

ANNUAL REPORT 2020

Industrial Technology Institute

Contents

Chapter 01	Introduction	
1.1	Vision, Mission, Quality Policy	1
1.2	Organizational Structure	2
Chapter 02	Strategic Performance	
2.1	Chairman's message	3
2.2	Executive Report	5
2.3	Action Plan	12
Chapter 03	Governance & Remuneration	
3.1	Board Matters	19
3.2	Board of Management	19
3.3	Management Committee	20
3.4	Internal Audits	21
3.5	Remuneration	22
Chapter 04	Performance Highlights	
4.1	Technology Transfer	23
4.2	Research, Development and Innovations	24
4.2.1	Technology development	24
4.2.2	Technology ready for transfer	27
4.3	Developments in Technical Services	27
4.3.1	New Services	27
4.4	Infrastructure Development	29
4.5	Contributions for National Issues	31
4.6	Contributions for National Projects	32
4.7	Technology for Human Welfare and Socio-economic Upliftment	34
4.8	New Initiatives	37
4.9	Collaborations	37
Chapter 05	Monitoring and Mitigation Pollution	
5.1	Wastewater Treatment	39
5.2	Air Pollution Control	39
5.3	Noise Mitigation	40
Chapter 06	Sustainable Development	
6.1	Employment Statistics	41
6.2	Quality Assurance	45
6.3	Information Services	45
6.4	Awards	46
6.5	Capacity Building	46
6.6	Overseas Training Programmes	50
6.7	Local Training Programmes	50
6.8	Promotional Events	51
Chapter 07	Financial Performance	
7.1	Financial Report	52
Chapter 08	Research Outputs	
8.1	Publications	56

8.2	Communications International	60
8.3	Books, Book Chapters and Guidelines	61
8.4	Patents	62
8.5	Patents Applied	62
	Executive Staff	

CHAPTER 01: INTRODUCTION

1.1 Vision, Mission and Quality Policy

Vision

To be a center of excellence in Scientific and Industrial Research for National Development.

Mission

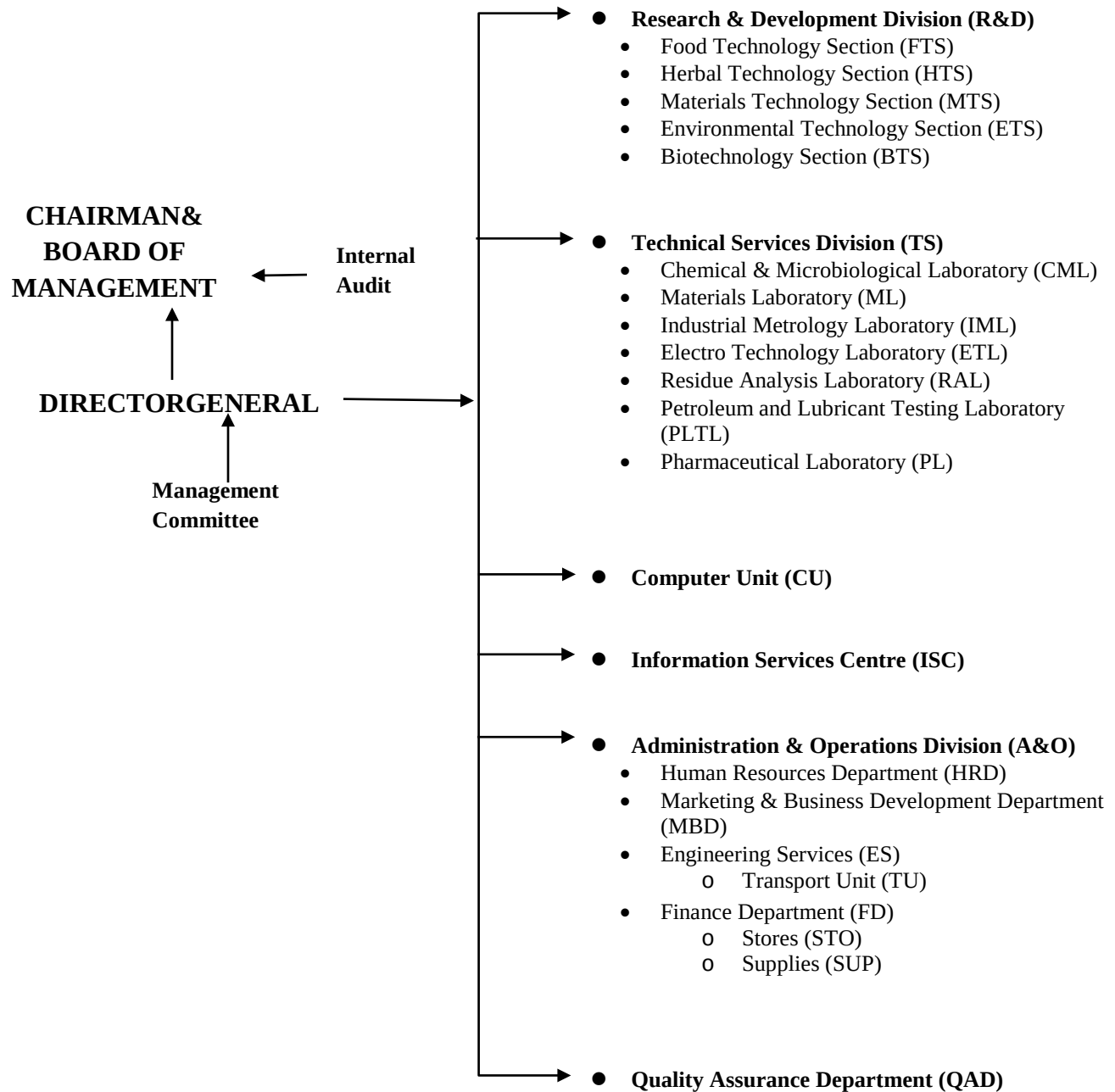
To conduct innovative Research & Development and provide internationally competitive technical services to accelerate industrial development to benefit the people of Sri Lanka.

Quality policy

Industrial Technology Institute (ITI), including its top management, is committed to professional practices, in compliance with the ISO/IEC 17025:2017 and ISO 9001:2015 standards 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 service is not compromised and ITI staff strives to achieve the highest level of customer satisfaction by maintaining Quality Management Systems (QMS) and implementing policies and procedures, and providing independent and unbiased factual data in accordance with stated methods and customer requirements. ITI staff are also committed to continually improving the effectiveness of QMS.

1.2 Organizational structure



CHAPTER 02: STRATEGIC PERFORMANCE

2.1 Chairman's Message

It is a great pleasure to send this message to the Annual Report - 2020 of the Industrial Technology Institute (ITI), the premier R&D institution engaged in scientific industrial research for the development of the country.

Meeting its mandate, the institute has grown steadily over the past sixty-five years and has expanded continuously on its skills, expertise, and competencies from a range of different scientific disciplines including testing services, industrial calibration, and research for socio-economic development. Founded in 1955 as the Ceylon Institute of Scientific and Industrial Research (CISIR) it has made a tremendous contribution to national development through innovative R&D, technology development, technical services, and intervention in a wide range of S&T needs of the country, including capacity building, S&T manpower development and competency enhancement in the MSME sector of the country.

The present Board of Management of ITI, appointed in February 2020, had many challenges in upgrading its capacities to meet the sudden demands created due to the global pandemic situation that started spreading in the country in early 2020. The government also had to face challenges in meeting the demands of the prevention of COVID-19 spread which needed S&T inputs from its R&D and testing institutions in the country. ITI, with its able staff, provided the most needed analytical services for the registration of biomedical products with the respective registration authorities, in supporting preventive and management aspects of the COVID-19 pandemic. Went on further, ITI established a hand sanitizer production facility, meeting the GMP & WHO guidelines to provide quality-assured alcohol-based hand sanitizer and made it available for the public through State Trading Corporation and CWE outlets by a cabinet direction.

With the new normal situations, demands of the 4th industrial revolution, and the state of the socio-economic, technological, environmental, and political landscape and the dynamics of global markets, the ITI board of management proposed coming up with strategic changes to the existing management & operation structure to meet the new demands created globally. In this context, the board approved the proposal from the National Science & Technology Commission to evaluate ITI and propose recommendations to meet the demands of advances in industrial developments for a knowledge-based economy. Further, the board reactivated the process started a few years back to establish a “one-stop-shop” centre at ITI for all S&T needs of the stakeholders. As a result, the board granted approval to establish the S&T Business Centre (S&TBC) at ITI Colombo Premises and an advisory committee was appointed from among leading personnel from S&T-based private sector organizations to assist the S&TBC affairs.

