-thermal process was initiated to optimize the Cold Plasma/UV process parameters for effective elimination of the microbial population on the surface of the selected spices and to study the effect of cold plasma/UV treatment on physicochemical, sensory qualities and shelf life of the selected spices.

During the year contaminant microbes, fungi and bacteria were isolated from contaminated selected spices (black pepper, chillies pieces) and were morphologically and genetically identified. UV-C treatments on these microbes showed a reduction of microbial counts while vacuum cold plasma treatment showed promising results for black pepper seed and powder.

Spray drying and product development of fruit and vegetable juices and yam pulp

A project was initiated collaborating with the Institute of Chemical Technology, Mumbai and CFTRI, Mysore to develop carrier agent parameters to control stickiness, anti-caking and drying properties to produce free-flowing fruit/vegetable juice powders which have high demand in the market. The project also works on improving the nutritional properties by encapsulation techniques and quality through surface modification studies of selected spray-dried powders.

Development of red clay granules fora water purification system

A collaboration project was carried out with Coordinating Secretariat for Science, Technology and Innovation (COSTI) and Korean Intellectual Property Office (KIPO), Korea Institute of Public Administration (KIPA) to develop a pretreatment method using red clay-based granules to incorporate into a community level water purification system, a Reverse Osmosis (RO) plant. A performance analysis was carried out and optimized the pretreatment unit to CKDu-affected areas of Sri Lanka.

CHAPTER 5: MONITORING AND MITIGATING POLLUTION

ITI has conducted more than 220technical in various areas of Environmental Management and Technology including air pollution control and mitigation, wastewater treatment, solid and hazardous waste management, ventilation management, water quality studies compliance monitoring & survey including indoor and outdoor air quality and illuminance testing and Environmental Impact Assessments (EIA), Initial Environmental Examinations (IEE) and Risk Assessments during the reviewed year.

5.1 Wastewater treatment

Wastewater and water quality experts in ITI provided a demonstration of the treatment process and consultancy on the implementation process of the wastewater treatment plants. During the review, demonstrations and consultancies were offered to construct and upgrade wastewater treatment plants in industry and hospitals.

A survey-based study with a comprehensive research plan was conducted to determine the major cause and process responsible for the higher COD levels in wastewater in an edible oil and fats manufacturing industry. Based on the analytical results mitigation measures were recommended to maintain the effluent parameters within stipulated standard levels.

The consultancy was provided for the conversion of a chemical treatment process into a biological treatment process for wastewater discharging from vehicle servicing stations.

5.2 Air Pollution Control

Monitoring Ambient Air Quality and Stack Emission

Ambient air quality monitoring was carried out according to recommended methods in the National Environmental (Ambient Air Quality) regulations published in Gazette Extraordinary No 1562/22, dated 15th August 2008, under the provisions of section 32 of the National Environmental Act No 47 of 1980. During the review year, air quality was monitored at the Sri Maha Bodhi area at Anuradhapura, Wilpaththu national wildlife park, Lakvijaya power plant, Norochchalaicoal power plant and Colombo CHEC port city. Baseline surveys on air quality were carried out for the Hambantota petroleum refinery and the Muthurajawela LNG project.

Air Quality Assessment

Non-methane VOC could be emitted into the surrounding environment through the normal operations of the factory. An air quality assessment for Fugitive Non-Methane VOC during normal operations was conducted to assess the emission levels with the CEA standards. Air quality assessment was performed in industries including Kent Display at Kelaniya, ETAL group at Ratmalana, Sanken constructions at Divulapitiya, Access Engineering PLC at Kotadeniyawa, Wilton Metal Box at Piliyandala and Toyota Lanka at Maharagama

Design of Air Pollution Control Systems

ITI is providing consultancy services with state-of-the-art technologies from the designing to the commissioning stage of air pollution control systems to meet regulatory standards required by environmental authorities. Air Pollution Control Systems were designed and technical advisory was given to Vista Creation (Pvt) Ltd after studying VOC measurements and comparing the results with stipulated standards.

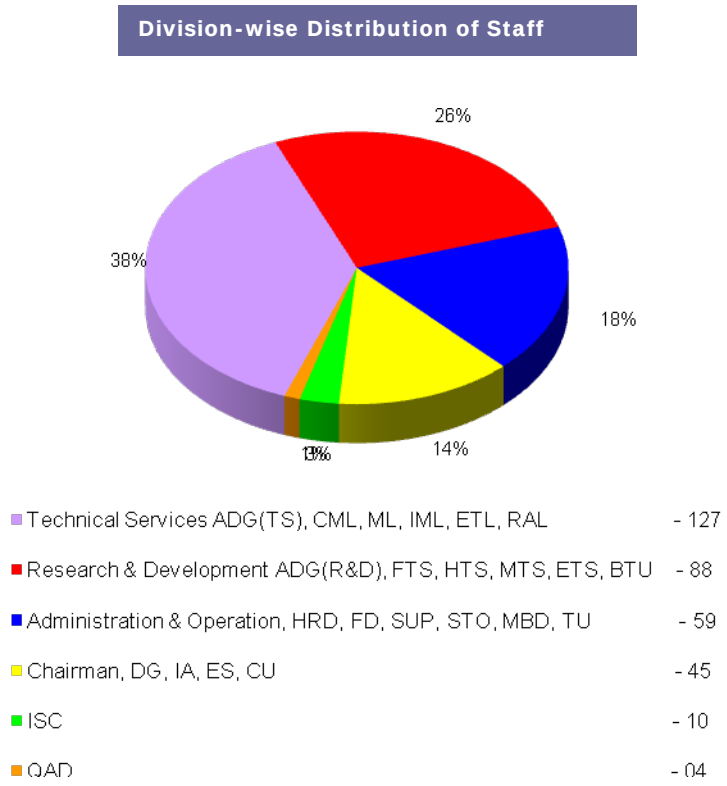
5.3 Noise Mitigation

Noise generated from various sources and activities pollutes the environment and disturbs humanity and remedies have to be taken by the Industries according to environmental regulations. ITI with its expertise and equipment facility offers its services to noise mitigation, especially to industries. During the reviewed year, ITI provided a noise mitigation proposal to a five-star hotel to avoid disturbance to the residence guests after identifying the noise-generating sources. Also, a noise mitigation solution was provided to the industry on their request to reduce the inconvenience to the workers by the noise generated in the factory, to assure occupational health safety.

CHAPTER 6 – SUSTAINABLE DEVELOPMENT

6.1 Employment Statistics

The total permanent staff of the institute was 333. The total permanent staff is comprised of 127 (38%) in Technical Service Division, 88 (26%) in Research and Development Division and 59 (18%) in Administration and Operation Division. Other sections such as the Chairman's office, Director General's Office, Internal Audit Department, Engineering Service Department, Computer Unit, Information Services Centre and Quality Assurance Department comprised 59 (18%) permanent staff. The Chemical & Microbiological Laboratory is the largest section of the Institute with almost 46 (13.8%) of the total staff. Employment statistics are presented in the following pie chart.

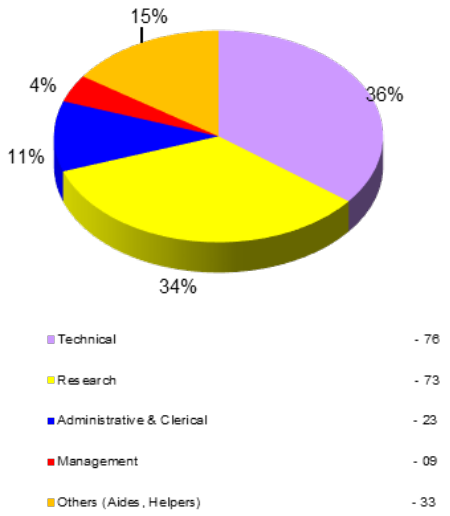


Distribution of Staff

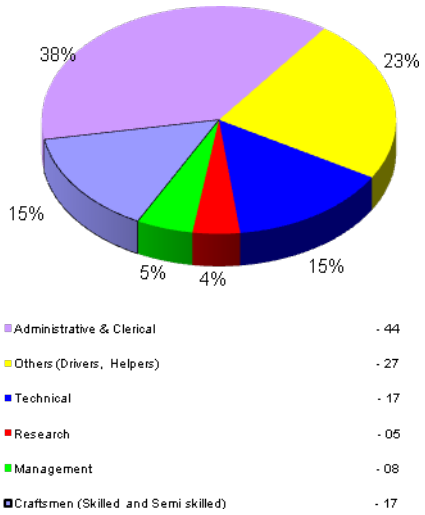
Technical Division comprised 76 Technical Staff, 74 Research Staff, 23 Administrative staff and Management Assistants and 33 other staff and 9 Senior Managers.

Support Divisions comprised 44 Administrative and Management Assistants, 27 other staff, 17Technical Staff, 05 Research Staff, 17 Craftsmen and 06 Senior Managers. The distribution of staff is presented in the following pie charts.

Category-wise distribution of Staff
Technical Divisions



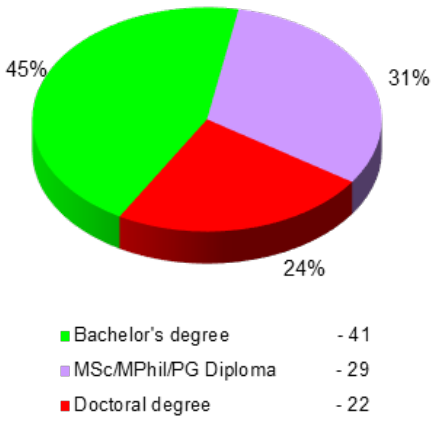
Category-wise distribution of Staff
Support Divisions



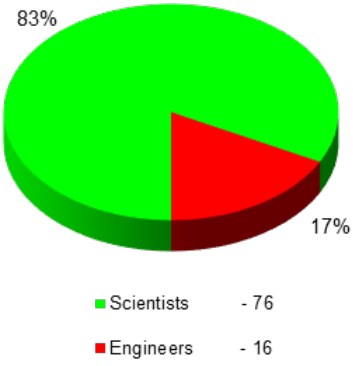
Research staff

The research Staff comprised 76 Scientists and 16 Engineers in the Institute. Among the Research staff, 22are qualified with Ph.Ds. and 29arewith MSc/MPhil/PG Diplomas. The educational background of the Research Staff is presented in the following piecharts.

Research Staff - *Educational Background*



Research Staff - - *Scientists / Engineers*



The expertise of the research staff

The research and Development Division of the Institute comprised five R & D sections, Food Technology, Herbal Technology, Materials Technology, Environment Technology and Biotechnology. The research staff carryout Research and Development and innovations in their

fields of expertise on demand-driven, national-importance high-tech research in multidisciplinary fields through state-of-art R&D laboratories at Modern Research and Development Complex, Malabe and Colombo facility. The research staff of the Research & Development Division provides solution-focused innovations and engages in activities connected with technology transfer, the adaptation of technologies and the development of new technologies for industrial promotion and Entrepreneurship development targeting the Micro, Small, and Medium Entrepreneurs (MSME), Startups, Women Enterprises and Small Businesses. The research staff is involved in providing technology to enhance Export Industry and for import alternatives and domestic value addition. In the Environmental Technology area, our strength lies in industrial pollution control and environmental monitoring including noise and vibration monitoring.

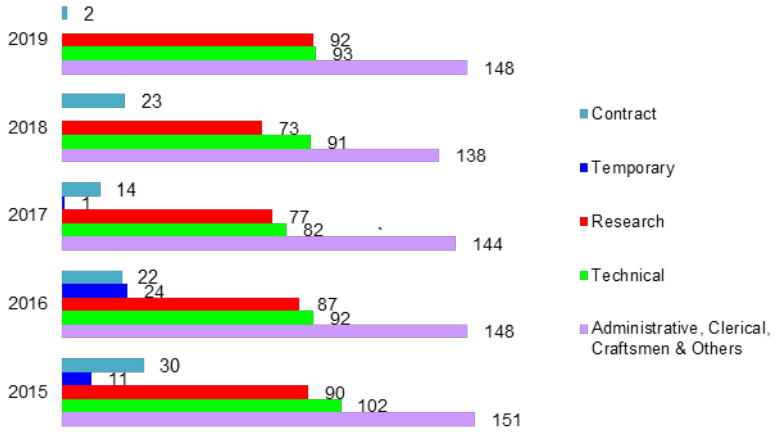
The Technical Services Division of ITI has become the pioneer in laboratory testing and calibration services expanding its scope of accreditation and ensuring the accuracy, precision and international acceptability of its test reports and services. This facility has high-end analytical testing and modern monitoring equipment and air quality and stack monitoring mobile laboratory to support the rapid industrialization of the country. ITI is the authorized testing laboratory for exporters, government organizations and local and international regulatory authorities.

The Research staff also has expertise in Information Management and Quality Management Systems.

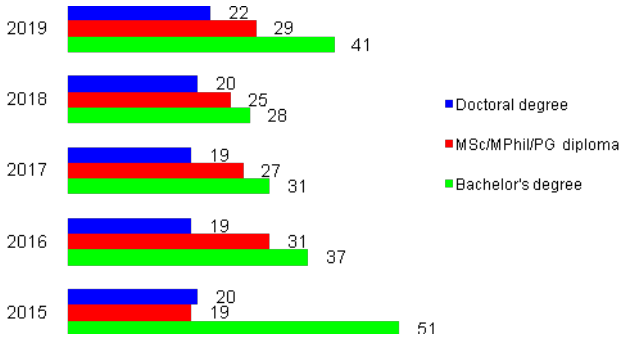
Trend analysis

In the reviewed year ITI recruited 65 permanent staff to its cadre. Even with 439 approved cadres currently, the institute has only 333 permanent staff. During the year the research staff showed an increase of 3% while the technical grade staff showed a slight decrease of 2%. The percentage of administrative, clerical, craftsmen and other positions remained constant.
The staff with PhDs and post-graduates increased by 12% during the period from 2015 to 2019. The ratio of Research Scientists to Research Engineers remained almost the same at 1:4 ratio.