In the strengthening of ITI technical capabilities, several new high-end equipment were added to its advanced analytical facilities and some fresh PhDs & Masters qualified S&T personnel were added to its critical mass. Revenue generation had a slight drop compared to the preceding year with a 46.4% expenditure recovery amid the COVID-19 pandemic and recurrent lockdowns. Further, ITI ensured its service to the nation by strategic solutions given for an uninterrupted service including vaccinating all staff within a very short period to avoid staff getting infected affecting the service delivery. Among many odds due to the pandemic, with the implementation of strategic solutions, the ITI progressed substantially well in the year aligning with the National Policy Framework “Vistas of Prosperity” to create an economic boom in the country. As such, on behalf of the board, I wish to thank the staff and the management of the Institute for their efforts in meeting the demands of the industry & the public helping to maintain ITI’s position as the premier industrial research institute and internationally recognized testing facility in the country.

A handwritten signature in black ink, appearing to read 'Dr. Sirimal Premakumara', with a stylized flourish at the end.

Dr. Sirimal Premakumara PhD
Chairman

2.2 Executive Report

For more than 65 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 (R&D), Technology Transfer, Consultancy, Training and internationally competitive Testing and Calibration Services for the economic development of the country. ITI has functioned under the Ministry of Higher Education, Technology and Innovation (until November 2020) and then the Ministry of Technology.

The COVID-19 global pandemic disrupted many domains of Sri Lanka including ITI, since the first lockdown on 15th March 2020. Major areas of testing and calibration, R&D services, supply chain and logistics were disrupted in 2020 due to COVID-19-related lockdowns and only being able to work with minimum staff. ITI faced these challenges with commitment, creativity and perseverance, making a substantial contribution to local industries during the pandemic in 2020. To fully play our role as the guarantor of technological leadership and technological sovereignty of Sri Lanka, ITI displayed a high degree of resilience during the pandemic. ITI was able to maintain and consolidate its role as a leading organization in applied R&D, testing and calibration services through its combined efforts and with the support of the government of Sri Lanka and local and foreign granting agencies.

This Annual Report provides the strategic performance including an action plan, a summary of ITI activities in 2020, performance highlights and outcomes against the planned objectives, monitoring and mitigating pollution, financial performance, and our contribution and delivery of quality services to the government, industries, non-governmental organizations and the community at large in 2020.

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 Management Committee, ITI staff and colleagues who maintained operational continuity while undertaking special assignments with deep commitment, dedication, and collaborative spirit, and adopted a multidisciplinary approach to scientific and administrative work. If not for their unstinted support and cooperation, ITI would not have been able to meet its targets in tumultuous times caused by the economic conditions due to the COVID-19 pandemic that prevailed in 2020.

In 2020 we continued to focus on Science and Technology and Innovation in areas that are aligned with government priorities, a National Policy Framework ‘Vistas of Prosperity and Industrial demand while facilitating the transition of research and commercialization of research outcomes. During the year, ITI undertook more than 15,000 services including testing and calibration, technology transfers, consultancy, contract projects, and training and worked with more than 18,000 customers, including Sri Lankan Industries, International Corporates, and over 1000 Small to Medium Entrepreneurs (SMEs).

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), United Nations Development Programme (UNDP), Ministry of Science and Technology of China, Yunnan Rural Science and Technology Service Center and Yunnan Agricultural University in Kunming in China, International Center for Chemical Biological Sciences, University of Karachi, Korean Intellectual Property Office (KIPO), Korea Institute of Public Administration (KIPA), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and the University of Toledo, USA.

Technology Transfers

Three key technology transfers were completed through agreements. These include; (a) an alcoholic Kithul beverage with its unique flavour and medicinal value, aiming export markets. Exclusive rights to this beverage belong to Agri Deshiya (Pvt) Ltd. at Rs. 20.5 M including royalty payment, which is the highest recorded financial transaction for a technology in ITI history. (b) Modified coir pith-based material and its application products for the removal of oil spills were sold to Taprobane International Ltd. (c) Frozen Potato French Fries from locally grown potato varieties as a substitute for imported Potato French fries were sold to JGS-Kahaththawela Ltd. with the assistance of the Smallholder Agribusiness Partnership Program (SAPP) of the Ministry of Agriculture.

Further, more than 60 technologies were transferred to Micro, Small and Medium Entrepreneurs (MSMEs) assisting them in initiating new businesses or upgrading or scope expansion of ongoing businesses. Major technologies transferred to SMEs include herbal-based care products against COVID-19, low-cost bottled Ice Coffee, a flavoured milk beverage, mango fruit pulp, mango beverages, mango preserves, ready-to-serve drinks, fruit and vegetable dehydration technologies, frozen fruit and vegetable processing technologies, spice processing technologies, Jak fruit-based products, meat substitutes and vegan products from young Jak fruit, mushroom and cereals and high-quality graphene-based materials, an elephant early warning and alarm system, herbal cosmetics, hand sanitizers, herbal teas and homecare products.

In addition, license agreements were signed to continue Kithul Activation and Sap Production Reagent (KASPER) technology with APIC Agro Pvt Ltd. and with the Industrial Development Board (IDB) to engage the service of IDB to market the KASPER product through its network. ITI also continued to provide technologies to build up and promote Micro Enterprises (MEs) and SME engagement in rural industrial promotion and women empowerment, 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 leading national government-owned, largest scientific R&D organization, ITI continues to deliver our core objective of delivering technology innovation to the entire nation working in collaboration with the government, research network, industry, and universities, both in Sri Lanka and globally. In 2020, twenty ongoing R&D projects were designed based on industry and consumer demand and these projects were in the areas of food, health, biotechnology, materials, environment, natural resources, metrology, electrotechnology and future industries. Many technologies were developed through these projects for commercialization. ITI thus successfully addressed technical issues and provided solutions to the industry and society.

ITI has conducted R&D to combat COVID-19 through this year. The key products that were developed include liquid and gel hand sanitizers, herbal mouthwash, design and fabrication of sanitizer dispenser, a rapid diagnostic kit for the detection of COVID-19 antigens, a mist tunnel, and O₃ generator. ITI also developed a herbal-based nebulizing agent and inhaler, portable herbal steamer, Ayurvedic oil body lotions, hand sanitizing spray and air spray, homecare anti-bacterial surface cleaning gel, hand wash and foaming wash, sanitizing smoking products, coconut oil ester-based products such as anti-microbial surface sterilizing agent, fruits & vegetable wash and surface disinfectant, body lotion, wet wipes and transparent soap and immunity boosters/enhancers such as capsules, tablets, herbal tea, herbal shot, syrup, lozinger and paspanguwa, horse gram products, herbal porridge, lime isotonic energy booster and pepper, coriander, turmeric and ginger-based products through its R&D during the COVID-19 pandemic.

The other key technologies developed through R&D for commercialization include lubricant products from local graphite, a graphite-based composite electrode for electrochemical applications, a wastewater treatment plant for the graphene production process, low-cost biodegradable plastic film, high precision 4 channel wi-fi thermometer and functional beverage from waste whey.

Technical Services

Following the hands-on experience and successes of ITI's testing services, in 2020 we continued to deliver these internationally recognized accredited services across the span of ITI's deep domain expertise to local industries and governmental organizations. These testing services were in areas of chemical, water, wastewater, food, agro products, cosmetics, pharmaceuticals, pesticides, alcohols, materials, lubricant and petroleum oil, microbiology, packaging and herbal drugs, spices and essential oil, biotechnology, environmental pollution and mitigation and trace level environmental contaminants, such as pesticide residues, heavy metals and mycotoxins and for national metrology infrastructure.

ITI also conducted more than 500 services in various disciplines of Environmental 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, and Environmental Impact Assessments in 2020. Noise and vibration assessment studies including measurements, mitigation, prediction, and acoustic modelling services were also provided to power and energy, road, highways, rail, industry and shipping sectors in the country.

During the review year, new testing services were established, expanding the scope of ITI to assist the local industry and export industries and support COVID-19-related product testing including hand sanitizers, face masks, isolation pods, disinfectants, antiseptics, sterilizers, fumigants, household and hospital cleaning products, Ayurveda and herbal products and immunity/energy enhancing food products.

Quality Infrastructure

The Institute continued with the ISO 9001:2015 Quality Management System Certification for R&D Division and Information Services Center. ITI's existing Laboratory Quality Management system, ISO/IEC 17025:2017 was maintained for Technical Services Division and more than 675 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/IEC17025:2017 Laboratory 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.

ITI has been granted ISO/IEC 17043:2010 Accreditation for Proficiency Testing (PT) by SLAB, becoming ITI the 1st Sri Lankan Accredited PT Provider. ITI is conducting PT programmes in water microbiology, food microbiology, and chemical and physical testing for cement for the Sri Lankan laboratories which is a very important element in National Quality Infrastructure. Accreditation status was applied to the newly establish packaging testing laboratory with the assistance of UNIDO.

Infrastructure Development

Petroleum and Lubricant Testing Laboratory was established under government funding for necessary infrastructure including testing equipment at ITI. The National Pharmaceutical Testing Laboratory was established at ITI to test pharmaceutical products including testing for advanced pharmaceutical parameters with financial support from the government. 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 Section. The Biotechnology Unit was upgraded to Biotechnology Section to get recognition for Biotechnology research and testing services at ITI.

ITI received an equipment grant to establish the microplastic testing laboratory from the Commonwealth Litter Programme (CLiP) as a grant program funded by the United Kingdom (UK) government through the UK Center of Environment, Fisheries and Aquaculture Science (Cefas), to develop actions to address plastics entering the oceans and to reduce marine litter. Furthermore, as a part of this CLiP project, ITI also received a grant to develop an online database system to store litter collection data hosted at the Computer Unit of ITI.

Under the MOU signed with the Ministry of Science & Technology (MOST) China and the Ministry of Higher Education Research Sri Lanka and the framework agreement ITI signed 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. ITI started finishing the work of the China-Sri Lanka Joint Laboratory on Biotechnology.

The Science & Technology (S&T) Business Centre was established to provide S&T-based services to stakeholders including Industries, Research Institutes, Universities and Investors, to act as a focal point for local and international organizations and to get a competitive advantage over networking in 2020.

A pilot-scale production facility was established at the Modern Research and Development Complex (MRDC), Malabe during the COVID-19 pandemic in 2020 and hand sanitizers were manufactured and distributed through Sri Lanka State Corporation and the sales outlets at Lanka Sathosa as an effort to defeat the pandemic.

In 2020, with the start of the COVID-19 pandemic, the institute's IT infrastructure was strengthened to create a flexible, participatory working environment for ITI staff during the lockdown and WFH periods. A firewall to secure and manage the computer network was installed at the Malabe premises and ITI staff were able to access internal resources directly through VPN. As a member of the LEARN Identity Access Federation, ITI was able to obtain Zoom and webinar facilities in 2020. The Zoom video conferencing facility was launched to assist the staff in conducting meetings, discussions and training programs. ITI Cloud was launched to facilitate the storage of test reports and other research documents.

Awards, Patents, Publications and Recognitions

ITI Scientists won two Gold medals in the open category under the technical field of Agriculture for the development of a Natural Agricultural Pest Control Agent (NAPCA) and the

commercialized category under the technical field of Food Technology for the development of the instant rice product “Ezy Rice” at the Presidential Awards Ceremony organized by Sri Lanka Inventors Commission. One Sri Lanka Association for Advancement of Science (SLAAS) GRC postgraduate research award and two SLASS GRC postgraduate merit awards were received for ITI Scientists for their PhD research work.

In 2020, 48 research articles were published in refereed journals, 24 abstracts were published in local and international symposium proceedings and 5 book chapters were written for international publishers. In addition, 2 patents were obtained while applications were filed for 5 local patents during the year.

Human Resource Development

Thirty-eight staff including Research Scientists and Engineers, Research Technologists and a Senior Legal Officer, a Senior Customer Liaison Officer and Management Assistants were recruited in 2020. During the year under review, four Research Scientists and one Research Technologist obtained their PhD while two scientists completed their Master's in Chemistry and Process Engineering.

Financial Performance

A capital grant of Rs 105 Mn and an allocation of Rs 125 Mn were received in 2020. These funds were utilized to purchase high-end equipment for R&D and Technical Services to generate more income through new technology development and testing and calibration services. During the year, by completing the procurement process utilizing Rs 105 Mn out of Rs 125 Mn, ITI was able to record its financial progress as 84%. ITI also received Rs 270 Mn in 2020 as a recurrent grant for compensating personnel emoluments and recurrent expenses of the Institute.

The Institute's income decreased from Rs 335 Mn in 2019 to Rs 285 Mn in 2020, due to COVID-19 lockdowns and working with minimum staff during the year while the recurrent expenditure decreased from Rs 589 Mn to Rs 553 Mn during the same period. The income/recurrent expenditure ratio showed a slight decrease from 51.4% to 46.4%. The Institute generated a high percentage of its income from testing and calibration services which contributed 63% (Rs 164 Mn) of the generated income while income from technology transfer, training programs including technology training, consultancy and contract projects remained at 37%. Income from technology transfers showed an increase from Rs 7.5 Mn in 2019 to Rs 11.5 Mn in 2020. However, the contract project and training income decreased due to the COVID-19 pandemic. As a resilient strategy during the pandemic lockdown, ITI started production of hand sanitizers with necessary approvals from the government and it contributed Rs 28 M to total income in 2020. The performance-based incentives were paid to the staff for the 17th consecutive year as the Institute achieved an overall income target set for the year.

I am confident that ITI will endure for the foreseeable future 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 especially due to the COVID-19 global pandemic in the near future. This Annual Report showcased the initiatives launched by ITI in adapting and responding to the changing environment and industry demand to meet its objectives and deliver targeted R&D and Testing Services for a better future for all citizens in Sri Lanka.

Acknowledgement

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

R. Samarasekera

Dr J K R R Samarasekera

Director General /Chief Executive Officer, ITI

2.3 Action Plan

No	Name of the Project/Activity relevance to the National Policy Framework 'Vistas of Prosperity and Splendor'	Brief description of the project	Progress
01	Chapter 04: A Productive Citizen and a Happy Family Sub Sector: Vocational Training and Skills Development 1.1. Provide vocational and technical opportunities to needy students regardless of their academic performances ITI Activity: Conducting NVQ 4 course for Laboratory Assistance Sub Sector: Higher Education ITI Activity: Establishment of Technology University affiliated to ITI for Undergraduate/Postgraduate degree offering status	• Introduced NVQ 4 course (6 months) for Laboratory. Assistance for the first time in Sri Lanka. • Upgraded the NVQ 4 course for NVQ 5 status. • A cabinet paper was submitted to establish ITI-affiliated Technology University.	• The first batch of 20 students enrolled for NVQ 4 and ITI staff have conducted theory/practical sessions. • ITI requested NAITA to upgrade NVQ 4 to NVQ 5 level and work is in progress to expand the scope by introducing new courses. • Identified infrastructure facilities required and budgetary allocations were requested through the capital budget. • The cabinet paper was submitted to the line Ministry.
	1.2 Provide a wider opportunity for the existing workforce to upgrade their skills ITI Activity: Conducting training programs and group technology transfer activities in the areas of Food Technology, Herbal Technology, Materials Technology and Biotechnology	• ITI conducted training programs in different areas for entrepreneurship development to provide knowledge on product processing, selection of packaging material and machinery, labelling and quality assurance etc. • Conducted around 25 awareness programs and invited presentations and webinars to	• More than 275 technology training was conducted in the areas of food technology, herbal, technology, materials technology and biotechnology. • More than 45 technology transfers and 75 contract projects related to the above areas were undertaken including technology development and transfer, fruit and vegetable dehydration, komarika RTS, pumpkin flour, kithul wine, frozen potato chips from locally grown potato, herbal-based cosmetics and drugs, graphene

		popularize ITI activities among stakeholders (postharvest management, value-added agro-technologies, herbal technology and technical analysis). Conducted/contributed to scientific exhibitions and popularized ITI technologies and services to industries and the general public. • Conducted awareness programs on ITI activities and services to relevant, newly established ministries (Ministries of Rural Industries, Fisheries, Agriculture, Digital Technology and Entrepreneur development etc.). • Actively participated in more than 12 webinars by providing expert resource persons and popularising ITI activities at the local and international levels.	technology, home-care products, hand sanitizers, elephant early warning system etc.). • Current issues and government priority areas such as turmeric processing, postharvest loss reduction and value addition to agriculture crops, products to combat with COVID-19 pandemic, import substitution, export promotion, quality maintenance of coconut oil, toxin-free food product technology etc. were mainly addressed in technology development and transfer. • Conducted more than 20,000 food and non-food product analytical testing services based on customer requests. • Participated in INNOVOTECH exhibition and three investor forums to showcase ITI technologies and services. Four awareness programs were conducted to aware the relevant new ministries on value-added food technologies, herbal technologies, material technologies, elephant early warning system technology etc. ITI is being negotiated with the Fisheries Ministry to conduct technology transfer training programs for the fishing community. • ITI has already submitted proposals for the Ministry of Rural Industries, Brass & Rattan and Ministry of Youth for potential technology transfers. • Ten awareness programs were conducted in collaboration with the Export Development Board (EDB), Government Medical Officers Association (GMOA), Department of Agriculture (DoA), Institute of Food Science and Technology (IFTSL) etc.
02	Chapter 04: A Productive Citizen and a Happy Family Sub Sector: Western Medicine Popularization of toxin-free healthy meals ITI Activities:	• Ten R&D Projects on healthy food development are being conducted, ex: the nutritional and functional properties of traditional rice, validation of coconut oil and value-added	• Meat substitutes from young jakfruit, mushroom, and cereals were developed, three technology transfers were undertaken and additional technology transfers are being negotiated with the industry. • Four entrepreneurs were established