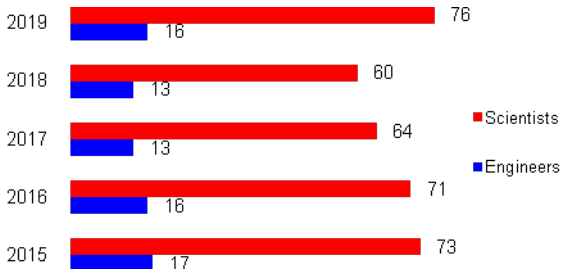
Category wise distribution of Staff 2015 - 2019



Educational Backgroundof Research Staff



Scientist/Engineers ratio 2014-2018



6.2 Quality Assurance

ISO/IEC 17043: 2010 Accreditation for Proficiency Testing

The Industrial Technology Institute (ITI), Sri Lanka, has been granted ISO/IEC 17043:2010 Accreditation for Proficiency Testing, by Sri Lanka Accreditation Board (SLAB), becoming ITI the 1st Sri Lankan Accredited Proficiency Testing Provider. ITI will provide Proficiency Testing to the Sri Lankan laboratories which is a very important element in the National Quality Infrastructure. ITI currently serves a large number of laboratories to prove evidence of their competency through Proficiency Testing programmes in the areas of water microbiology, food microbiology, and chemical and physical testing on cement.

Enhancing the quality infrastructure of ITI

A project in collaboration with Physikalisch-TechnischeBundesanstait (PTB), Germany and other institutes of the National Quality Infrastructure in Sri Lanka (SLS, SLAB) was initiated to improve the quality infrastructure of the country and to enhance the use of quality assurance services based on international good practices in SME located in the Northern region of the Island. This collaboration funds ITI to develop its quality system in obtaining ISO 17043 accreditation to qualify as a Proficiency Testing (PT) provider and ITI was granted the accreditation becoming the 1st Sri Lankan PT Provider.

ITI's existing laboratory quality management system ISO/IEC 17025:2005 was converted to ISO/IEC 17025:2017 during the reviewed year.

Accreditation for parameters

With the scope of expanding its analytical services, laboratory accreditation was expanded in microbiological analysis while applications were submitted for 115 parameters in pesticides, beverages, cereals and water and wastewater to Sri Lanka Accreditation Board.

6.3 Information Services

Information Services Centre continued to function in its role as an information provider to researchers, technologists and industrialists by developing its resources and disseminating information with the view to fostering scientific & technical development. The Centre is open freely for the benefit of the public.

The information material relevant to S & T was collected through a wide array of sources and during the review year 10 books were purchased and 155 books were received as donations. At requests from Technical Services Division, 78 standards were purchased from Sri Lanka Standards Institute. 330 research articles related to ongoing projects at ITI and articles relevant to current S & T trends were added to the collections. For the 13thconsecutive year, four sectors of Science Direct were subscribed to Chemistry, Materials, Agriculture and Biological Sciences and Pharmacology, Toxicology, and Pharmaceutical Sciences.

ISC was entrusted to coordinate the initiation of the National Vocational Qualification (NVQ) course, a certificate course for laboratory assistants. ISC also continued to carry out content management of the ITI website and the internal website, i.net.

6.4 Awards

Dr. Ilmi Hewajulige, Ms. Ramya Pitipanaarachchi, Ms. Sachini Jayawardena and Ms. Hasini Mahanama won the Gold Medal in the commercialized product category for the *Aloe vera* ready-to-serve beverage formulation at the awards ceremony organized by the National Inventors Commission.

Dr. R.M. Dharmadasa won the Gold Medal for the commercialized category under the Technical Field of Agriculture for the Development MASAK P, a bio-pesticide for controlling Mealybugs in crops at the award ceremony organized by the Sri Lanka Inventors Commission.

Dr. Ilmi Hewajulige, Dr. Shanthi Wilson, Mr. Nisala Gunasekara, Ms. Yoga Milani, Ms. Shiranthi Perera, Mr. Dineth Samarawickrama, Mr. Anura Sooriya Arachchi and Ms. Manori Wijemanna won the 1st prize for excellence in Agricultural Research, 2019 in non-plantation crops categoryin consideration of the research on “Enhancing preservation of fruits using nanotechnology” organized by the Council for Agricultural Research Policy.

Dr. Kaushalya Abeysekera and Dr. Sirimal Premakumara won the 1st Prize for Excellence in Agricultural Research 2019in the plantation sector in consideration of the research on “Bioactivity of Ceylon Cinnamon” organized by the Council for Agricultural Research Policy.

Dr. R. M. Dharmadasa and Dr. C. H. Manoratne received the certificate of commendation in the non-plantation crops category for the research on “Formation of a para-pheromone from local varieties of *Ocimum sanctum* L. for the control of local fruit and melon flies” organized by theCouncil for Agricultural Research Policy.

Dr Radhika Samarasekera received the SUSRED (Support Scheme for Supervision of Research Degrees) Award organized by the National Science Foundation of Sri Lanka.

6.5 Capacity Building

Postgraduate Studies

Ms. H D S M Perera was awarded a PhD degree for her study on Chemical characterization and *in vitro* bioactivity studies of constituents of *Osbeckia octandra* DC. and *Dillenia retusa.* Thumb. under the supervision of Dr Radhika Samarasekera, Prof Shiroma Handunhetti and Dr Jagath Weerasena from the University of Colombo.

W R D Weerasooriya obtained a MSc degree in Analytical Chemistry from the University of Colombo.

Ms. S M R Weerasekera obtained a MSc degree in Analytical Chemistry from the University of Peradeniya.

6.6 Overseas Training Programmes

Dr. H. P. P. S. Somasiri participated in a programme on "Application of Raman Spectroscopy", Metrohm Application Laboratory, Sharjah, UAE (12th - 17th January).

Ms. M. R. P. Dassanayake participated in a Training on "Ion chromatography, titration and Spectroscopy (Raman)", Metrohm (13th – 15th January).

Eng N. A. T. D. D. Gunasekara participated in a "Training programme on "Energy Auditing", Lahore Campus of COMSATS University, Islamabad, Pakistan, (21st January - 02nd February).

Dr R Samarasekera participated in the "COMSATS 22nd Meeting of Coordinating Council", organized by COMSATS and hosted by Tianjin Institute of Industrial Biotechnology and Chinese Academy of Sciences, Tianjin, China (16th- 18th April 2019).

Dr R Samarasekera participated in a "WAITRO Senior Management Programme in Research Technology Organization" organized by WAITRO and Standard and Industrial Research Institute of Malaysia (SIRIM) at Concorde Hotel, Shah Alam, Selangor, Malaysia (29th April -3rd May).

Dr. Theja Herath participated in a "WAITRO-SIRIM Capacity Building Programme 2019-Workshop on Commercialization of Research and Innovations" organized by Standard and Industrial Research Institute of Malaysia (SIRIM) at Concorde Hotel, Shah Alam, Selangor, Malaysia (29th April -3rd May).

Mr. C.H. Manoratne participated in a WAITRO capacity building programme on "Solar thermal technology for industrial application", organized by Standard and Industrial Research Institute of Malaysia (SIRIM) at Concorde Hotel, Shah Alam, Selangor, Malaysia (29th April -3rd May).

Dr. C. Wijayasiriwardana participated in a programme on "Women empowerment in personal care product development", organized by Standard and Industrial Research Institute of Malaysia (SIRIM) at Concorde Hotel, Shah Alam, Selangor, Malaysia (29th April -3rd May).

Dr. H. P. P. S. Somasiri participated in a "Practical Training of Assessment of Proficiency Testing Providers (PTP) as per ISO 17043", NABL India (29th – 30th May).

Dr. Ilmi Hewajulige Participated in a "Multicounty observational study mission on Good Agricultural Practices (GAP) and Advance postharvest handling technologies", in Tokyo and Fukushima, Japan (10^{th} -14^{th} June).

Dr. P. Ranasinghe participated in the 2019 South and Southeast Asia technology transfer matchmaking conference and China-south Asia technology transfer sub-center working seminar series activities, China-South Asia Technology Transfer Center (CSTTC) (11^{th} – 20^{th} June).

Eng (Ms) W.R. L. Wijesekara participated in "18^{th} CTWF International Symposium and Training Program on Aerosol and Climate Change: Atmospheric Aerosol Observation, Modeling and Interactions", Organized by CAS-TWAS Center of Excellence for Climate and Environment Sciences, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China, (15^{th} - 21^{st} July).

Eng (Ms) D. M. H. S. Dissanayake participated in the Tech camp on "Clean Air for South Asia", Kathmandu, (29^{th} – 31^{st} July).

Dr R Samarasekera participated in the "4^{th} Meeting of the Indo-Sri Lanka Joint Committee on Science & Technology" organized by the Department of Science & Technology, New Delhi, India, (13^{th} -14^{th} August 2019).

Dr. H. P. P. S. Somasiri participated in a "Bruker Optics Training Courses 2019- FT-IR Training", at Bruker Optics GmBH, Ettilingen, Germany (1^{st} – 14^{th} October).

Eng (Ms) D. M. H. S. Dissanayake participated as the Sri Lankan Expert for "Asia-Pacific Workshop on Regional Workshop on the Reduction of Mercury Emission from Coal Combustion in conjunction with UN Environment's Global Mercury Partnership Meeting on Coal Combustion", Hanoi, Viet Nam, (30^{th} October - 01^{st} November).

Ms. Upeka Rajawardane participated in the 5^{th} COMSATS-ISESCO-INIT International Conference on 'Agriculture, Biotechnology and Food Security: Role of ICTs' hosted by The Young Affiliates Network (TYAN), to give a lecture on "Beneficial Microorganisms from Sri Lankan Dairies as Candidates in Nutrition, Healthcare and Biochemical Industries", Monastir, Tunisia (4^{th} - 6^{th} November).

Mr. Tharaka Gunawardane participated in an "International training program on "Science, technology and innovation diplomacy", Pretoria, South Africa (27^{th} November -7^{th} December).

Dr. Ilmi Hewajulige and Dr. W M S Wijesinghe Participated in a "Workshop on Sustainability, SDGs and Global Challenges", Gebze, Turkey (3^{rd} - 5^{th} December).

6.6 Wellbeing of ITI

Kukuleganga Training Programme

An outbound training program was held at Laya Leisure, Kukuleganga on 31st May and 1st June 2019. The programme was organized to streamline ITI activities and to improve the capabilities of ITI employees for better output. Around 60 employees participated in the training programme which was conducted by Mr Peter de Almeida, CEO and Managing Director of n*able Pvt Ltd, a leading technology company that helps businesses improve through innovation.

Welfare and Recreation Society

The activities for the year started with organizing the tea party after the pirith ceremony on the 1st of January 2019. During the reviewed year the welfare club initiate a fund, named Diri Daru Sarana to assist the children of employees who lost their lives or resigned from the job due to accidents or illness while in service. The fund will assist the entire education of the children. The fund was initiated to assist the children of an officer who lost his life due to a road accident. A stage drama, Lowrensoge manamali was organized and staged at Apegama to raise funds for the surgery of an employee who met with an accident. Discarded unwanted items from ITI inventories were sold and the income was taken to the welfare and recreation club fund.

Buddhist Society

The year started withpirith ceremony on 1st January in Colombo and 2nd January at Malabe premises.The annual Vesak lantern competition was held on Colombo Premises. A dharma sermon by Venerable Mawarale Bhaddiya thero was organized at Malabe with Food Technology Section and a sermon by Venerable Kukulpane Suddassi thero was heldat Colombo because of Poson poya.The Society patronizedthe Vas season at Kukulegama Sri Sumana Len Viharaya at Kalawana and looked for the needs of the priests and the temple during the vas season. Around 50 members of the Buddhist society participated in the Katina Pinkama held in October.

The society continued to give prizes to the students who performed well on the grade 5 scholarship exam and who received university entrance from the GCE A/L examination.

Seva Vanitha Unit

Seva Vanitha Unit of the Institute continued to provide services to the employees. Five projects were carried out during the year for the benefit of the members.

- Distribution of schoolbooks for children of deserving employees.
- Sale of Oshani Linen at a discounted rate for employees.
- Organized a health camp through Hemas hospital for staff
- Promotional sales during Avurudu and Christmas.
- Increased membership with new members

The Annual General Meeting 2019 was held on 18th February 2020 at ITI Main Auditorium. Dr. Menuka Arawwawala was appointed as the Vice President. Ms Thushari Deheragoda was appointed as the Secretary.

6.7 Promotional Events

Intending to take the new knowledge in Science, Technology and innovation to the general public, and creating a Business to Public (B2P) platform to make the innovators scattered around the country to meet the investors, the Ministry of Science Technology and Research organized a National Exposition on Science Technology and Innovation, named '*ShilpaSena* -Sri Lanka Technological Revolution'.

The 12 institutions under the purview of the Ministry championed each of the 12 Theme Zones and the Vidatha network will become the one-stop shop for technology and knowledge transfer and tech business spinoffs.

Industrial Technology Institute was given the total responsibility of the "BIOTECHNOLOGY" zone and ITI showcased most of the research carried out on Videos, Charts and Models. Many industry partners, university students and staff members of the Biotechnology unit took part in this event. This event was held in Colombo and Polonnaruwa and was able to disseminate information about the application of Biotechnology to the general public.