	2.1. Research and development projects targeting healthy food development and technology commercialization	healthy food, development and quality improvement of tea, novel food formulation to combat NCDs, value-added products from underutilized food crops/herbsetc. are ongoing.	targeting local and export markets onJak, frozen fruit and vegetable processing. • A healthy breakfast meal was developed using traditional rice and underutilized cereals (5 products) and one product was commercialized. • Developed fruit and vegetable powder using spray drying technology. • New test methods that were established through the projects are being used in providing ITI technical services.
		• Immune boosters to combat COVID-19 were developed.	• More than 10 product technologies based on coriander, ginger, turmeric and other medicinal plants as immune boosters were developed and these technologies are ready to be transferred
	2.2 Popularization of organic food development	• Conducted R&D projects on organic-based fungicide and pesticide development. One biopesticide was developed and is ready for technology transfer. • Additive-free food product development. • Designed a biofertilizer-making composter to dispose of kitchen waste.	• Two R&D projects on organic-based fungicides and pesticides are ongoing. • Around 150 samples for pesticide residue analyses were undertaken at ITI Residue Analysis Laboratory each month. • One project on Additive-free food product development is ongoing. • Developed a home composter to generate compost from biodegradable food waste within 24 hours and the technology is ready to transfer. • Established laboratory facilities for organic fertilizer testing, biopesticide testing and irrigation water quality testing.
	2.3 Promote proper eating habits at all ages	• Introduced proper food processing techniques through technical workshops. • Upgrading Vidatha Entrepreneurs' food products to capture the High-end markets. • Training food industries on proper processing techniques during the COVID-19 pandemic period.	• More than 75 training programmes were conducted by the Food Technology Section to equip the industry with proper food processing technologies for value addition. • More than 100 of the food products of Vidatha Entrepreneurs were upgraded by addressing food quality and introducing safety measures/standards. • Two training programmes were conducted for participants from different food industries.
	2.4. Create a healthy environment by preventing	• Conducted air quality testing analysis and issue test reports.	• More than 500 services on air quality monitoring were conducted.

	pollution of air, water and soil through a sustainable environment policy	• Conducted consultancy and contract projects for the industry for air quality monitoring, environmental pollution and control and environmental impact assessments etc.	• Testing services for sanitizers, disinfectants, facemasks and herbal products were undertaken. Testing of drinking water quality, soil and fertilizers was undertaken and more than 2000 samples were analysed.
	2.5 Indigenous Medicine and Ayurvedic-related R&D	• Two R&D projects on indigenous medicine development are ongoing. • A test kit to evaluate the adulteration of bee honey was commercialized. • A herbal-based mouthwash was developed to address COVID-19. The herbal-based mouthwash was tested and its efficacy was confirmed against Coronavirus and Influenza viruses. • Hand sanitizers and other related technologies were developed in response to the COVID-19 pandemic. • Ayurveda formulae testing was conducted upon customer request to obtain Ayurvedic registration and cosmetic testing was undertaken.	• More than 20 herbal-based care products were developed against COVID-19. • The bee honey industry is currently using the test kit to detect adulteration. • The antibacterial and antiviral properties of the products were tested and the herbal mouthwash technology is ready for transfer. Technology transfer workshops on hand sanitizer manufacturing were undertaken. • Alcohol-based liquid hand sanitizer, alcohol-based herbal liquid hand sanitizer, alcohol-based herbal gel hand sanitizer, herbal mouthwash, Harankaha hand sanitizing spray, air-sanitiser, antibacterial hand wash/foaming wash, coconut oil-based bio surface disinfectant, coconut oil-based surface sterilizing bio fruits & vegetable wash, coconut oil-based bio transparent soap, coconut oil-based body lotion, coconut oil-based bio wet wipes, moringa oil ointment, moringa oil spray, moringa laxative mixture, pumpkin-based health products, herbal shot immunity boosters, ultrasound sensing automatic hand sanitizer dispenser were developed. • Herbal-related beverages and cosmetic products were developed. • More than 400 test services were undertaken during the period.
03	Chapter 5: People-Centric economy ITI Activities: 3.1 Post-harvest loss reduction 3.2 Research for Agricultural innovation	• Training programs, webinars and invited presentations were conducted for industries and the general public on post-harvest loss reduction and value addition to crops. • Contributed to the Parliamentary	• Four training programs and one webinar on postharvest loss reduction and value addition were conducted. • Five technology training programs were conducted to introduce postharvest protocols targeting export and supermarkets—around 50 participants from

		subcommittee on post-harvest loss reduction. • Post-harvest technology cold chain management, minimal processing, and frozen and value-added fruit and vegetable technologies were introduced to the industry for new entrepreneurship. • Research on enhancing the nutritional status by introducing healthy food products from jak, pumpkin, banana and fish while reducing post-harvest losses of these commodities.	the industry and new Entrepreneurs benefited from the programs. • Around 30 innovative products were developed based on said agricultural commodities. • Four new industries are established on jakfruit-based products. • Six pilot scale studies were conducted on mango fruit pulp, immature jakfruit canning, minimally processed jakfruit, and spray-dried fruits. • More than 50 technology transfer programmes related to postharvest management and value addition and Agri innovations were conducted.
	• R&D on Rubber	• Research on improvement of thermal conductivity of rubber.	• Rubber thermal conductivity has been improved using graphite-based nanocomposite.
	• R&D on Cinnamon	• Research on cinnamon value addition.	• Nutritional, functional and health benefits of Sri Wijeya and Sri Gemunu high-yielding cinnamon varieties (<i>Cinnamomum zeylanicum</i> Blume) were established. • Cinnamon capsules were developed, and technologies are ready for commercialization. • A range of Cinnamon incorporated herbal cosmetics was developed and is ready for technology transfer.
04	Chapter 6: Establishing a Technology-Based Society (Biotechnology, Nanotechnology, Electro technology-related R&D developments, technology transfers and R&D services)	• Conducting research on Biotechnology/Nanotechnology /Electrotechnology innovations.	• Nine Biotechnology innovation-related projects are ongoing, focusing on PCR-based food testing, monoclonal antibody development for dengue virus, whey-based value-added, functional beverage development etc. • Developed three products on graphite, natural rubber composite and electrode are in progress. • Designed and developed an AC/DC shunt and wireless humidity and temperature monitoring system. • A clinical trial was conducted to validate the ear screening device. • An early warning alarm system was

			developed to address human-elephant conflict and is already being commercialized.
		• Research publications, patents and other scientific achievements.	• 49 peer-reviewed journal publications. • 70 communications/Abstracts. • 02 patents received. • 05 patents applied. • 02 national awards. • More than 100 industry tie-ups for potential technology development and transfer. • ITI signed 14 agreements and MOUs with international universities, industry, ministry, and other authorities for technology partnerships. • Fifty-two new research proposals addressing national priority areas of Vistas Prosperity and Splendour were submitted, seeking funds. These proposals are related to food technology, herbal technology, chemical technology, biotechnology, environmental technology and climate change, and material technology.
		• Scope expansion and Establishment of new laboratories at ITI.	• China-Sri Lanka Joint Biotechnology Laboratory with Yunnan Rural Science and Technology Service Center, Yunnan Agricultural University and Kunming University of Science and Technology- Interior decoration is completed and waiting on the Chinese delegation for equipment commissioning. • Establishment of National LMO/GMO Laboratory: Laboratory interior designing is complete and equipment is being received through the collaborative program of the Ministry of Environment and FAO. • Establishment of National Packaging Center by upgrading the packaging testing laboratory- Testing is already commenced. • Establishment of Petroleum and Lubricant Testing Laboratory- Testing is already commenced. • Hand Sanitizer Production Facility was

			established to supply quality guaranteed alcohol-based hand Sanitizers through STC to Sathosa outlets - successfully commercialized.
		•Other activities: Testing services, consultancy, contract projects and other services undertaken by ITI to support local industries and export promotion etc.	•More than 20,000 testing services were undertaken to support the industry. •More than 1000 consultancies were undertaken to support the industry.
05	Chapter7: New approaches in a national spatial system	•Urban waste management, industrial sewage and wastewater management.	• Conducted several consultancies (more than 100 Nos) on Hazardous Waste Generating Industries in Sri Lanka. • Developed new approaches for poultry wastewater treatment using anaerobic digestion.
06	A Righteous Disciplined and Law-Abiding Society Training of Vidatha entrepreneurs/women empowerment	•Technology training for Vidatha and Samurdhi entrepreneurs. •Women empowerment programs.	•20 technology transfer workshops and product upgrading were conducted for more than 100 Vidatha entrepreneurs. •As most Vidatha entrepreneurs are women, contributed to women's empowerment in the country.