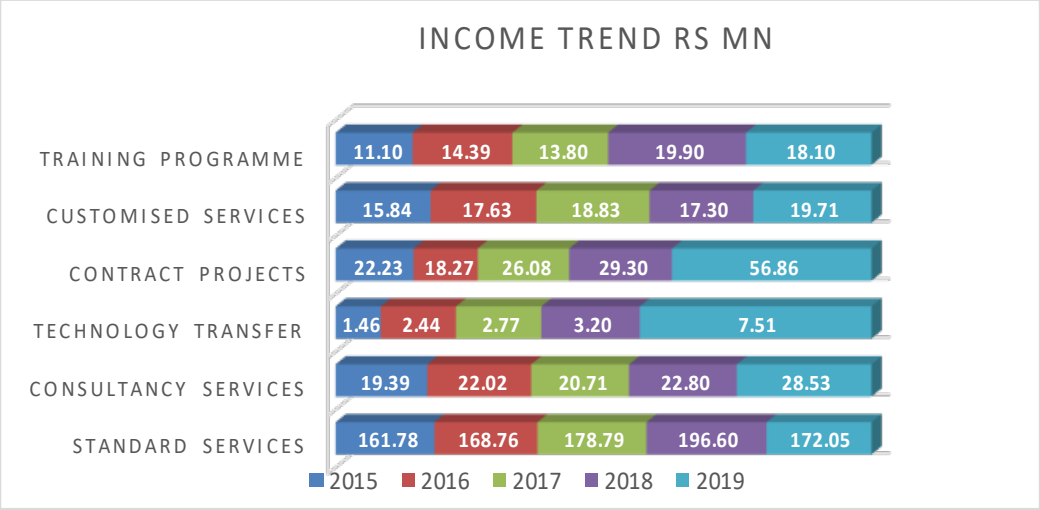
CHAPTER 07 – FINANCIAL PERFORMANCE

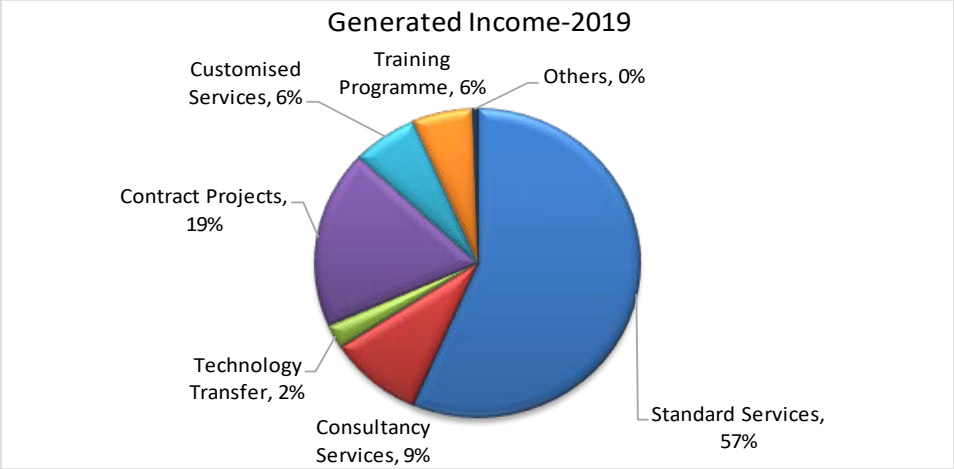
Financial Report

Income

Institute's income from business activities showed a remarkable increase of 14% from the last five years of the average income of Rs 266 Mn to Rs 304 Mn in 2019 and recorded an increase of 5% in 2019.

Testing & calibration services continued to be the leading income generation activity of the institute by contributing a share of 63% (Rs 191.2 Mn) compared to a decrease of Rs 22 Mn from 2018 due Good Friday attack on April 2019 which directly affected the export market in the country. Consultancy Services, Contract Projects and Technology transfer income have been increased by Rs 5.6 Mn Rs 27.56 Mn and Rs 4.3 Mn, respectively. Training income has been slightly dropped during the year.



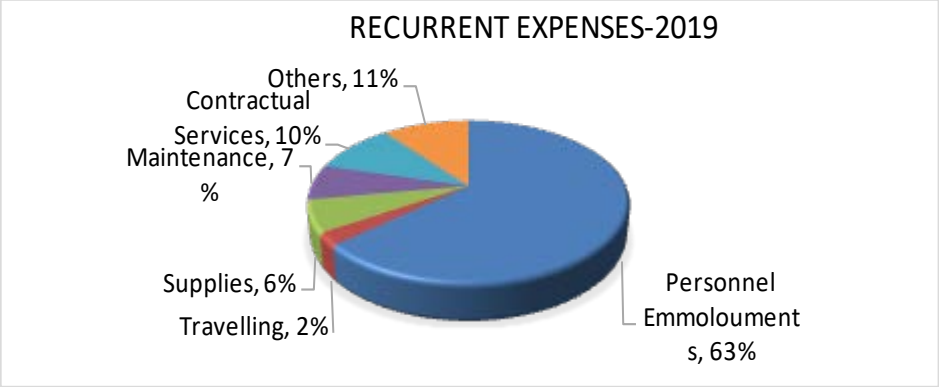


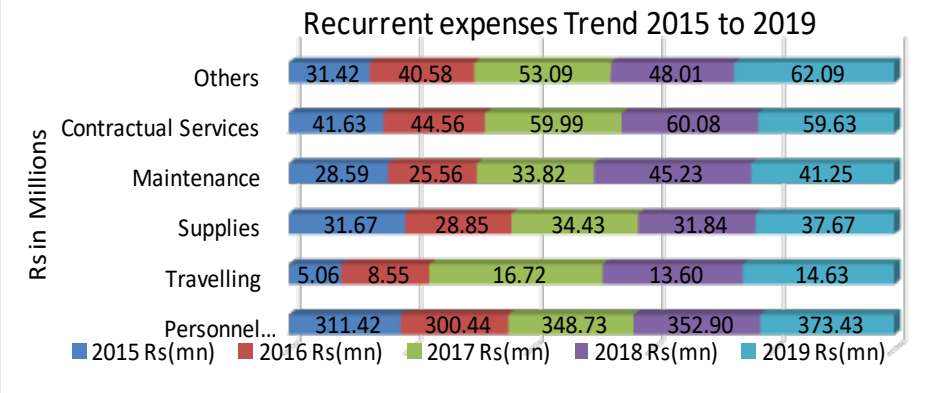
Expenditure-Recurrent

ITI could able to maintain the operational expenses with a marginal increase of Rs 37 Mn (7%) and it has been recorded as Rs 588.7 Mn in 2019whereas Rs 551.7 Mn in 2018.

The total expenses with depreciation and amortization of Rs 813 Mn compared to Rs 744 Mn in the previous year. This represents a 9.3% increase compared to the 2018 total expenses.

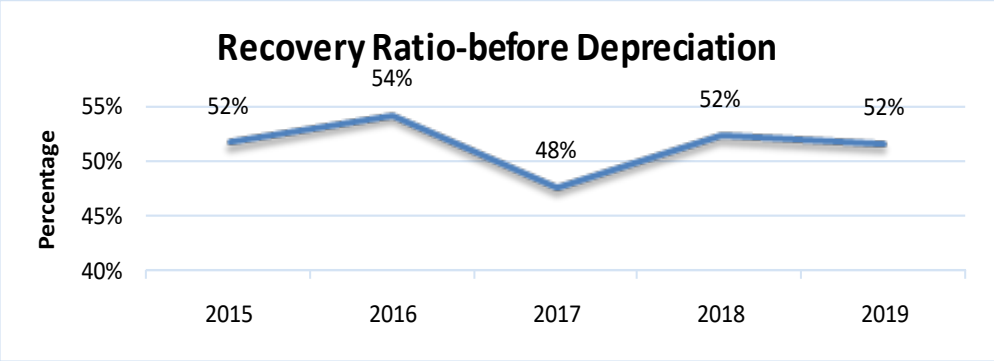
The performance-based incentives were paid to the staff for the 16th consecutive year as the institute achieved overall income targets set for the year.





Recovery Ratio

The ITI Income over expenses recovery ratio has been recorded as 51.5% which slightly decreased from the previous year's 52.4%.



Grants Received

A capital grant received in 2019 is Rs 121 Mn where the allocation was Rs 225 Mn to utilize purchasing high-end technical equipment to generate more income through using technical and R&D services. During the year ITI was able to complete the procurement process of Rs 207 Mn (92%) out of Rs 225 Mn which was the highest percentage in history.

ITI received Rs 250 Mn in 2019 (Rs 240 Mn in 2018) as a recurrent grant to compensate Personnel Emoluments recurrent expenses of the Institute.

Chapter 8 – Research Outputs

8.1 4th Biennial Research Symposium

The 4th Biennial Research Symposium of ITI was held at Modern Research and Development Complex (MRDC), Malabe from 17th – 18th December 2019 under the theme "Excellence in Science, Technology and Innovation for Sustainable Development". The event was ceremonially inaugurated by the Chief Guest, Honourable Minister of Higher Education, Technology and Innovation Mr. Bandula Gunawardena on 18th December and Honourable State Minister of Technology and Innovation Mr. Thilanga Sumathipala graced the occasion as the Guest of Honour.

Dr S M Junaid Zaidi, Executive Director of COMSATS graced the occasion as a Special Guest while Mr Farhan Ansari, Senior Assistant Director, Programmes participated as a COMSATs delegation member. Prof R U Halwathura Professor in Civil Engineering at the University of Moratuwa, Sri Lanka delivered the keynote address.

The outstanding performance of ITI scientists and engineers has appreciated during the awards ceremony and more than 28 researchers received awards and certificates.The Director General, ITI Dr Radhika Samarasekera welcomed the gathering and the Organizing Chair, Dr Ilmi Hewajulige delivered the vote of thanks. Technical Sessions were held at MRDC seminar rooms on the 17th December afternoon and 18thof December.

8.2 Publications in referred Journals

1. Abeysekera, W.P.K.M., Arachchige, S.P.G., Abeysekera, W.K.S.M., Ratnasooriya, W.D., Medawatta, H.M.U.I. (2019). Antioxidant and glycemic regulatory properties potential of different maturity stages of the leaf of Ceylon cinnamon (*Cinnamomumzeylanicum* Blume) in vitro. *Evidence-Based Complementary and Alternative Medicine* : 1-10.

2. Champa, W.A.H., Gunasekera, N., Wijeratnam, S. W., Hewajulige, I. G. N., Weerasinghe, W.M.S.S.K., Kumara, B.A.M.S. (2019). Postharvest treatment of Cinnamon (*Cinnamomumzeylanicum*) bark oil and hexanal incorporated bio-wax maintains quality and extends the marketable life of lime (*Citrus aurantifolia swingle*). *International Journal of Fruit Science* : 3-12.

3. Chandrasiri, G.U., Mubarak, M.N.A., Mahatantila, K., Mahanama, K.R.R. (2019). Single laboratory validation of determination of 13 trace elements in rice by ICP-MS with an overview of challenges encountered. *American Journal of Analytical Chemistry* 10: 367-376.

4. Dahanayake, J.M., Perera, P.K., Galappatty, P.G., Fernando, P., Arawwawala, M (2019). Pharmacognostical, Physico-chemical and phytochemical evaluation for standardization of three *Piper* species used in ayurvedic medicine. *Asian Journal of Pharmacognosy* 3 (2): 18 – 28.

5. Dahanayake, J.M., Perera, P.K., Galappatty, P.G., Perera, H.D.S.M., Arawwawala, L.D.A.M. (2019). Comparative phytochemical analysis and antioxidant activities of tamalakyadi decoction with its modified dosage forms. *Evidence-Based Complementary and Alternative Medicine.*

6. De Silva, D.S.N., Bandara, L.L., Samanmali, B.L.C., Ratnasooriya, W.D., Pathirana, R.N., Abeysekara, W.P.K. (2019). Investigation of sun screening and antioxidant activity of *M. indica ver* "*Willard*". *Journal of Pharmacognosy and Phytochemistry* 8 (4): 1130-1133.

7. Divisekera, D.M.W.D., Samarasekera, J.K.R.R., Hettiarachchi, C., Gooneratne, J., Choudhary, M. I., Gopalakrishnan, S., Wahab, A. (2019). Lactic acid bacteria isolated from fermented flour of finger millet, its probiotic attributes and bioactive properties. *Annals of Microbiology* 69:79-92.

8. Dilruni, A.D.G.L., Abeysinghe, D.C., Dharmadasa, R.M., Prathapasinghe, G.A. (2019). Proximate and mineral compositions, bioactive compounds and total antioxidant capacity of different parts of *Moringa oleifera* Lam. *EC Nutrition* 14 (10): 922-927.

9. Divisekera, D.M.W.D., Samarasekera, J.K.R.R., Hettiarachchi, C., Gooneratne, J., Choudhary, M. I., Gopalakrishnan, S. (2019). Isolation and identification of lactic acid bacteria with probiotic potential from fermented flour of selected banana varieties grown in Sri Lanka. *Journal of National Science Foundation Sri Lanka* 47 (1): 3-16.

10. Dharmadasa, R.M., Lintha, A., Wijesekara, R.G.S., Abeysinhe, D.C., Ranasinghe, P. (2019). Use of *Halosarcia indica* (Willd.) Paul G. Wilson extracts for low salted dried fish production. *World Journal of Agricultural Research* 7 (4):132-136.

11. Gunathilaka, T.L., Samarakoon, K.W., Ranasinghe, P., Peiris, L.D.C. (2019). *In-Vitro* Antioxidant, hypoglycemic activity and identification of bioactive compounds in phenol–rich extract from the marine Red Algae *Gracilaria edulis* (Gmelin) Silva.*Molecules* 24: 1-16.

12. Gunawardena, H., Silva, R., Ranasinghe, P. (2019). Human plasma dynamically quenches the fluorescein at the initial point of oxygen radical absorption capacity (ORAC) assay. *BMC Research Notes* 12 (1): 809.

13. Gunawardena, H.P., Silva, R., Sivakanesan, R., Ranasinghe, P., Katulanda, P. (2019). Poor glycaemic control is associated with increased lipid peroxidation and glutathione peroxidase activity in type 2 diabetes patients. *Oxidative Medicine and Cellular Longevity*: 1–10.

14. Herath, H.M.T., Samaranayake, M.D.W. (2019). A study on the acceptability of fortification of rice flour in Sri Lankan practice a pilot scale study. *Research Journal of Chemical Sciences* 9 (4):1-10. 2019.

15. Hewageegana, H.G.S.P., Ariyawansa, H.A.S., Arawwawala, L.D.A.M. (2019). Clinical study on the efficacy of Vipadikahara Grita Taila on the treatment of Vipadika skin disease. *Journal of Dermatology and Dermatopathology* 1 (1): 102.

16. Jayawardana, S.A.S., Samarasekera, J.K.R. R., Hettiarachchi, G.H.C.M., Gooneratne, J., Datta Mazumdar, S., Banerjee, R. (2019). Dietary fiber components, starch fractions and mineral composition of finger millet varieties of Sri Lanka. *Journal of Food Composition and Analysis* 82: 103249.

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18. Karunadasa, K.S.P., Manoratne, C.H., Pitawala, H.M.T.G.A., Rajapakse, R.M.G. (2019). Thermal decomposition of calcium carbonate (calcite polymorph) as examined by in-situ high-temperature X-ray powder diffraction. *J. Phys. Chem. Solids* 134:21-28.

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20. Karunarathne, Y.A.U.D., Arawwawala, L.D.A.M., Amarasinghe A.P.G., Weerasooriya, T.R., Samarasinghe, U.K.A. (2019). Physico-chemical, phytochemical and nutritional profiles of root powder of *Asparagus recemosus* (Willd) of Sri Lankan origin. *Asian Journal of Pharmacognosy* 3 (3): 29-35.

21. Kulathunga, R.D.H., Gunarathna, E.D.T.P., Jayawardhana, N.D.N., De Silava, R.H.S.K., Ranasinghe, R.L.D.S., Faisulhaq, M.H., Samarasinghe, U.K.A., Arawwawala, L.D.A.M. (2019). Phytochemical and Physico-chemical comparison: Sri Lankan and Indian varieties of *Hemidesmus indicus* R. Br Roots. *International Journal of Ayurveda* 4 (5): 1-4.

22. Kulathunga, R.D.H., Gunarathna, E.D.T.P., Jayawardhana, N.D.N., De Silva, R.H.S.K., Ranasinghe, R.L.D.S., Faisulhaq, M.H., Samarasinghe, U.K.A., Arawwawala, L.D.A.M. (2019). A comparative analytical study on two types of Sharibadi decoctions: An Ayurveda preparation. *Journal of Complementary and Alternative Medical Research* 8 (3):1-8.

23. Kulathunga, R.D.H., Gunarathna, E.D.T.P., Jayawardhana, N.D.N., De Silava R.H.S.K., Ranasinghe, R.L.D.S., Faisulhaq, M.H., Fernando, P., Arawwawala, L.D.A.M. (2019). Standardization of Thoravature Taila: a Sri Lankan traditional formulationused in chronic kidney disease. *Journal of Ayurvedic and Herbal Medicine* 5 (3): 100-102.

24. Kulatunga, W.M.S.S.K., Arawwawala, L.D.A.M. (2019). Phytochemical analysis of anti-venom traditional herbal preparation for snake-bite. *South Asian Research Journal of Natural Products* 2 (4):1-6.

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27. Nupearachchi, C.N., Perera, V.P.S., Samarasinghe, K.A., Arawwawala, L.D.A.M. (2019). Secondary metabolic analysis of the pith of selected local banana varieties as constituents in bio-batteries. *Research Journal of Chemical Sciences* 9 (4): 46 -49.

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8.3 Communications International

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3. Gamage, D.G.N.D., Abeysinghe, D.C., Wijesekara, R.G.S., Prathapasinghe, G.A., Dharmadasa, R.M., Someya, T. (2019). Identifying the best growing requirements of Ocimum tenuiflorum L. (Heen maduruthala) to produce quality raw materials: cosmetic potential medicinal plant. *6th International Conference on Agriculture (AGRICO 2019), Bangkok, Thailand. 22th-23th August 2019*: pp.29.

4. Gamage, D.G.N.D., Abeysinghe, D.C., Wijesekara, R.G.S., Prathapasinghe, G.A., Dharmadasa, R.M., Someya, T. (2019). Identifying the best growing requirements of Justicia adhatoda L. to produce quality raw materials: cosmetic potential medicinal plant. *International Conference on Agriculture and food security (AGROFOOD 2019), Colombo, Sri Lanka*. 8th-9th August 2019: pp.9.

5. Gamage, D.G.N.D., Abeysinghe, D.C., Wijesekara, R.G.S., Prathapasinghe, G.A., Dharmadasa, R.M., Someya, T. (2019). Investigating the best growing requirements of Cenna asaitica (L.) Urb. (Giant morphotype) for enhancing the yield to fulfil the existing demand herbal cosmetic industry of Sri Lanka. *In Asian international conference on Multidisciplinary Research (2019 AIMR'19), Colombo, Sri Lanka*. 10th May 2019:28.

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7. Rathnayake, D.T., Tharangani, L.W.N., Karunadasa, K.S.P., Manoratne, C.H. (2019). Mechanically compressed graphite-clay composite electrode for high-temperature applications. *International research conference Uva Wellassa University (IRCUWU):* 456.

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8.4 Books, Book Chapters and Guidelines

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2. Hewajulige, I. G. N., Wijeratnam, R. S. W., Hutchinson M. J. (2019). Papaya. *In* Postharvest Biology and Nano-Technology (Ed.). Paliyath, G., Subramanian, J., Loong-Tak, L., Handa, A., Mattoo, A. USA:Wiley Blackwell.

3. Divisekera, D. M. W. D., Samarasekera, J. K. R. R., Hettiarachchi, C., Gooneratne, J. Gopalakrishnan, S. (2019). Sri Lankan finger Millet (Elucinecoracana) Variety 'Raavana' as Potential Probiotic source. *In* Evolving Industrial Biotechnology in Developing Countries (Ed.). Ogbadu, L., Ogbadu, G., Mahamadi, C. New Delhi:NAM S&T Centre publications.

8.5 Patents

1. Jayarathna, I.P.L., Jayawardane, J.T.S.T., Arachchi,R.C.W., Hettiarachchi,H.A.M.I.T., Kottegoda, I.R.M.Regeneration method of red-clay filter for removal of fluoride from water. Patent No:18302

8.6 Patents Applied

1. Kottegoda, Iresha and Wijesekera, Ramya. Catalyst-supported solar treatment fordecontamination of agrochemical-contaminated wastewater. Patent Application No: 20264.

2. Kottegoda,I.R.M., De Silva, R.C.L. An Apparatus and a method of preparation of graphene and reduced graphene oxide on a mass scale in a few minutes. Patent Application No: 20447.

3. Jayawardena, S. A. S., Samarasekara, J. K. R.R., Hetiarachchi G. H. C. M. and Goonaratne, J. Antioxidants and dietary fibers rich finger millet flour incorporated lactovegetarian set yoghurt without the addition of gelatine as a gelling agent and the processing technology for preparing the same (Application No: 20587)

4. Lakshan, S.A.T., Jayanath, N.Y., Abeysekera, W.P.K.M., Abeysekera, W.K.S.M., Arampath, P.C. Optimized blue Katabolic flower (*Clitoria ternatea* L.) extract incorporated sugar-free herbal beverage. Patent Application No. 20607.

5. Kottegoda,I.R.M., Nayanajith, L.D.C., De Silva, R.C.L., Milani, M.D.Y., Samarawickrama, D.S. Heat resistant rubber/graphite composite and preparation method thereof. Patent Application No: 20614.

6. Kottegoda,I.R.M. and Arachchi,R.C.W. Method of clay modification and optimized mineral composition for removal of hardness and other contaminants from water. Patent Application No.20669

7. Karunadasa,Kohobhange S. P.and Manoratne, C.H.A stable composite electrode based on graphite and clay for high-temperature and general electrochemical applications Mineral Composition for Removal of Hardness and other Contaminants from water.Patent Application No.20844

8. Theja Herath. Formulation of instant nutritious horse gram-based porridge mix (Application No: 20810)

9. Theja Herath. Formulation of ready-to-serve instant dry powdered horse gram-based nutritious drink (Application No: 20811)

10. Theja Herath.Formulation of ready-to-serve horse gram-based nutritious granola bar (Application No: 20812)

Executive Staff

as at 31st December 2019

DIRECTOR GENERAL / C.E.O

Dr J K R R Samarasekera (Ms)
BSc(Hons)(Colombo),PhD(Rothamsted),CChem, MIChemC,MIBiol

Additional Director General, Research & Development

Dr I G N Hewajulige (Ms)
BSc(Hons)(Peradeniya), MPhil(Colombo), PhD(Colombo)

Additional Director General, Technical Services

(Vacant)

Additional Director General, Administration & Operation

K A S P Kaluarachchi
MBA, PGD in Mgt. ,BSc(B.Ad)(Spl),Inter (CA), CBA (CASL) ,CPFA,CIPFA ,MAAT,MIM,ACIPM

RESEARCH & DEVELOPMENT

FOOD TECHNOLOGY SECTION

Senior Deputy Director, Food Technology Section

(Vacant)

Principal Research Scientist

Dr H M T Herath (Ms)
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Senior Research Scientist

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Senior Research Technologists

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M G D S Perera (Ms)
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W U D Medis
LTCC(ChemC)

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Management Officer

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HERBAL TECHNOLOGY SECTION

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Management Officer

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MATERIALS TECHNOLOGY SECTION

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Research Technologist
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MBA (Open University), Graduate Chemist (IChem.)

R C W Arachchi
BSc (Open University)

Research Engineer
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BSc(Eng)(Moratuwa)

ENVIRONMENTAL TECHNOLOGY SECTION

Senior Deputy Director, Environmental Technology Section/Principal Research Engineer

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Bsc (Jaffna) PhD(UK)

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BSc (Ruhuna)

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BSc (Peradeniya) , M.Phil (Peradeniya)

OFFICE OF THE ADDITIONAL DIRECTOR GENERAL – RESEARCH & DEVELOPMENT

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ENGINEERING SERVICES

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U I Gamhewa
NDT (Moratuwa)

Management Officer (Admin)

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M M C B Nawarathna
DTLC

V J Chithran
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RESIDUE ANALYSIS LABORATORY

Senior Deputy Director – RAL / Principal Research Scientist

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GIC Part I, LTTC, Dip. In Management Programme

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BSc(Spl)(Hons)(Sri Jayawardenepura)

A U W Dissanayaka (Ms)
BSc (Sri Jayawardenepura)

Ms K D Madushani (MS)
BSc (Ruhuna)

MATERIALS LABORATORY

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Research Engineers

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Research Scientist

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Bsc(Spl)(Kelaniya)

L S R Widuranga
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K W Prasadini (Ms)
BSc (South Eastern University)

Research Technologists

B M P Fernando
DLTC, Dip (Plastic & Rubber Institute)

W A M Priyanwada
DLTC

M V P N Somathilake
NDE (IET)

M M Niyangama
BIT (Colombo)

INDUSTRIAL METROLOGY LABORATORY

Senior Deputy Director - Industrial Metrology Laboratory/Principal Research Scientist

Dr W M S Wijesinghe
BSc(Hons)(Sri Jayewardenepura), MSc(USM, Malaysia), PhD.(UST, Korea) CPhys(SL), MIP(SL)

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PGD(Kelaniya),MA,MSc(Colombo)

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BSc(Spl)(Hons((Sri Jayawardenepura)

R A D S D Ranasinghe
BSc(Spl)(Hons((Sri Jayawardenepura), Dip. In Inf. Tech(Colombo)

M D R De Costa
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L G R C Lewangama (Ms)
BSc (Ruhuna)

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BSc (Spl) (Sri Jayawardenepura)

Senior Research Technologist

T N P K Peiris
BSc (OUSL)

Research Technologists

S P C Padmaharsha

T G N B Karunathilaka

P T De Silva
BSc (Open University)

Management Officers

B LU R Kumari (Ms)

R P D Vonhagt (Ms)

ELECTRO TECHNOLOGY LABORATORY

Senior Deputy Director - Electro Technology Laboratory/Principal Research Engineer

Dr R M Weerasinghe
PhD, BSc(Eng)(Peradeniya), MSc (AIT -Thailand)

Senior Research Scientist
C M Kalansuriya
BSc(Hons)(Open University), LIP(SL)M
Phil(Colombo)

Research Engineer

R P K Wijewardena
BSc(Eng)(Moratuwa)

Research Scientist

K A C Perera
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Senior Research Technologist

L D D C Jayaratne

Research Technologist
K K N Dharshana

OFFICE OF THE DIRECTOR GENERAL

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H H S M R Wijenayaka (Ms)
B.Com (Sri Jayawardenepura)

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S S Chathurika (Ms)
B.Law (Colombo), Attorney-At-Law

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Vacant

Customer Liaison Officer
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NDT (Moratuwa)

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A G A H Abeysinghe (Ms)

QUALITY ASSURANCE DEPARTMENT

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F H Salahudeen (Ms)
BSc(Spl)(Colombo)

Quality Assurance Officer

P A M P Marage (Ms)
BSc (Uva Wellassa University)

CHAIRMAN'S OFFICE

Confidential Secretary
H A A U Dias (Ms)
B.Com (Sri Jayawardanepura)

FINANCE DEPARTMENT

Senior Deputy Director Finance

D L C A Gunaratne
MBA Finance (Aus) ACMA,PG Dip BM ,ACBA

Chief Accountant

Mr. D N Weerakoon
HNDA,ICASL-Infor, CMA-DIP, MBS (Colombo)

Accounts Officers

R Malavipathirana (Ms)
IAB(London)

L K Lalitha (Ms)
IAB(London)

L A M S P Menike (Ms)

STORES

Senior Stores Officer
G H K G L Kushan
HNDA (SLIATE), Master of Professional Accountancy (Sri Jayawardenepura)

Stores Officer
A P Edirisooriya

SUPPLIES

Senior Supplies Officer

Mr H P R Kumara
B.Sc Business Management (Accountancy)(Kelaniya),MSS (Colombo)