CHAPTER 03: GOVERNANCE & REMUNERATION

3.1 Board Matters

The 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 the line Ministry 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. The ITI Board which presently comprises 08 members as follows meets monthly.

as at 31st December 2020

Chairman

Dr. G A S Premakumara

Members

Dr. Radhika Samarasekara
Director General

Ms. Kumudini Chandrasekera
Assistant Director
Department of Ministry of Finance

Ms. Deepa Liyanage
Additional Secretary (Research)
Ministry of Higher Education, Research and
Innovation

Dr. Aruna Champika Jayakody
Executive Director
Melsta Hospital, Ragama

Eng. W H S P Withanage
Consultant, Civil Engineer

Prof. A L T Perera
Emeritus Professor
Faculty of Agriculture,
University of Peradeniya

Mr. Dinesh Kumara
Founder Inspire X (Pvt) Ltd

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 after evaluation by an interview panel.

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 2020

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
Vacant

Research & Development
Food Technology Section
(Vacant)

Dr. P Ranasinghe
Senior Deputy Director
Herbal Technology Section

Dr. Iresha Kottegoda
Senior Deputy Director
Materials Technology Section

Eng. N A T D Gunasekara
Senior Deputy Director
Environmental Technology Section

Technical Services
Dr. H P P S Somasiri
Senior Deputy Director
Chemical & Microbiological Laboratory

Dr. W M S Wijesinghe
Senior Deputy Director
Industrial Metrology Laboratory

Eng. Dr. R M Weerasinghe
Senior Deputy Director,
Electro Technology Laboratory

Eng. A T M Adikari
Senior Deputy Director
Materials Laboratory

Dr. R M Dharmadasa
Senior Deputy Director
Bio-Technology Section

Mr. M N A Mubarak
Senior Deputy Director
Residual Analysis Laboratory

Petroleum and Lubricant Testing Laboratory
(Vacant)

Pharmaceutical Laboratory
(Vacant)

Administration & Operation

Senior Deputy Director
Administration & Human Resources
(Vacant)

Eng. A S Arachchi
Chief Engineer
Engineering Services

Mr. Laleen Gunaratne
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 Industrial Technology Institute, 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, 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 Program 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 Program, 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 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.

Two Audit Committees were held in the year 2020 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 one Audit & Management Committee 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 Incentives 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

During the review year, more than 60 technologies were transferred to Micro, Small and Medium Entrepreneurs (MSMEs) assisting them to initiate new businesses or upgrade or scope expansion of ongoing businesses. Among the technologies transferred, alcoholic Kithul beverage, modified coir pith, frozen Potato French Fries, ready-to-serve drinks, fruit and vegetable dehydration technologies, herbal cosmetics and homecare products were the key technologies.

Technology training was conducted on food, herbal and materials technologies for Vidatha entrepreneurs and other MSMEs targeting rural industrial development and women empowerment. Organic agriculture-based food products were also introduced at requests of the Smallholder Agribusiness Partnership Program (SAPP) and District Secretariat Office, Monaragala. Four enterprises were established targeting local and export markets on Jak and frozen fruit and vegetable processing technologies. Meat substitutes and vegan products from young jackfruit, mushroom, and cereals were developed and technology transfers were undertaken.

Alcoholic Kithul Beverage

The technology to manufacture alcoholic beverages from Kithul sap was transferred to Agri Deshiya (Pvt) Ltd. The Kithul beverage with its unique flavour and medicinal value has a high potential in the export market. This new industry establishment with exclusive technology transfer of Rs. 20.5 million with royalty payment recorded as the highest financial transaction for Technology carried out in ITI history.

Frozen Potato French Fries

Technology transfer and new industry establishment on Frozen Potato French Fries from locally grown potato varieties were undertaken for the JGS-Kahaththawela Ltd. with the assistance of the Smallholder Agribusiness Partnership Program (SAPP) of the Ministry of Agriculture. The technology transfer fee for Frozen Potato French Fries was Rs. 3.0 million and is an import substitute for imported Potato French fries.

Synthesis of high-quality graphene-based materials

Graphite is a valuable natural resource available in the country, currently being exported at a low price mainly as a raw material without any value addition. Graphene-based value-added products have a high export market. Pilot trials on the mass-scale synthesis of reduced graphene oxide and graphene oxide from graphite were conducted using new and modified existing methods. The technologies were transferred to the graphite industry.

Modified Coir Pith for oil spill cleaning

The technology of modified coir pith for the removal of oil spills was developed to use in the efficient cleanup of oleophilic oil spills in water bodies. After the completion of laboratory development and characterization of modified coir pith and biochar, the pilot trials were carried out at an industrial facility. The technology was transferred to Taprobane International Pvt Ltd.

Bottled Ice Coffee

Ice Coffee is a new addition to the range of flavoured milk beverages in the Sri Lankan market. The product is manufactured by industries with high-tech equipment facilities, and this processing facility is not affordable to many SMEs. A low-cost coffee-milk beverage processing method was developed to support SMEs. The technology was transferred to Sue Coffee Pvt Ltd. An awareness program on “Risk of incorrect processing of milk added beverages as for the health hazards of extended storage of mildly- processed low acidic milk products” was also conducted for industry and stakeholders to increase awareness.

Mango fruit pulp and beverages

With the business scope expansion, Maliban Biscuits PLC Ltd has started commercial-scale horticultural orchards of mango. Targeting for knowledge expansion on postharvest management protocol of mango and value-added product processing, the Food Technology Section of ITI has undertaken a pilot scale technology transfer of the process technologies of mango fruit pulp and beverages to Maliban Biscuits PLC Ltd.

Potato Chips

The technology to manufacture a ready-to-eat deep-fried snack, Potato chips, processed using locally grown potato varieties was transferred to 505 Special Watch (Pvt) and the company has commercialized three different flavours of Potato chips; BBQ, Cheese and Salt & Vinegar under the brand name “Krispies”.

Mango Preserve

The technology for osmotically dehydrated fruit with a thin transparent powdered sugar was transferred to Mr Neil de Silva of Confectionery House and the product is available in the local market.

4.2 Research, Development and Innovation

4.2.1 Technology Development

As the leading national government-owned largest scientific R&D organization, ITI continues to deliver technology innovation for the entire nation, working in collaboration with the government, research network, industry, and universities, both in Sri Lanka and globally.

ITI has conducted research and development and testing services facing many challenges to assist in combating COVID-19 throughout this year. The following products were developed as ITI contributions to combat COVID-19 during the lockdown period.

Formulation of Liquid and Gel Hand Sanitizers

A pilot-scale production facility for herbal gel hand sanitizers, and herbal liquid hand sanitizers was established at ITI during the COVID-19 pandemic period in 2020. Under this facility, alcohol-based hand sanitizers were formulated and manufactured according to SLS 1657-2020 Specifications for hand sanitizer using 75% ethyl alcohol. The hand sanitizer product has NMRA registration and the manufacturing facility has GMP status. The product is marketed through Sri Lanka State Trading Corporation under the ITI brand name SELANI.

Design and fabrication of Sanitizer Dispenser

A sensor-activated hand sanitizer dispenser was designed, developed and installed at different locations of the Institute as a measure of personal protection against COVID-19.

Development of Herbal Mouth Wash

A mouthwash with local herbs and essential oils with high anti-microbial efficacy was developed. The product showed antiviral activity against Coronavirus and Influenza viruses.

Rapid Diagnostic Kit for the detection of COVID-19 antigens

ITI, in collaboration with the National Institute of Fundamental Studies, undertook research to develop a rapid diagnostic kit for the detection of COVID-19 antigens.

Mist Tunnel

A mist tunnel was designed as a spraying unit and when walking through it, a spray of ethyl alcohol will entirely disinfect the person.

O₃ Generator

The O₃ generator was designed to produce ozonized water for sterilization.