Supplies Officers

B P N Peiris (Ms)
Dip Sup Mat Mang

D L Gamlath (Ms)
BSc(Spl) Public Management (Sri Jayawardanepura)

W A D De Alwis(Ms)

HUMAN RESOURCES DEPARTMENT

Senior Deputy Director – Administration & Human Resources
I H Kathriarachchi
MBA(Colombo)PDG in Inter Relations (BCIS) BSc(Spl)(Sri J'pura) HNDA (Sri Lanka Technical College)

Senior Administrative Officers (HR)

I Kannangara (Ms)
PQHRM (IPM)
HR Officers

U A Thilakasiri
BLE (Colombo)

W V P Sarojinie (Ms)

Administrative Officer

L N Perera (Ms)
Dip. (Kelaniya)

MARKETING & BUSINESS DEVELOPMENT DEPARTMENT

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Bsc(Sabaragamuwa),MBM(Colombo)

Industrial Liaison Officer

M M D S Dharmasiri (Ms)
BSc (Ruhuna)

Marketing Officer

N P K Wanniarachchi
BSc (Sri Jayawardenepura)

INFORMATION SERVICES CENTRE

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GradIChemC, MPhil(Open University), CChem, MIChemC

Senior Research Scientist

E M S Isanka (Ms)
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Librarian
N S Sangasinghe (Ms)
ASLLA

Assistant Librarian

W W P N Geekiyanage (Ms)
ASLLA

W W R L Fernando (Ms)
PGD in Information Management

Management Officer
Y A R Kapurubandara (Ms)

COMPUTER UNIT

Computer System Engineer

M R M Naseer
BSc (Jaffna)

Senior Research Technologist

N K Alagoda (Ms)
NDT (Moratuwa)

S S Wickramasekara
BIT (Colombo),Certificate (NAITA),Certificate (NIE)

INTERNAL AUDIT

Chief Internal Auditor

Vacant

Senior Internal Audit Officer

B M Roberts (Ms)
IABK (London), Dip.Com.Based Acctg (Professional Accounting Institute, Colombo)

Internal Audit Officers

S P Haputhanthri
Nat.Dip in Finance (SLIATE),

A D R M U Rajapakse

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
STATEMENT OF FINANCIAL POSITION AS AT 31ST DECEMBER, 2019

	NOTE	2019	2018
ASSETS			
Current Assets	3		
Cash and Cash equivalents	3D	497,110,346	542,752,411
Trade and other receivables	3B	192,769,960	184,966,258
Inventories/Stocks	3A	25,143,890	15,450,513
Prepayments	3C	14,354,390	10,769,004
		729,378,585	753,938,186
Non-current Assets			
Property, Plant and Equipment	1	1,617,460,790	1,678,793,122
Other Assets (Work-in progress)	2	575,948,496	485,304,258
Investments	3D	110,000,000	110,000,000
		2,303,409,287	2,274,097,381
Total Assets		3,032,787,872	3,028,035,567
LIABILITIES			
Current Liabilities	4		
Payables	4A	183,774,234	109,762,412
Accrued Expenses	4B	177,530,504	154,583,621
Provision for Gratuity	5C	11,270,531	8,680,141
		372,575,320	273,026,175
Non-Current Liabilities	5		
Payable	5A	19,520,122	10,702,357
Differed Income	5B	941,578,871	992,342,590
Provision for Gratuity	5C	108,432,373	104,167,663
		1,069,531,416	1,107,212,610
Total Liabilities		1,442,106,736	1,380,238,785
Total Net Assets		1,590,681,136	1,647,796,783
NET ASSETS / EQUITY	6		
Accumulated Fund	6A	696,394,363	700,716,545
Reserves - Donations	6B	740,844,345	793,637,808
Revaluation Surplus	6C	153,442,429	153,442,429
Total Net Assets / Equity		1,590,681,136	1,647,796,783

The Accounting policies on pages **05 to 06** and Notes on pages **07 to 30** form an integral part of these Financial Statement. The Board of Directors responsible for the preparation and presentation of these Financial Statements and signed on behalf of the Board of Directors.

R.Samarasekera

Dr. .(Mrs) J.K.R.R.Samarasekera
Director General

Dr. (Mrs.) J. K. R. R. Samarasekera
Director General
Industrial Technology Institute
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DCAGunaratne

D.L.C.A.Gunaratne
Senior Deputy Director - Finance

Senior Deputy Director - Finance
Industrial Technology Institute
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Colombo 7.

On behalf of the Board of Directors:

Dr. G.A.S.Premakumara
Chairman 13/5/2020

CHAIRMAN
Board of Management
Industrial Technology Institute
363 Bauddhaloka Mawatha, Colombo 07

Member of the Board
Ms. S.P.K. Vrthanage

INDUSTRIAL TECHNOLOGY INSTITUTE
STATEMENT OF FINANCIAL PERFORMANCES
FOR THE PERIOD ENDED 31ST DECEMBER, 2019

	NOTE	2019 Budget	2019	2018
Operating Revenue				
Recurrent Grant		250,000,000	250,000,000	240,000,000
Amortization of Government Grants - Depreciation	5A1	129,480,000	168,739,413	164,862,516
-R & D Projects & HRD	5A1	54,020,000	45,029,526	19,870,287
-Rehabilitation & Improvements	5A1	41,500,000	10,788,244	8,046,182
Income - Revenue	7A	330,739,000	304,250,050	289,317,289
- Other Income	7B		30,423,996	34,594,568
		805,739,000	809,231,229	756,690,843
Operating Expenses	8			
Personnel Emoluments	8A	369,804,000	373,430,949	352,879,467
Travelling	8B	14,000,000	14,635,988	13,601,336
Supplies and Consumable used	8C	40,399,000	37,670,704	31,843,979
Maintenance	8D	39,663,000	41,258,914	45,230,365
Contractual Services	8E	60,872,000	59,635,064	60,081,277
R & D Projects & HRD	8F	54,020,000	45,029,526	19,870,287
Depreciation	8G	129,480,000	168,739,413	164,862,516
Other Operating Expenses	8H	56,001,000	54,622,110	41,304,263
Rehabilitation & Improvements	8I	41,500,000	10,788,244	8,046,182
Disposal & write Offs			7,193,852	6,720,743
Damage & Losses			285,384	(1,999)
Total Operating Expenses		805,739,000	813,290,149	744,438,417
Surplus/(Deficit) from Operating Activities		-	(4,058,920)	12,252,426
Net Surplus / (Deficit) for the period		-	(4,058,920)	12,252,426

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
THE STATEMENT OF CHANGES IN EQUITY FOR THE YEAR ENDED 31st DECEMBER , 2019

	Accumulated Fund	Reserves Donations	Re-Valuation Surplus
	Rs.	Rs.	Rs.
Balance as at 01.01.2019	700,716,546	793,637,808	153,442,429
Changes in Equity for 2019			
Surplus for the period	(4,058,920)		
Shedule Adjustment	(263,263)		
Surplus from revaluation			
Amortizarion of Non - Current Assets Up to 2002			
Donation received during the year		-	
Amortization of Non - Current		(52,793,464)	
Addition during the year (Capital Grant)			
Capital grants transfferd			
Balance as at 31.12.2019	**696,394,363**	**740,844,345**	**153,442,429**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
CASH FLOW STATEMENT FOR THE YEAR ENDED 31ST DECEMBER, 2019

	2019 (Rs.)	2018 (Rs.)
Cash Flow From Operating Activities		
Operating Surplus/(Deficit)	(4,058,920)	12,252,426
Adjustment for		
Depreciation / Amotization	168,739,413	164,862,516
Profit/Loss on Property Disposal		
Gratuity Provision	20,624,734	15,383,131
Incentive Provision	44,819,617	43,653,878
Provision for Audit Fee	1,536,000	4,608,000
Interest on Investments	(17,089,735)	(27,959,619)
Bad Debts Provision	23,196,938	15,976,637
Capital Grants Amortized	(224,557,183)	(192,778,985)
Operating Surplus/(Deficit)	**13,210,864**	**35,997,985**
Change in Working Capital		
(Increase)/Decrease in Investments		
(Increase)/Decrease in Inventories	(9,693,376)	(3,319,359)
(Increase)/Decrease in Debtors	(7,803,703)	(29,793,991)
(Increase)/Decrease in Prepayments	(3,585,387)	5,616,474
(Decrease) /Increase in Payables-Non Current	(37,681,244)	691,429
(Decrease) /Increase in Payables-Current	76,602,212	(83,633,357)
(Decrease) /Increase Accrued Expenses	22,946,883	41,871,622
Cash Generated from operating Activities	53,996,249	(32,569,198)
Gratuity & Incentive Paid	(44,993,165)	(34,132,123)
Net Cash Flow From Operating Activities	**9,003,085**	**(66,701,321)**
Cash Flow From Financing Activities		
Capital Grants Received	121,000,000	303,740,034
Interest Received	22,406,172	20,569,727
Net Cash Flow From Financing Activities	**143,406,172**	**324,309,761**
Cash Flow From Investing Activities		
Acquisition of Property Plant & Equipment - Purchases	(107,407,082)	(171,709,181)
Other Assets (Work In Progress)	(90,644,241)	(117,863,847)
Net Cash Flow From Investing Activities	**(198,051,323)**	**(289,573,028)**
Net Cash Flow	(45,642,067)	(31,964,588)
Cash as at beginning of the year	382,526,412	414,491,000
Deposits below 03 months beginning of the year	160,226,000	160,226,000
Cash at the end of the year (Note - 22)	**497,110,345**	**542,752,412**

ACCOUNTING POLICIES AND SIGNIFICANT EVENTS – 2019

1. GENERAL

The Statement of Financial Position as at 31.12.2019 and the related Financial Statements have bee prepared on the historical cost convention, in accordance with the Sri Lanka Public Sector Accountin Standards.

Retirement benefits to employees are provided according to the laid down statutory requirements Institute's contribution for Provident Fund and Employees' Trust Fund is 15% and 3% respectively Gratuity Provision is made according to the Gratuity Act No. 12 of 1983. This provision is no externally funded.

2. BASIS OF PREPARATION

The financial statements have been in accordance with the Sri Lanka Public Sector Accountin Standards for the year ended 31st December 2019.

3. ACCOUNTING FOR GOVERNMENT GRANTS

A. Recurrent Grant from the General Treasury has been recognized as revenue in the statement o financial performance. Since year 2003 Capital Grant has been shown under deferred income i conformity with the formats specified in Circular No. PED/19. Depreciation for the year i funded by amortizing the following.

Fund	Depreciation for the year
Differed Income	Non-Current Assets acquired after 2003
Government Grant - Capital	Non-Current Assets acquired before 2003
Donation & Grants	Non-Current Assets relating to Donations

4. ASSETS - BASIS OF THEIR VALUATION

4.1 Fixed Assets

Funds for acquisition of Fixed Assets are provided by the General Treasury.
Fixed Assets have been shown at cost, less depreciation. Assets are depreciated at the following rates:

Buildings	5%
Plant and Machinery	10%
Office Equipment and Furniture	5%
Vehicles	20%
Computers	33 1/3%
Library Books and Journals	5%
Software and Other Assets	33 1/3%

Depreciation in respect of motor vehicles, computers and software was 10% before the 1st of January 1999 and was revised to 20% and to 33.33% respectively after that date.

Depreciation is charged from the date of purchase until the date of disposal.

Fully Depreciated Assets value as at 31.12.2019 is. Rs.790,816,685.97

4.1.1

Assets received as donations or purchased with Government Grant are amortized at the rates o depreciation referred above.

4.2 Debtors

Debtors and other recoverable are stated at the value estimated to be realized. The debtors consist of sundry trade debtors and the debts of ex-employees who are in breach of bonds and agreements.

4.3 Stocks

Stocks are shown at the Book Value. Stock issues are valued at the simple average basis.

4.4 Savings Bank Deposit Account

As per instructions given by Ministry of Finance & Policy Planning Fidelity Bonds invested with the Bank of Ceylon for Provision for Gratuity and 06 months Personal Emolument Cost. Fund Deposits for 06 months period are shown as other assets.

4.5 Deposits on accounts of Gratuity Provision

As per the statutory requirement an amount of Rs. 100 Million is kept in deposit account to meet the Gratuity obligations. This deposit is kept PED Circular No.56

4.6 Crown Land

The Land occupied by the institute is referred as Crown land and belongs to the state.

5. Liabilities and Provisions

Current Liabilities are those which fall due for payments on demand or within one year from the Balance Sheet date.

5.1 Funds for ITI Chairman's Science Award Fund

This fund is externally invested.

6. Income and Expenditure Account

Income and Expenditure are based on accrued accounting basis.

7. Provision for Doubtful Debts

Full provision for doubtful debts is made on out standings of Trade Debtors for more than one year. However in cases of specific debts where it is considered that a higher provision is prudent such additional provision has also been made.

8. Provision on Gratuity

The provision on gratuity is made after completion of one year of service.

9. Long Term Research and Development

There are more than 25 Research & Development Projects in progress which are funded by the general treasury. Apart from Treasury Grants there are funded projects sponsored by local agencies such as National Science Foundation (NSF) and National Research Council (NRC).

10. Vidhatha program/ "Shilpa Sena" Exhibition

During the year under review number of employees of ITI participated in the Vidhatha Program & "Shilpa Sena" exhibition conducted by the Ministry of Science, Technology & Research.

Schedule on Buildings, Plant Machinery & Lab Equipment, Furniture Fittings, Vehicles, Computer Equipment Library Books & Journals , Software & Other Assets as at 31.12.2019

NON -CURRENT ASSETS

NOTE - 01

	Land	Buildings 5%	MRDC Building 5%	Plant Mach. & Lab Equip. 10%	Furni. Fittings & Office Equi. 5%	Vehicles 20%	Computer Equipment 33.33%	Library Book & Journals 5%	Soft Ware & Accessories 33 1/3%	Other Assets 33 1/3%	TOTAL
Cost											
Balance as at 01.01.2019	40,000,000	262,837,429	889,143,459	1,231,286,217	86,313,523	122,804,891	75,692,379	83,314,428	48,966,854	4,512,594	2,804,871,774
Additions -											
Purchases	-	905,704	-	89,991,598	3,596,652	-	8,244,471	952,260	91,571		103,782,256
Donations			-		-	-	-				-
Donations - TG				3,432,176			192,650	-	-		3,624,826
Re-Valuation		-			-	-					-
Less:											-
Write - Off				-	-		-				-
Adjustment		-		-		-	-		-		-
Balance as at 31.12.2019	40,000,000	263,743,133	889,143,459	1,324,709,992	89,910,175	122,804,891	84,129,500	84,266,688	49,058,425	4,512,594	2,952,278,857
Less :											
Depreciation											
Balance as at 01.01.2019		151,657,489	117,164,582	634,591,876	28,470,608	67,214,549	62,283,219	65,384,623	34,799,114	4,512,594	1,166,078,653
Add:											
Depreciation for 2019		12,259,979	44,457,173	68,917,543	3,599,122	17,525,960	8,305,885	2,011,269	11,662,482		168,739,413
											-
Less:											-
Re-Valuation						-					-
Disposal				-	-		-				-
Adjustment				-							-
Balance as at 31.12.2019	-	163,917,468	161,621,755	703,509,418	32,069,730	84,740,509	70,589,103	67,395,893	46,461,596	4,512,594	1,334,818,066
Balance as at 31.12.2018	40,000,000	99,825,665	727,521,704	621,200,574	57,840,445	38,064,382	13,540,397	16,870,796	2,596,829	-	1,617,460,790

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT OF FINANCIAL POSITION AS AT 31ST DECEMBER 2019

	2019	2018
Other Assets (work in progress) - (Note - 2)		
Work in Progress - General	1,625,537	1,625,537
Modern R & D Complex, Malambe	536,084,946	450,754,206
Work in Progress - ES Preparation of 5 Nos. Fume Cupboards	456,020	456,020
NCE in Food Research , Technology and Food Safety	102,177	102,177
NCE for Chemical and Residual Analysis	102,177	102,177
NCE for Natural and Indigenous Knowledge based products	102,177	102,177
Business Centre on the Ground floor of the library building	9,816	9,816
Treasury Grant Projects	37,465,649	32,152,149
	575,948,499	**485,304,258**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT OF FINANCIAL POSITION AS AT 31ST DECEMBER 2019

	NOTE	2019 Rs.	2018 Rs.
Current Assets (Note - 3)			
Consumable Stores			
Chemical		6,112,591	5,516,212
Laboratory Ware		13,363,734	5,855,081
Mis. Supplies		524,973	518,250
Electronic Components		6,013	6,013
Stationery		945,386	1,104,926
Industrial Gases		156,076	49,904
Toners & Cartrides		2,842,518	2,400,127
Goods in Stores (Direct DGN)		1,192,598	-
	(Note - 3A)	**25,143,890**	**15,450,513**
Purchase Advances - Local Supplies	15A	**9,476,908**	**1,633,418**
Purchase Advances - Foreign Supplies	16	**29,969,744**	**43,587,119**
Sundry Debtors	17	**40,633,361**	**45,509,262**
VAT Receivable		**183,187**	**1,365,160**
VAT Receivable from Inland Reveneu		**33,452,869**	**24,690,471**
Receivable from BOC (Donation)		**100,000**	-
Welfare Receivable		**806,250**	**336,250**
Provision for Welfare receivables		**(336,250)**	**(336,250)**
Trade Debtors	18A	**8,898,943**	**15,750,479**
Staff Advances	20	**40,466,670**	**37,444,083**
Deposits	21	**4,942,454**	**4,642,454**
Funded Projects	23	**23,234,804**	**9,402,792**
Obsolete Assets for Disposal		**941,019**	**941,019**
	(Note - 3B)	**192,769,961**	**184,966,258**
Pre-payments (Note - 3C)	19	**14,354,391**	**10,769,004**
Fidelity Bonds (LCs), Gratuity Obligation & Reserve for Working Capital (Over 06 months)		**110,000,000**	**110,000,000**
Fidelity Bonds (LCs), Gratuity Obligation & Reserve for Working Capital		160,226,000	160,226,000
Cash & Bank Balance	22	**336,884,346**	**382,526,411**
	(Note - 3D)	**497,110,346**	**542,752,411**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT OF FINANCIAL POSITION T AS AT 31ST DECEMBER 2019

		NOTE	2019 Rs.	2018 Rs.
Current Liabilities (Note - 4)				
Trade Creditors		18B	6,097,745	2,599,690
Sundry Creditors		15B	102,441,454	23,483,088
Tender & Security Deposits		24	792,695	764,880
Staff Group Medical Insurance Empolyee Control A/C			1,565,075	1,609,508
Funded Projects		23	72,877,265	81,305,247
	(Note - 4A)		183,774,234	109,762,412
Accrued Expenses	(Note - 4B)	25	144,077,635	129,893,150
Provision for VAT Receivable			33,452,869	24,690,471
Provision for Gratuity	(Note - 5C)	26	11,270,531	8,680,141
Non-Current Liabilities				
Provision for Gratuity	(Note - 5C)	26	108,432,373	104,167,663
Reserves - Bond Defaulters			16,907,162	8,255,638
Science Award Fund (Originated by Prof. Vijaya Kumar)			393,445	393,445
Staff Activity Fund			2,199,449	2,033,209
Kasper Unit Fund			20,065	20,065
	(Note - 5A)		19,520,122	10,702,357

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO FINANCIAL POSITION AS AT 31.12.2019

		2019		2018	
Amortization of Government Capital Grants (5A1) (A/C - 604440-70700)		**Rs.**	**Rs.**	**Rs.**	**Rs.**
Depreciation	:- Non-Current Assets Upto 2002	-		-	
	Non-Current Assets 2003 Onwards	115,945,950		115,135,954	
	Non-Current Assets Donated	52,793,464	168,739,413	49,726,562	164,862,516
R & D Projects & HRD	:- Treasury Granted	23,526,215		7,958,736	
	Research & Development	354,042		928,759	
	HRD - Training	1,072,047		390,255	
	Membership fee	3,719,738		2,807,280	
	Library Science Directory	9,164,563		7,785,258	
	Quality System Improvement & Silpas	7,192,921			
	R & D Expenditure	-	45,029,526	-	19,870,287
Rehabilitation & Improvement	:- Building & Structure	9,317,611		2,975,807	
	Plant Machinery and Equipment	1,083,597		3,879,082	
	Improvement of Vehicles	199,500		651,891	
	Improvement of Other Capital Assets	187,535	10,788,244	539,403	8,046,182
			224,557,183		**192,778,985**

Differed Income (Note - 5B) Government Contribution - Capital - 2003 Onwards) (A/C - 300102-29755 & A/C - 300104)			**Rs.**	**Rs.**
Balance as at 01.01.2019	992,342,590		814,654,980	
Additions during the year-Capital Grant for MRDC			216,000,000	
Capital Grant for ITI	121,000,000	1,113,342,590	104,740,034	1,135,395,014
Schedule Adjustment				
Amortization (Depreciation of Non-Current Assets)	(115,945,950)		(115,135,954)	
Amortization (Research & Development- Accreditation)	(354,042)		(928,759)	
Amortization (Treasury Granted Project Expenditure)	(23,526,215)		(7,958,736)	
Amortization (Rehabilitation Expenditure)	(10,788,244)		(8,046,182)	
Amortization (HRD)	(1,072,047)		(390,255)	
Amortization Library Science Directory- Annual Sub	(9,164,563)		(7,785,258)	
Amortization Membership Fee	(3,719,738)		(2,807,280)	
Amortization Quality System Improvement & Silpa Sena	(7,192,921)			
Amortization R & D Expenditure	-	(171,763,719)		
				(143,052,423)
Balance as at 31.12.2019		**941,578,871**		**992,342,590**

		2019		2018	
Accumulated Fund (Note - 6A) Government Contribution Capital - Upto 2002 and Income & Expenditure Account Balance) (A/C - 300101-30000 & A/C - 300300-30400)		**Rs.**	**Rs.**	**Rs.**	**Rs.**
Government Contribution Capital Upto 2002 - 01.01.2019		619,826,595		636,826,595	
Income & Expenditure Account - 01.01.2019		80,889,950	700,716,546	68,637,525	
Additions during the year- Capital Grant for ITI		121,000,000		87,740,034	
Capital Grant for ITI trf to Differd Income		(121,000,000)		(104,740,034)	688,464,120
Schedule Adjustment			(263,263)		
Amortization - Capital				-	
Surplus (Deficit) for the period of 2019		(4,058,920)		12,252,426	
			(4,058,920)		**12,252,426**
Balance as at 31.12.2019			**696,394,362**		**700,716,546**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)

DONATIONS AND GRANTS AS AT 31ST DECEMBER, 2019

NOTE - 6B

Donations	A/C No.	Balance 01.01.2019	Additions during the year	Amortizations during the year	Balance 31.12.2019 Rs
UNIDO - AID	300202	11,049		11,049	(0)
Capital Reserves	300205	1,523,209			1,523,209
ADB Donation	300207	4,488,682		1,122,175	3,366,507
Other Donation	300204	106,145		53,072	53,072
Gift from JICA - FP 42	300213	29,495		7,374	22,122
Gift from MHIM - FP 36	300214	2,367		592	1,775
Gift from CARP FP 48	300215	1,800		450	1,350
Gift from TVEC	300219	11,656		2,914	8,742
Japanese 2KR Project	300222	17,977		1,731	16,247
Int.Atomic EA Donation	300226	567,538		567,538	(0)
NSF Tsunami Project	300227	-			-
NSF - Accessories to SEM	300228	222,000		111,000	111,000
ICBR Int.Centre for Bamboo ration	300229	271,412		271,412	0
Ministry of rural industries & self	300230	5,116		5,116	-
Common Fund commodities	300231	175,650		43,138	132,513
Treasury Grant Vehicle Cab (MOTR)	300232	2,565,110		1,595,000	970,110
Donation to BTU	300234	783,752		195,938	587,814
Treasury Grant Vehicle Car (CHOGAM)	300235	1,312,932		1,312,932	0
Treasury Grant Vehicle Car & Van	300236	806,519		806,519	0
Gift from Lion Brewary	300237	6,719,639		1,120,451	5,599,187
NRC Waters-HPLC	300238	2,312,877		350,000	1,962,877
NSF Donation	300239	369,539		52,791	316,748
Dept. of Ayurweda	300240	29,750		4,250	25,500
2KR Japanies Counterpart fund	300241	748,128,470		41,562,693	706,565,778
NSF FP 99	300242	340,232		37,804	302,428
Gloria Mundi Energy Institute FP 112	300243	132,255		14,695	117,560
Korean Institute of Ocean Science Technology FP 117	300244	56,676		6,297	50,378
NSF FP 113	300245	344,857		40,780	304,077
CIDA - IDRC Project	300403	22,301,106		3,495,754	18,805,352
TOTAL		**793,637,809**	**-**	**52,793,464**	**740,844,345**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
REVALUATION BALANCE AT AT 31.12.2019

Note -6C

	2019	2018
2008 Re-Valuation	**Rs.**	**Rs.**
Plant Mach. & Lab Equipment	26,950,099	26,950,099
Furni. Fittings & Office Equip.	6,404,627	6,404,627
Computer Equipment	(7,197,654)	(7,197,654)
	26,157,073	**26,157,073**
2009 Re-Valuation		
Buildings	102,685,357	102,685,357
	128,842,430	**128,842,430**
2016 Re-Valuation		
Vehicles	24,600,000	24,600,000
	153,442,430	**153,442,430**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT OF INCOME
FOR THE REPORTING PERIOD ENDED 31ST, DECEMBER 2019

	2019		2018	
Revenue (Note - 7A)	**Rs.**	**Rs.**	**Rs.**	**Rs.**
Income -Standard Services	172,564,965		197,741,067	
Less: Refund	533,168	172,031,797	1,122,312	196,618,755
Income -Consultancy Service		28,531,332		22,848,833
Income-Technology Transfer		7,515,894		3,244,993
Income-Contract Projects	57,013,235		29,251,463	
Less:-Sub Contract Projects	155,345	56,857,890	-	29,251,463
Income-Customised Services		19,719,157		17,299,887
Income-Training		18,078,448		19,948,847
Royalty Received		1,515,532		104,511
		304,250,050		**289,317,289**
Other Income (Note - 7B)				
Other Operating Income				
Income-Library	140,074		156,444	
Income - Other / General	11,069,641	**11,209,715**	4,844,674	**5,001,118**
Other Non Operating Revenue				
Interest on Staff Loan	1,351,337		1,070,507	
Interest on Investments (Working Capital,Gratuvity, LC Dposit)	17,089,735		27,959,619	
Contribution from Projects	-		72,140	
Exchange Gain & losses	9,809		491,184	
Profit/(Loss) Sale of Assets	763,400	**19,214,282**	-	**29,593,450**
		30,423,996		**34,594,568**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)

NOTES TO STATEMENT OF INCOME

FOR THE REPORTING PERIOD ENDED 31ST, DECEMBER 2019

	2019	2018
Personnel Emoluments (Note - 8A)	**Rs.**	**Rs.**
Salaries & Wages	232,130,192	215,397,674
Casual Wages	9,288,246	8,892,736
Assingment Base Salaries	5,473,684	17,425,191
R & D Allowances	18,310,576	10,648,479
Employee Provident Fund	31,930,327	28,172,710
Employee Trust Fund	6,384,501	5,634,542
Gratuity	20,624,734	15,383,131
Overtime	11,840,672	7,424,985
Honorarium - G.B. Members	480,300	751,575
Medical Reimbursement	2,965,171	1,678,848
Incentive (PBIS)	4,725,445	6,436,866
Incentive (PF-380)	26,648,870	32,210,976
Staff Group Medical Insurance	2,628,232	2,821,754
	373,430,949	**352,879,467**