ITI also developed a herbal-based nebulizing agent and inhaler, portable herbal steamer, Ayurvedic oil body lotions, hand sanitizing spray and air spray, homecare anti-bacterial surface cleaning gel, hand wash and foaming wash, sanitizing smoking products, coconut oil ester-based anti-microbial surface sterilizing agent, Bio Surf for fruits & vegetable wash and Bio Surf surface disinfectant, body lotion, Bio wet wipes and Bio G Transparent soap and Immunity boosters/enhancers such as capsules, tablets, herbal tea, herbal shot, syrup, lozinger and paspanguwa, horse gram products, herbal porridge, lime isotonic energy booster and pepper, coriander, turmeric and ginger-based products through its research and development during the COVID-19 pandemic period.

Lubricant Products from Local Graphite

Graphite shows high lubricating properties due to its weak covalent bonds which allow the graphite layers to slide on top of each other with little resistance. With this unique property, graphite-based lubricants are widely used, especially in mechanical equipment. A project was initiated to develop unique graphite lubricant products as a value addition to local graphite to use as a dry lubricant at high temperatures using Sri Lankan graphite. Graphite lubricants with different compositions were developed using graphite, graphite oxide and graphene and the properties are being tested.

Graphite-based Composite Electrode for electrochemical applications

Graphite-based electrodes developed using organic binders usually fail due to the instability of the polymeric binders at high temperatures restricting the majority of existing graphite-based electrodes to use in only low-temperature electrochemical applications. As a value-added product to local graphite, a low-cost graphite-clay composite electrode was developed without using polymeric binders to use in high-temperature applications. Graphite electrodes based on graphite-morillonite and graphite-kaolinite composites were designed, characterized and tested for suitability at high-temperature and for general electrochemical applications.

Wastewater treatment plant for the Graphene production process

The project was initiated to address the drawbacks in the commercialization of graphene to meet environmental disposal regulations in industrial applications. A low-cost efficient wastewater treatment method was developed for graphene production at a laboratory scale and pilot trials are in progress before implementation.

Low-cost bio-degradable Plastic Film for polythene shopping bags

Plastic waste is a major environmental issue faced by many countries. Dumping single-use lunch sheets and shopping bags into soil, rivers, waterways and the coastal line is a major cause of pollution leading to environmental and health hazards.

Biodegradable materials are an alternative solution to plastics, and the main objective of the project was to develop low-cost biodegradable plastic films. Processing and characterization of biodegradable plastics and additives were completed in the year 2020.

Development of high precision 4 channel wi-fi Thermometer

A thermometer was developed using the digital signal processing (DSP) technique to use in calibration purposes. The thermometer is very useful to calibrate cold rooms, temperature enclosures and temperature measurements at highly restricted laboratories. The cost of the high precision thermometer is very costly and therefore, this invention is a key solution to fulfilling the reference thermometer requirements and for the required accuracy of measurements.

4.2.2 Technology ready for transfer

Immunity Boosting Herbal Drinks

Herbal drinks were developed by incorporating coriander (*Coriandrum sativum*) and fresh turmeric root (*Curcuma longa*) and ginger to boost human immunity.

Development of Functional Beverage from waste whey

Whey is the major by-product with high biological oxygen demand during cheese (Paneer, Channa and Chakka) production and causes major disposal problems in the dairy industry. Due to its amino acid composition, whey protein has a higher biological value compared to all other protein sources available. Whey is an ideal, but underutilized raw material for the production of functional beverages. The technology for a functional beverage, pineapple/mango incorporated milk/whey smoothie has been developed and the technology is ready to transfer.

4.3 Developments in Technical Services

4.3.1 New Services

During the review year, new testing services were established, expanding the scope of ITI to assist the local industry and export industries and support COVID-19-related product testing including hand sanitizers, face masks, isolation pods, disinfectants, antiseptics, sterilizers, fumigants, household and hospital cleaning products, Ayurveda and herbal products and immunity/energy enhancing food products. An uninterrupted service on chemical, microbial metal and chemical residue testing was provided for clients including tea exporters and alcohol manufacturers and importers and alcohol auditing during the COVID-19 pandemic period in 2020. More than 50 Nos. of new Innovative products were tested and evaluated at the request of the Sri Lanka Invention Commission and MSMEs.

New test methods established to test COVID-19-related products include evaluating bacterial filtration efficacy of anti-viral protective face masks and face mask materials and herbal masks using a biological aerosol of *Staphylococcus aureus*, implementing the ASTM standards for assessment of antimicrobial activity using a Time-Kill procedure for hand sanitizers and disinfectants and implementing the ASTM test method for Face Masks including the assessment of the bacterial filtration efficiency.

The other new testing services initiated are the assessment of germicidal activity of vegetable/fruit washes, the antimicrobial activity and minimum inhibitory testing concentration of food, beverage and herbal products, quantification of cyanogenic glycoside and saponins in plant materials, cinnamon and clove oleoresin analysis by HPLC, analysis of hazardous chemicals in smoke of burnt incense sticks. In material testing, environmental stress cracking test on plastic according to the SLS 1336:2017 standard, analysis of paint brushes according to the SLS 562:1982 and detection of pull strength test on paint brushes according to the IS 384 (Part 1):2012 were initiated as new test methods.

Petroleum and Lubricant Oil testing facility

ITI initiated new testing services in its newly established Petroleum and Lubricant Oil testing Laboratory in September 2020. The petroleum and lubricant oils were tested according to local and international (ASTM and ISO) standards. The testing services will assist the country with retaining the foreign exchange spent for fuel and lubricant oil testing. ITI is currently in the process of preparing documents to obtain accreditation for the testing services of the laboratory.

Identification of microbial species and PCR products by DNA Sequencing

DNA Sequencing is the most accurate and accepted method of species identification. Capillary Electrophoresis Sequencing (CES) service is provided by ITI to identify different microbial species and PCR products (animal and plant-based), in collaboration with Macrogen Inc., Korea. This service helps the food and agriculture-based industries to maintain and monitor their product quality and ITI provides raw and analyzed data depending on customer requirements.

Accreditation Scope Expansions

Residue Analysis Laboratory (RAL) continues to be the benchmark for analytical testing and obtained accreditation for 102 new parameters in May 2020 from Sri Lanka Accreditation Board (SLAB). The new parameters included analysis of heavy metals on cereal and cereal-based products, fruit juices, squashes, cordials, fruit drinks, toothpaste and creams; analysis of veterinary antibiotics residues in animal-origin food authorized to use in Sri Lanka and analysis of glyphosate residues in soil. Analysis of pesticide residues which are relevant to banned, registered and approved for application in Sri Lanka in tea and spices and organochlorine pesticide residues in water and wastewater are also included.

Chemical and Microbiology Laboratory expanded its scope by obtaining accreditation for the analysis of anionic ingredients of shampoo and baby shampoo products as per SLS 1346:2018 and SLS 1342:2018.

Accreditation of Micropipette Calibration

Micropipettes are widely used in analytical and medical laboratories. The test results are mainly dependent on the accuracy of the micropipette. Therefore, there is a demand for micropipette calibration, especially in the range of 1 µl to 10 µl. The accredited calibration method was

developed at Industrial Metrology Laboratory (IML) enabling it to provide more accurate and reliable service.

Repair of Laboratory Instruments

More than eighty laboratory instruments of Coconut Research Institutewere repaired by Electro Technology Laboratory. If these instruments were discarded due to a lack of maintenance and support from the supplier agents, the government has to spend several million rupees to replace these instruments.

Testing for specifications of LED Flash shoulder lights

LED flashlights are used by the traffic police atnight to identify policemen on duty. Some samples of flashlights were tested using developed test procedures to comply with the parameters as per the given specifications.

Calibration Services

During the period under review, a total number of 6500 calibration services have been completed. IML specially provides calibration services with international traceability for local industrialists, BOI companies, ISO 9001 and ISO 17025 certified companies and testing laboratories with the main objective of maintaining the quality system as per the above standards. Further, calibration services were provided to outside customers, the laboratory continued to provide internal calibration services for the ITI testing and R&D laboratories that have obtained international accreditation/certification at ITI.

4.4 Infrastructure Development

Petroleum and Lubricant Testing Laboratory

The Government of Sri Lanka has funded the necessary infrastructureincluding testing equipment to establish a state-of-the-art Petroleum and Lubricant Testing Laboratory at ITI as per the cabinet decision taken in 2015 for the joint cabinet memorandum submitted by the Ministry of Finance and Ministry of Petroleum Resources.The laboratory is nowequipped to a greater extent as per ASTM and SLSI requirements, with state-of-the-art testing equipment and run by fully qualified Research Scientists and Technologists. The Public Utility Commission of Sri Lanka (PUCSL), can make use of this testing facility as expected and directed by the parliamentary subcommittee.