Travelling (Note - 8B)		
Travelling - Local	1,638,522	1,766,904
Travelling - Foreign	9,640,927	8,646,280
Travelling - Pool Transport	3,356,539	3,188,152
	14,635,988	**13,601,336**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT INCOME
FOR THE REPORTING PERIOD ENDED 31ST, DECEMBER 2019

	2019	2018
Supplies and Consumable used (Note - 8C)	**Rs.**	**Rs.**
Chemicals	10,687,571	13,069,577
Labware	8,208,573	4,324,224
Electronic Components	273,926	144,332
Stationery	6,257,108	3,355,909
Other Supplies	1,572,419	1,764,234
Other / CRR	2,738,042	356,729
Safety Measures	315,502	532,319
Uniforms - Watchers, Drivers, Etc.	952,849	1,055,828
Welfare Including Sports	123,217	84,714
Fuel Charges	6,541,497	7,156,112
	37,670,704	**31,843,979**
Maintenance (Note - 8D)		
Buildings & Premises	15,139,592	13,016,885
Plant &Machinery	7,457,416	14,962,894
Furniture & Equipments	2,918,675	2,744,286
Library Books	-	6,900
Laboratory ware	97,142	1,018,251
Computer	7,150,008	5,754,624
Canteen	69,530	100,272
Generator	1,374,107	535,742
Vehicles	7,052,445	7,090,511
	41,258,914	**45,230,365**
Contractual Services (Note - 8E)		
Electricity charges	32,249,501	33,203,990
Telephone & Internet charges	13,504,864	12,729,478
Postage Expenses	396,694	381,853
Rate & Taxes	2,023,560	2,135,980
Security Services charges	10,086,189	9,666,615
Water charges	1,374,256	1,963,362
	59,635,064	**60,081,277**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT INCOME
FOR THE REPORTING PERIOD ENDED 31ST, DECEMBER 2019

	2019	2018
Projects & HRD (Note - 8F)	**Rs.**	**Rs.**
TG Expenditure	23,526,215	7,958,736
Research & Development (Accreditation)	354,042	928,759
HRD - Training	1,072,047	390,255
Membership Fee	3,719,738	2,807,280
Library Science Directory Annual Sub	9,164,563	7,785,258
Quality System Improvement & Silpa Sena	7,192,921	
	45,029,526	**19,870,287**
Depreciation & Amortisation Expenses (Note - 8G)		
Buildings	56,717,152	58,752,358
Plant & Machinery	68,917,543	64,667,496
Furniture & Equipments	3,599,122	3,517,414
Computers	8,305,885	6,365,195
Vehicles	17,525,960	18,843,823
Software	11,662,482	10,663,510
Library Books	2,011,269	2,052,721
	168,739,413	**164,862,516**
Rehabilitation Expenditure (Note - 8I)		
Rehabilitation of Building and Structures	9,317,611	2,975,807
Rehabilitation of Plant Machinery and Equipments	1,083,597	3,879,082
Rehabilitation of Improvement of Vehicles	199,500	651,891
Rehabilitation of Improvement of Other Capital Assets	187,535	539,403
	10,788,244	**8,046,182**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT INCOME
FOR THE REPORTING PERIOD ENDED 31ST, DECEMBER 2019

	2019	2018
Other Operating Expenses (Note - 8H)	**Rs.**	**Rs.**
Staff Training Expenses	1,030,673	1,748,532
Sampling Charges	4,717,365	3,691,800
Subsistance charges	3,020,427	2,769,320
Subscription Expenses - Local / Foreign/Other	222,271	454,587
Laboratory Membership Fee (Local)	275,818	842,145
Honorarium Expenses	1,257,118	1,490,689
Medical Examination Fee (New Recruits)	324,900	43,729
Entertainment Expenses	460,529	399,696
Insurance Expenses	2,237,729	2,241,488
Printing Charges	1,054,956	450,622
News Papers & Subs.	79,878	60,136
Audit Fees	1,536,000	3,296,400
Legal Fee	303,000	315,085
Bank Charges	124,143	55,632
Credit Card Commission	166,930	170,800
Advertising	1,828,714	2,473,330
Publication - Annual Reports	396,279	439,131
Promotional & Publicity	578,904	1,670,890
Disallowed VAT	8,762,398	8,235,511
Economic Tax	-	1,480,813
National Building Tax	1,337,351	73,707
Survey Fee - Board of Survey	229,820	801,300
Patency & Consultancy Fee	940,422	385,350
Expenditure- Standard Services	964,769	1,633,191
Expenditure -Consultancy Services	825,742	827,315
Expenditure -Technology Transfer	316,272	64,205
Expenditure -Contract Project	2,854,274	631,374
Expenditure -Customised Services	394,677	430,910
Expenditure -Training	3,395,908	1,425,434
R & D & TS General Expenditure	183,431	341,869
Clearing Charges	130,666	31,906
Annual Research Symposium R & D	1,579,426	-
Exhibition Expenses (ITI)	246,927	286,154
Exhibitions / Vidhatha/ Ministry works	1,457,420	1,100
Exhibition"Shilpa Sena"	7,147,498	
COMSAT Meeting expenses	16,640	68,654
Stamp Duty	61,850	73,475
Provident Fund Stationeries	178,433	149,222
Donations	-	100,000
Miscellaneous Expenditure	34,316	28,409
CENTEC Expenditure -% Contribution	184,000	391,000
ASOMPS Chairmans Visit	-	11,798
Quality Infrastructure Facilities	3,718,318	1,217,555
Moving Expenditure	45,918	
	54,622,110	**41,304,263**

NATIONAL AUDIT OFFICE

My No: TEC/A/ITI/01/18/2019 Your No: Date: 21st August 2020

The Chairman
Industrial Technology Institute

The Auditor General's Report on the Financial Statements of the Industrial Technology Institute for the year ended on 31st December 2019 and other legal and regulatory requirements as per Section 12 of the National Audit Act, No.19 of 2018

1. **Financial Statements**

1.1 **Qualified opinion**

The Financial Statements of the Industrial Technology Institute for the year ended on 31st December 2019 comprising its Financial Position Statement as at 31st December 2019, Financial Performance Statement for the year ended on the said date, Statement of Changes in Equity, Cash Flow Statement, Notes to the Financial Statements for the year ended as at the above date and summarized important accounting policies were audited subject to my direction in terms of the provisions of the National Audit Act, No.19 of 2018 and the Finance Act, No.38 of 1971 to be read with Article 154(1) of the Constitution of the Democratic Socialist Republic of Sri Lanka. My report, in terms of Article 154(6) of the Constitution, shall be tabled in Parliament in the due course.

Except the effect that may be caused by the matters described in the section "basis for the qualified opinion" in my Report, it is of my view that the financial position of the Institute as at 31st December 2019 and its financial performance and cash flow for the year ended on that date, reflect a true and fair position in accordance with the Sri Lanka Public Sector Accounting Standards.

1.2 **Basis for the qualified opinion**

(a) A private Company had filed a case against the Institute claiming Rs.6,355,550 for releasing a Performance Bond and even though there had been a possibility of occurring an improbable credit to the said value on the said reason, the Financial Statements did not reveal such matters as per Clause (100) of the Sri Lanka Public Sector Accounting Standard No.08.

(b) Action was not taken to estimate the least value out of the final stock cost or Net Realization Value in terms of the Sri Lanka Public Sector Accounting Standard No.09 and the value of the final stock was estimated on Simple Average Cost and indicated as Rs.25.1 million in the Financial Statements.

(c) The error of incorporating Rs.2,000,000 in the Depreciation account had not been rectified in the current year as well that had taken place due to the depreciation of five percent in the precedent year, on the cost of land where the Research and Development Building in Malabe was situated.

(d) Action had not been taken to identify and adjust the direct bank credit of Rs.6,993,491 in accounts which had then existed, but not identified as at 31st December in the year under review and was recorded as Current Credits in the

Financial Statements. For this reason, the Financial Statements indicated a lesser revenue and more current liabilities of the above value in the year under review.

(e) Rs.1,134,572 was allocated as suspicious loan for the unsettled advance payments of Rs.9,476,908. For this reason, the Financial Statements indicated Rs.1,134,572 of deficiency in excess in the current year also.

(f) Even though the Financial Statements had indicated Rs.790,816,686 as the value of total asset depreciation as at 31st December 2019, it was observed a difference of Rs.4,016,099 between the values as the said value had been Rs.786,800,587 in accordance with the Schedule presented for audit purpose. Notwithstanding that the said assets had been employed for the Institute's activities, action was not taken to rectify and revalue the estimated error of the assets in accordance with the Sri Lanka Public Sector Accounting Standard No.03.

(g) Even though the trade debtors value as at 31st December 2019 had been Rs.29,791,016, any balance confirmation letter to the effect was not produced at the audit.

The audit was conducted in accordance with the Sri Lanka Auditing Standards. The responsibility under these auditing standards has been further described in the section "Responsibility of the Auditor regarding the auditing of the Financial Statements". It is my belief that the audit evidence that has been perceived is sufficient and appropriate for providing a basis for the qualified opinion.

1.3 Responsibility of the Management and governing parties on Financial Statements

It is the responsibility of the Management to prepare and fairly present these Financial Statements in accordance with the Sri Lanka Auditing Standards and the Sri Lanka Public Sector Accounting Standards and to decide the internal controls required for the preparation of Financial Statements free of quantitative erroneous statements which may occur due to frauds or defaults.

When preparing the Financial Statements, it is the responsibility of the Management to decide the sustainability of the Institute and also to keep records of accounts on institutional sustainability basis and reveal matters relevant to its sustainability unless the Management intends to liquidate or suspend its operations in the absence of other alternatives.

The governing parties bear the responsibility relating to finance recording process of the Institute.

In terms of sub section 16(1) of the National Audit Act, No.19 of 2018, books and records on income and expenditure and, assets and liabilities should be duly maintained, to enable to prepare the Annual and Periodic Financial Statements of the Institute.

1.4 Responsibility of the Auditor regarding the auditing of the Financial Statements

It is my aim to provide an overall fair confirmation that the Financial Statements are free of quantitative erroneous statements which may take place due to frauds and defaults and, to issue the Auditor's Report including my opinion. Even though fair confirmation amounts to that of high standard, it will not guarantee that quantitative misstatements will often be revealed in the audit

carried out in accordance with the Sri Lanka Auditing standards. The individual or collective impact of frauds and errors may result in quantitative misstatements and it is expected that the economic decisions taken by the users based on these Financial Statements may have an impact.

The audit was carried out with professional judgement and doubt in accordance with the Sri Lanka Auditing Standards. And,

- My opinion is supported through sufficient and appropriate audit evidence to avoid the risks caused by frauds and defaults in planning the timely appropriate audit criteria to identify and estimate the risks of quantitative erroneous statements which may occur in those statements due to frauds and defaults. The impact caused by fraud is higher than that caused by quantitative erroneous statements and a fraud may take place through collusion, preparation of fraudulent documents, intentional ignorance or ignorance of internal controls.

- In order to plan audit criteria as timely appropriate, internal control of the Institute was understood and however, it is not expected to express an opinion on the productivity of the internal control.

- Assessment of the appropriateness of the related revelations made by the Management and the fairness of the accounting policies and estimates used.

- That, the relevance of using the basis of institutional sustainability for accounting purposes was decided on the audit evidence perceived as if there exists a quantitative uncertainty on the Institute's sustainability due to any incidents or circumstances. In case I determine that such a quantitative uncertainty exists, my report should focus on the revelations regarding these Financial Statements and if those revelations are not sufficient, my opinion must be modified. However, sustainability may cease on future incidents or circumstances.

- Presentation, structure, and content of the Financial Statements inclusive of these revelations were assessed and the supported transactions and incidents were evaluated suitably and fairly as inclusive in the Financial Statements.

The governing parties were informed on the vital audit findings, major internal control weaknesses and other matters as identified during my audit.

2. Report on other legal and regulatory requirements

The National Audit Act, No.19 of 2018 consists of Special Provisions relating to the following requirements.

- All information and clarifications required for the audit were perceived apart from the effect that may be caused by the matters described in the section "basis for the qualified opinion" in my Report as per Section 12 (a) of the National Audit Act, No.19 of 2018 and in the light of my inquiry, the Institute had duly maintained its Financial Reports.

- The Financial Statements of the Institute are in compliance with those of the precedent year as required by Section 6 (1) (d) (III) of the National Audit Act, No.19 of 2018.

- The Financial Statements contains my recommendations in the precedent years, except the matters referred to in paragraphs 1.2. (a) and (b) of this report, as required by Section 6 (i) (d) (iv) of the National Audit Act, No.19 of 2018.

  Subject to the processes followed, evidence obtained and quantitative matters, anything material did not attract my attention.

- That, a member of the Board Management having direct or indirect liaison, has entered into an agreement on the Board outside normal business conditions, as required by Section 12 (d) of the National Audit Act, No.19 of 2018.

- That, any written law or other general or special orders as issued by the Board of Management of the Institute except the following observations, has not been complied with, as required by Section 12 (f) of the National Audit Act, No.19 of 2018.