Pharmaceuticals Testing Laboratory

The Government of Sri Lanka has funded the necessary infrastructureincluding testing equipment to establish a national Pharmaceutical Testing Laboratory at ITI as there isn't a fully-fledged pharmaceutical testing facility in the country at present. ITI has established a laboratory for testing pharmaceutical products including testing foradvanced pharmaceutical parameters.

ITI obtained a grant under National Quality Infrastructure (NQI) Development Plan

The Chemical & Microbiological Laboratory of ITI was granted an allocation of Rs. 18.5 Million from the National Exports Strategy (NES) implemented under the Ministry of Trade to develop the infrastructure to implement activities identified in the National Quality Infrastructure (NQI) Development plan. The grant enables to upgrade of its testing capabilities to assist the local industries to access the export market with faster and upgraded testing services.

Science & Technology Business Centre

The Science & Technology(S&T) Business Centre was established to provide S&T-based services to stakeholders including Industries, Research Institutes, Universities and Investors, to act as a focal point for local and international organizations and to get a competitive advantage over networking in 2020.

ITI initiates to conduct of NVQ Courses

The Certificate Course for Laboratory Assistants leading to NVQ level 4 qualification was inaugurated on 28th August 2020 with 20 participants. The syllabus of the course was developed and designed according to the requirements of the Tertiary and Vocational Education Commission by the University of Vocational Technology with the assistance of ITI.

Installation of Firewall

A firewall to secure and manage the computer network of ITI was installed at the Malabe location. During the lockdown working from home (WFH) period, ITI staff were able to access internal resources directly through VPN due to this system. Further, the firewall enhances the security and remote access of the new ERP system which is being developed.

Zoom Video Conference Facility

The Zoom video conferencing facility was launched in ITI during the first COVID-19 lockdown in 2020. This facility assisted the staff to conduct meetings and discussions during the COVID-19 lockdown and WFH period. ITI joined the LEARN Identity Access Federation (LIAF) as the 1st member in 2019 enabling obtaining Zoom facilities in 2020.

Launching of ITI Cloud

During the review year, ITI Cloud was launched to facilitate the storage of test reports and other research documents. This is useful to store all softcopies of the test reports in a centralized location with security.

Upgrading of iNET

The iNET, the intranet of ITI launched in 2008 with the concept of using ICT in Government business was redesigned, upgraded and launched with new facilities. The system is accessible to all employees in ITI to get internal information.

4.5 Contributions to National Issues

Arsenic in canned fish marketed in the Western province of Sri Lanka

Heavy metal contamination in food is a major concern as it leads to many adverse health effects. It was reported that a consignment of canned fish imported to Sri Lanka contained arsenic and ITI was requested to analyse canned fish for arsenic by Importers, Consumer Affairs Authority and Sri Lanka Standards Institute. The total arsenic concentration was determined by Inductively Coupled Plasma Mass spectrometry (ICP-MS) after microwave digestion. The results were verified with SLS 591-2014 standard and the reports were submitted to the above Institutions. ITI continues testing all imported canned fish for heavy metal and the importers were able to clear their consignments of canned fish from Sri Lanka customs with ITI test reports.

Analysis of mercury in whitening cream

The use of face and skin whitening creams is becoming very popular among consumers and many local and imported products are available in the local market. The presence of mercury salts beyond the allowed limits in these products is of great concern as they cause adverse health effects. ITI was requested to test for mercury content in the whitening creams available in the market.

Local and imported whitening creams were tested using an Inductively Coupled Plasma Mass Spectrometer (ICP-MS) in compliance with ISO/TR 17276:2014 standard. The results were assessed against the SLS 743:2014 standard and found more than 52% of the tested samples exceeded the SLS maximum limit of 1.0 mg kg^{-1} of mercury. The majority of the samples that complied with the SLS maximum allowable limit were manufactured within the country.

Testing of Face Masks and Sanitizers

According to WHO guidelines, the use of face masks and sanitizers protects against and limits the spread of COVID-19. Accordingly, high demand was created in Sri Lanka from March 2020 onwards. Local Industries started manufacturing and also importing face masks and sanitizers to meet the demand and supply. These products have to comply with the specifications of Sri Lanka Standards, SLS 1675:2020 and SLS 1627:2020, respectively to be marketed locally. ITI carried out testing for microbial efficacy and air filtering for the face masks and analysis of sanitizers with a newly developed GC/FID test method as per SLS. The testing services were provided throughout the year including the COVID-19 lockdown period to address the pandemic crisis.

Testing of Tea for Weedicide residues

ITI initiated issuing test reports on the analysis of Glyphosate, Diuron and Hexaconazole in tea expanding the scope of its technical services to the country. Glyphosate an organophosphorus compound used as a weedicide commonly in agriculture is currently banned in the country. The

tea exports especially to Japan, faced a major challenge due to the non-availability of an analytical testing facility to analyze residue levels of Glyphosate and other residues in tea leaves within Sri Lanka. A group of ITI scientists developed a method to analyze the weedicide using the LC-MS-MS obtaining Limit of Quantification (LOQ) values lower than the stipulated Maximum Residue Levels (MRL) values by the Sri Lanka Tea Board and Tea Research Institute of Sri Lanka. This service provided an opportunity to gain the export market for Ceylon tea and minimize the flow of hard-earned foreign currency out of the country for testing. The uninterrupted service was provided even during the COVID-19 lockdown period, enabling the exporters to send consignments to Japan and other countries.

Field implementation of Elephant Early Warning System

The Human-Elephant Conflict is a national issue in Sri Lanka. A considerable amount of people and elephants get killed yearly due to elephants invading villages and plantations. The government has been seeking a sustainable solution for the Human-Elephant Conflict for several years.

ITI developed a solution using the existing mobile technology through the involvement of the community to mitigate elephant attacks by using early warning signals.

The Elephant Early Warning system was installed in Galgamuwa divisional secretariat as a pilot scale project. Two villages Wathupolagama and Ehetuwewa were secured from this system as the community used the system actively. The pilot project was funded by the Eco-system Conservation and Management project (ESAMP) of the Department of Wildlife.

4.6 Contributions to National Projects

Noise modelling for proposed red, green and blue line Light Rail Transit

The integrated transport proposal, Light Rail Transit (LRT) is consisting of 3 LRT lines, RED, BLUE and GREEN. The project was implemented by the Ministry of Mega Police and the EIA is carried out by TEAMS (PVT) Ltd. ITI was subcontracted to develop the noise model and identification of noise barrier locations of LRT lines. During the COVID-19 lockdown period, the noise model development work was carried out successfully.

Testing of RUMBLE stripes for Central Expressway Project 2

Drivers tend to fall asleep when driving at a constant speed on expressways, resulting in major accidents. The Road Development Authority implemented fixed Rumble stripes along the hard shoulder of the expressways to avoid such accidents. Rumble strips cause an intense vibration and an audible sound is transmitted through the wheels into the interior of the vehicle.

The consultant company of the project requested ITI to test the noise and the vibration generated by the vehicle passing over a rumble strip. Four types of vehicles were selected and vibration transmission to the steering wheel and the noise level were measured at the ear of the driver.

Measuring background noise of Central Expressway Project 3

ITI provided noise monitoring services for the Central Expressway Project 3, which runs from Pothuhara to Galagedara at a distance of 32 km. A joint site inspection was conducted with the project officials and 19 monitoring locations were identified. In some locations, 24-hour noise monitoring was performed while measurements were done day and night basis for a short period in other locations. Further, ITI will be undertaking noise barrier design for the Central Expressway Project 3.

Commonwealth Litter Programme (CLiP) on Micro-plastics pollution in Sri Lankan aquatic bodies

With the intervention of the Foreign Ministry, Sri Lanka as the focal point for the Commonwealth Blue-Green Charter (CBC), Sri Lanka has embarked on several important diplomatic missions in the field of microplastic waste management including the adoption of a resolution at the United Nations Environment Conference on Marine Pollution and Microplastics Management in 2019 and its support for the Commonwealth Clean Ocean Alliance. The Commonwealth Litter Program (CLiP) is being implemented in Sri Lanka as a grant program funded by the United Kingdom (UK) government through the UK Center of Environment, Fisheries and Aquaculture Science (Cefas), to develop actions to address plastics entering the oceans and to reduce marine litter, including the grant of laboratory equipment to ITI, Central Environment Authority (CEA), Marine Environment Protection Authority (MEPA), and National Aquatic Resources and Development Agency (NARA).

The Commonwealth Litter programme (CLiP) which assists in finding solutions to environmental and socio-economic problems for aquatic waste management accepts the proposal by ITI to initiate a survey on qualitative and quantitative assessment of micro-plastics in Sri Lankan aquatic environments. At the initial stage, ITI has selected to carry out baseline studies on the water quality of 5 major rivers, implementing CLiP proposed analytical methods for testing and validation of test methods.