Laws and regulations ref.	**Description**
(a) Code of Finance Regulations of the Democratic Socialist Republic of Sri Lanka	
(i) FR No.507 (2) and Clause 7.4.5 of the Circular No. PED/12 dated 2003-06-02	An inventory inquiry had not been conducted on the non-current assets of the Institute to the value of Rs.2,952 million in the year of review.
(ii) FR No.395(d)	Even though every institution which maintains bank accounts is supposed to prepare a Bank Reconciliation Statement before the 15th day of the following month, on the status of transactions at the end of each month, the Institute had prepared only one Bank Reconciliation Statement for the year 2019 on 31st December 2019 instead of separate monthly Bank Reconciliation Statements dedicated for each month.
(iii) Section 396 (d)	The value of cheques not presented for payment was Rs.11,414,070 in terms of the Bank Reconciliation Statement as at 31st December 2019. Action had not been taken in respect of the cheques to the value of Rs.1,031,917 which had exceeded its validity period of 06 months.
(b) Code of National Procurement Guidelines 2006	
(i) Section 4.2.1(d)	Even though a comprehensive procurement plan needs to be prepared on the procurement activities for the following year, the Institute had not prepared such a comprehensive plan for the year 2019.
(ii) Section 4.2.2 (a)	Although a procurement timetable needs to be

	prepared detailing out the time period for each process from the beginning to the end of a procurement process, the Institute had not so taken action to the effect in the year 2019.
(iii) Section 6.2.2	Even though a minimum period of 21 days needs to be allowed in the implementation of the National Competitive Bidding Process and Limited National Competitive Bidding Process, only a minimum bidding period of 15 days was allowed in respect of 3 procurements in the year 2019.
(iv) Section 5.3.11 (a)	Although the bidders should have produced a bidding security under the relevant format in terms of the provisions of the Code of Procurement Guidelines, the procurement process of 8 procurements to the value of Rs.21,261,110 in the year 2019 had been maintained while accepting bids without obtaining bid securities.
(v) Section 5.4.4 (i)	Although a payment of Rs.4,136,214 had been made on 09-06-2016 as construction advance in accordance with the contractual agreement entered into with a private Company for the construction of a canteen for the Office Complex in Malabe, an advanced payment guarantee had not been obtained for the purpose.
(vi) Section 5.4.4 (iii)	Even though the paid advance should have been secured totally at the 90% of the payments to the contractor, action was not taken to secure the advance of Rs.4,136,214 totally at the time of final payment to the contractor of canteen for the Office Complex in Malabe, on 12-07-2018.
(vii) Section 8.9.1	Although a formal agreement should have been entered into subsequent to the confirmation of the contractor and the construction agreement of the canteen for the Office Complex in Malabe at the value of Rs.20,681,068 had been transferred to a private Company on 22-04-2016, an agreement on construction activities was entered into on 28-06-2016.
(d) Management Services Circular No.2/2014 dated 11.02.2014	
Sections 5 (i) (c) and 5 (ii)	Even though the officers' examination proposals should have been submitted to and approved by a Committee comprising the officers of several other Government Institutions with the participation of the Secretary to the Ministry of Science, Technology & Research, the Institute

	had not taken action accordingly.
Section 6 (i)	Although Treasury funds should not be utilised for research projects and provisions should be obtained from the National Research Council or the National Science Foundation for the purpose, action was not so taken, and the said funds were utilised for 87 research projects from 2015 to 2019.
Section 4 (ii)	Even though an interim examination report with progress should have been produced within 6 months from the date of commencement of the research in accordance with the Action Plan pertaining to the research proposal, action was not taken accordingly.

- That, the Board has acted not in compliance with the powers and functions as required in Section 12(g) of the National Audit Act, No.19 of 2018.

- That, the resources of the Board have not been procured and used within the period productively, efficiently, and effectively as required by Section 12(h) of the National Audit Act, No.19 of 2018.

3. <u>Other audit observations</u>

(a) The Institute had not taken action to settle the accrued expenses of Rs.1,272,918 with 6 items that had sustained from a period of 03 to 10 years.

(b) Action had not been taken to recover the debtors balance amounting to Rs.14,158,958 with 10 items which had included in the Financial Statements since several years, within the year under review as well.

(c) The sum of Rs.16,899,429 which ought to have been recovered from 20 Officers who had violated the conditions of foreign scholarship agreements since years, was not so recovered even by 31st December 2019.

(d) There are 448 loan balances to be recovered since a period of more than 06 years, in the receivable trade balance of Rs.29,378,901 as at 31st December 2019 and the said value is Rs.10,612,617.

(e) Since the Institute had not introduced a formal procedure for the identification of the current prices of the technical equipment in the international market, there were shortcomings in the preparation of cost estimates relevant to the said procurements. For this reason, a price increase from 25 percent to 107 percent was observed in the cost estimates prepared for 12 equipment purchased within the year 2019.

(f) The Tablet Friability Tester machine which had been procured for the Chemical and Microbe laboratory at the value of Rs.665,900 on 19th November 2019, was not in use even by 07th February 2020.

(g) Although the Institute had received the Rack Mountable Server System at the value of Rs.2,549,321 on 05th September 2019 that had been procured to the Computer Unit for the installation of the LMS, it was not in use even by 23rd June 2020.

(h) The Industrial Technology Institute had not released 25 completed project examination reports out of 56 research projects to be completed within the period from 2015 to 2019 and subsequently, the anticipated objectives had not been achieved from the research projects that had been conducted within the said period.

(i) It was identified that the Industrial Technology Institute had earned an income of Rs.1,610,000 for the technical transfers through research within the period from 2015 to 2019 and the total sum of Rs.95,430,262 including the expenditure of Rs.61,449,858 for the research projects within the said period and Rs.33,980,404 for the payment of research allowances had been paid. Accordingly, no economic benefit was generated in respect of the funds used for the research projects.

(j) 05 bank balances totalling Rs.3,066,925 had been maintained as inactive bank accounts since a period of more than 05 years.

(k) There were 58 posts vacant including 29, 20 and 09 posts in the staff grade, non-staff grade and other staff respectively and, action had not been taken to make recruitments to the said posts.

(l) Total 47 posts of employees had been approved by the Department of Management Services in respect of the Drugs and Petroleum Laboratory for maintaining the activities of the Industrial Technology Institute at commercial level and even though there had been 21, 18 and 08 vacancies in the posts of staff grade, non-staff grade and other staff respectively in the current year, action was not taken to make recruitments.

(m) It was observed during the audit, that 07 posts including the post of Chief Internal Auditor have fallen vacant since many years.

W.P.C.Wickramaratne
The Auditor General

Report of the Auditor General as per the Section 12 of the National Audit Act No 19 of 2019 on the Financial Statements of Industrial Technology Institute for the year ended on 31st December 2018 and other legal and regulatory requirements.

No	Matters in the Report of the Auditor General	31.12.2019 Explanation of the Institute
01	Financial Statements	
1.2	Basis for the qualified opinion	
(a)	A private Company had filed a case against the Institute claiming Rs.6,355,550 for releasing a Performance Bond and even though there had been a possibility of occurring an improbable credit to the said value on the said reason, the Financial Statements did not reveal such matters as per Clause (100) of the Sri Lanka Public Sector Accounting Standard No.08.	The Institute has paid Rs. 4.6 million was withdrawn due to contractual deficiencies in the project. The remaining amount is recorded as an accrual. They had informed that they would take legal action, but legally thy had not taken any action. Therefore, it was not included in the final accounts.
(b)	Action was not taken to estimate the least value out of the final stock cost or Net Realization Value in terms of the Sri Lanka Public Sector Accounting Standard No.09 and the value of the final stock was estimated on Simple Average Cost and indicated as Rs.25.1 million in the Financial Statements.	In the existing computer system, there are no necessary facilities to carry out the stock audit according to the average cost, so the simple average method is used for the stock audit. A new computer system with this facility is being installed.
(c)	The error of incorporating Rs.2,000,000 in the Depreciation account had not been rectified in the current year as well that had taken place due to the depreciation of five percent in the precedent year, on the cost of land where the Research and Development Building in Malabe was situated.	The adjustment of the allocation of the concerned will be done in the conversion year.
(D)	Action had not been taken to identify and adjust the direct bank credit of Rs.6,993,491 in accounts which had then existed, but not identified as at 31st December in the year under review and was recorded as Current Credits in the Financial Statements. For this reason, the Financial Statements indicated a lesser revenue and more current liabilities of the above value in the year under review.	The amount of Rs.312,915 related to the PF 380 contribution paid for health insurance and Agrahara insurance scheme has been adjusted in the insurance account as it has been paid through the insurance account.

No	Matters in the Report of the Auditor General	31.12.2019 Explanation of the Institute
(E)	Rs. 1,134,572 was allocated as suspicious loan for the unsettled advance payments of Rs. 9,476,908. For this reason, the Financial Statements indicated Rs. 1,134,572 of deficiency in excess in the current year also.	Provisions for partial loans will be adjusted through the respective advance account.
	Reference to legal and regulatory requirements	
	An inventory inquiry had not been conducted on the non-current assets of the Institute to the value of Rs.2,952 million in the year of review.	Although all arrangements were made to complete the non-current assets inspection related to 31.12.2019 in the month of February/March, due to the lockdown of all institutions due to the COVID 19 (Corona) epidemic, it was not possible to carry out those activities. The work will be completed as soon as possible (by August 2020).
	Even though every institution which maintains bank accounts is supposed to prepare a Bank Reconciliation Statement before the 15th day of the following month, on the status of transactions at the end of each month, the Institute had prepared only one Bank Reconciliation Statement for the year 2019 on 31st December 2019 instead of separate monthly Bank Reconciliation Statements dedicated for each month.	The shortage of employees in the financial sector has affected this and all the bank reconciliations for the year 2019 have been completed and due to the corona epidemic situation in 2020, the completion of the bank reconciliations for this year has been delayed and the preparation of the bank reconciliation statements is in progress.
	The value of cheques not presented for payment was Rs. 11,414,070 in terms of the Bank Reconciliation Statement as at 31st December 2019. Action had not been taken in respect of the cheques to the value of Rs.1,031,917 which had exceeded its validity period of 06 months.	Even though this clause has been dealt with for expired checks and the action has not taken in this year and it will be done according to this clause.
03	Other Audit Observations	
(a)	The Institute had not taken action to settle the accrued expenses of Rs.1,272,918 with 6 items that had sustained from a period of 03 to 10 years.	The telephone bill payable by Sri Lanka Telecom has been credited to this account. But the bill was paid through the telephone expense account. In this transition year, proper adjustments have been made.
(b)	Action had not been taken to recover the debtors balance amounting to Rs. 14,158,958 with 10 items which had included in the Financial Statements since several years, within the year under review as well.	A board paper has been submitted to write off some items. Its recommendations will be acted upon. Some items are charged in the year of conversion. Appropriate action will be taken in the transition year for the remaining items.

No	Matters in the Report of the Auditor General	31.12.2019 Explanation of the Institute
(c)	The sum of Rs. 16,899,429 which ought to have been recovered from 20 Officers who had violated the conditions of foreign scholarship agreements since years, was not so recovered even by 31st December 2019.	Out of this Rs. An amount of 4,020,392 is related to 17 officials and actions were taken to recover the relevant amount from the officials who violate the agreements, but those actions were failed because the officials had left the island. Many of their guarantors are also out of the island and some are not alive. Necessary arrangements are being made with the Attorney General's Department regarding the officer who violated the agreement worth Rs. 3,789,640.
(D)	There are 448 loan balances to be recovered since a period of more than 06 years, in the receivable trade balance of Rs. 29,378,901 as at 31st December 2019 and the said value is Rs. 10,612,617.	This rise in debtor balances was largely due to collection of SVAT credit vouchers. The preparation of SVAT was done using trainees and due to the present situation it has become difficult to recruit the trainees.
(E)	Since the Institute had not introduced a formal procedure for the identification of the current prices of the technical equipment in the international market, there were shortcomings in the preparation of cost estimates relevant to the said procurements. For this reason, a price increase from 25 percent to 107 percent was observed in the cost estimates prepared for 12 equipment purchased within the year 2019.	The estimated cost of capital items is determined based on the market prices prevailing at the end of the last year and the market prices published on the internet. Those prices are not the actual value of the goods and the estimated value is based on factors such as customs fees, warehousing charges and all other relevant costs to be paid during the importation of the goods and the depreciation of the rupee due to the exchange rates. Therefore the actual value is overstated.
(f)	The Tablet Friability Tester machine which had been procured for the Chemical and Microbe laboratory at the value of Rs.665,900 on 19th November 2019, was not in use even by 07th February 2020.	The recruitment of staff for the pharmaceutical laboratory has not been completed and therefore there are no staff members for regular use of the equipment. After recruit the staff, the machine will be used for the respective tasks.
(g)	Although the Institute had received the Rack Mountable Server System at the value of Rs.2,549,321 on 05th September 2019 that had been procured to the Computer Unit for the installation of the LMS, it was not in use even by 23rd June 2020.	Agreed to observe and integrated software system (Science Land Pvt Ltd) to the (ISS) computer system, these officials are conducting the preliminary studies required for the ISS software with the relevant departments. Also, the relevant contract agreement was signed with the said company on 24.06.2020 and the initial work of installing the software is underway. This is to be completed in 08 months and then the respective Rack Mountable Server system can be used.

No	Matters in the Report of the Auditor General	31.12.2019 Explanation of the Institute
(h)	The Industrial Technology Institute had not released 25 completed project examination reports out of 56 research projects to be completed within the period from 2015 to 2019 and subsequently, the anticipated objectives had not been achieved from the research projects that had been conducted within the said period.	At the time of the audit, the rest of the project reports had not been obtained, but the activities related to them had been properly carried out, as evidenced by the publication of research papers and technology assignments. However, by today the final reports have been received and can be submitted for audit.
(i)	It was identified that the Industrial Technology Institute had earned an income of Rs.1,610,000 for the technical transfers through research within the period from 2015 to 2019 and the total sum of Rs.95,430,262 including the expenditure of Rs.61,449,858 for the research projects within the said period and Rs.33,980,404 for the payment of research allowances had been paid. Accordingly, no economic benefit was generated in respect of the funds used for the research projects.	For the period of 2015 – 2019, the revenue earned through technology transfers was Rs. 17,430,270. It should be stated that the benefit from technology transfer is not limited to just one year and thus has long term economic benefits. The Institute parteks the benefits related to the transfers made in the past.
(j)	05 bank balances totaling Rs. 3,066,925 had been maintained as inactive bank accounts since a period of more than 05 years.	Account No. 000-0351 567 is related to the CENTEC project, which is jointly run by the Institute of Industrial Technology and several companies involved in the production of ceramic tiles, is currently inactive and a written request has been made to recover this amount.