Implementation of a database system for the Commonwealth Litter Programme (CLiP)

Furthermore, as a part of this CLiP project, ITI submitted a proposal to develop an online database system to store litter collection data. The development of the database and a mobile application was completed and hosted at the Computer Unit of ITI.

4.7 Technology for Human welfare and Socio-economic upliftment

Enhancing the nutritional status of people by introducing healthy food products

Jak, pumpkin and banana are commodities with a high nutritional value which faced high postharvest loss due to high yields and lack of proper value chain management. Developing healthy food products, functional food ingredients and meal plans utilizing these agricultural commodities would address the sustainability and food and nutritional security of the country.

The project was initiated to minimize post-harvest losses, develop innovative value-added products, and transfer technologies targeting rural entrepreneurship development. A range of value-added jak, polos and pumpkin-based dehydrated, canned and bottled products were developed, and some technologies were transferred to more than five entrepreneurs including export industries.

Lactic Acid Bacteria from Sri Lankan dairies as a source of functional ingredients for the industry

The native Lactic Acid Bacterial (LAB) isolates that were identified from a previous project were further studied to generate a complete profile of their functionalities as probiotic candidates for local dairy industries. The isolates with the potential to produce organic acids, bacterial exopolysaccharides (EPSs), enzymes, bacteriocins and antioxidants were screened and identified. Some LAB isolates also showed positive results as functional starters, dairy fermenters, non-dairy fermenters, suitable candidates for the formulation of synbiotic functional products and producers of functional ingredients for food, pharmaceutical and chemical industries. This study initiated the 1st dairy culture collection of Sri Lanka at ITI and new testing services related to functional product quality evaluations.

Ready to serve drink from Kowakka

Kowakka leaves can reduce blood glucose levels and are used as traditional medicine. A ready-to-serve drink was developed using Kowakka leaf extract. A process was developed to retain the bioactive compounds and the product was sweetened with an approved artificial sweetener. The product is being tested for antioxidant and antiglycation properties.

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

The product development with extracts of the Sri Lankan variety of *Moringa*, *Moringa oleifera* to facilitate the establishment of new business enterprises/start-ups resulted in the development and standardization of herbal infusion, chewable tablet formulated incorporating moringa leaf powder, burn cream and anti-inflammatory ointment incorporating moringa oil and herbal toothpaste. Bioactivity studies for antioxidant, anti-inflammatory and anti-diabetic properties of extracts of different parts of *Moringa oleifera* were also investigated.

Identification of GMOs in food samples

Genetically modified organisms (GMOs) have specific changes introduced to their genome by genetic engineering techniques. GMO testing is a mandatory requirement for some EU countries. Also, several local food processing companies already started to have a non-GMO label on their products for quality and customer acceptance. BTS provides the GMO detection test service by checking for the presence of CaMV 35S promoter and Nos terminator GM elements using real-time PCR which is most widely used as the promoter and terminator for genetic modification. BTS is currently in the process of obtaining ISO 17025 accreditation for GMO testing.

Value addition to essential oils by fractional distillation under vacuum

With the objective of upgrading and standardization of essential oils, fractions of essential oils were distilled using a pilot scale distillation unit and hydro distillation. Essential oils and fractions were analysed by GC-MS followed by GC-FID. The different cultivars and maturity stages of Lemon grass and Citronella were studied for the highest content of citral and geraniol, respectively.

The different forms of Cinnamon bark; chips, featherings, quilling and H-grade cinnamon and Cinnamon leaf oil were subjected to pilot-scale hydro-distillation to extract different grades of the bark oil.

DNA sequencing and bio activity studies of endemic and new varieties of Ceylon cinnamon

Cinnamomum capparucoronde, *Cinnamomum zeylanicum*, *Cinnamomum sinharajaense*, *Cinnamomum dubium* and *Cinnamomum* new species were collected from selected locations. DNA from the samples extracted using the Cetyltrimethyl ammonium bromide (CTAB) method were subjected to Polymerase Chain Reaction. Sri Wijeya and Sri Gemunu are high-yielding Cinnamon varieties grown in Sri Lanka. Antioxidant activities and approximate composition of bark and leaves of Sri Wijeya and Sri Gemunu varieties were carried out during the reviewed year.

Curing of bamboo culm that suits tropical environment and bamboo products development

With the intention of developing the bamboo industry, a project was initiated to survey and document bamboo resources/ cottage industries of Sri Lanka and to introduce monopodial bamboo species through a trial plot at Ambewela farm. The project also aims to develop bamboo products from standard wood planks, bamboo charcoal, charcoal tile, bamboo floor tile and bamboo pulp and a preservation treatment for bamboo culm. During the review year, an awareness program on bamboo products was conducted and developed charcoal, bamboo floor tile and bamboo pulp on a laboratory scale.

Value-added products from selected underutilized fruits

Most locally available seasonal underutilized native fruits are rich in functional bio-active phytochemicals; polyphenols, flavanoids, tannins, carotenoids, dietary fibres etc. Preparation of

juices/drinks from these underutilized fruits using pasteurization followed by hot filling to minimize the destruction of bioactive components and nutrients and to retain the quality of the product. During the reviewed year antioxidant activity of fresh and vacuumed dried powder of ambarella, sour-sop and veralu were performed and an ambarella powder incorporated with instant soup and sour-sop powder incorporated with drinking yogurt was developed.

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

Food products with spray-dried fruit, vegetables and yam powders are not very common in the Sri Lankan market and the process is yet to be popularized. These fruit and vegetable juice powders will have high potential in the market. Several spray-dried products, such as ginger tea, ginger milk tea, vegetables incorporated milk powder, and aloe vera powder were developed and the physical parameters of the products were determined.

Development of plant-based fungicide formulation to control anthracnose disease

Postharvest diseases of fruits are mostly controlled by synthetic fungicides. However, there is an urgent need for developing bio-fungicides for the control of postharvest pathogens. New fungicides of this nature can be used in organic cultivation, which could bring more foreign earnings while providing safe foods to consumers. In this study, the effect of combining the most active fractions of selected herbal plant extracts from *Aloe vera* (Komarika), *Zyzguymcumini* (Madan) and *Senna alata* (Aththora) were tested for antifungal effects on papaya and mango.

Amino acid profiling of selected Sri Lankan rice varieties using liquid chromatographic techniques

The study aimed to investigate the variations observed in the amino acid (AA) profiles of selected traditional and improved rice varieties grown in Sri Lanka. The focus was also made to find out the impact arising from the geographical location and the seasonal impact on the AA profiles. In addition, the variations imparted by the post-processing techniques such as milling, parboiling and germination and the cooking technique on the AA profile of rice were also investigated. The work carried out during the reviewed year showed that the free amino acids (FAAs), gamma amino butyric acid (GABA) and protein-bound amino acid (TAA) levels significantly differed across the rice varieties upon cooking and cooking techniques used.

The study was carried out in collaboration with the Rice Research and Development centers of the Rice Research Institute of Sri Lanka located at Batalagoda and Bombuwala.

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

Grain legumes are rich in proteins, carbohydrates and fiber and many vitamins and minerals. The nutritional data of Sri Lankan legume varieties were studied and published but data on Anti-Nutritional Factors and bio-active proteins are not available. This study identified Anti-

Nutritional Factors (ANFs) and the activity of bio-active compounds in commonly grown local edible legumes in Sri Lanka. Among the studied 12-grain legumes, horse gram (*Macrotyloma uniflorum*) varieties; ANK-Black, ANK-Brown and cowpea (*Vigna unguiculata*) variety Waruni, showed radical scavenging activity of ABTS and DPPH in both raw and cooked forms. This study is the first systematic study on the antioxidant potential of locally grown legume varieties and will provide data for varietal identification.

4.8 New Initiatives

Detection of food-borne pathogens using molecular methods

Continuous monitoring of foodborne pathogens is important in the food industry. The Sri Lankan food quality standards set by SLSI specify the accepted limits of food pathogens in food and water. ITI is currently in the process of establishing protocols (in line with food quality standards both local and international) to detect pathogenic *Salmonella*, *Staphylococcus* and *Campylobacter*. As molecular detection of foodborne pathogens requires less time than conventional methods of pathogen detection, this initiative will help the local food industry to maintain the quality, quantity and continuity of their produce.

Stable composite based on titanium dioxide and clay as an effective photo catalyst for wastewater treatment

The objective was to develop an effective and stable TiO₂-clay composite photocatalyst in the form of a rod, plate, spheres, etc. to mineralize a broad spectrum of organic pollutants present in wastewater.

Development of nutritious and healthy food corners for children and adolescents

The objective was to develop nutritious and healthy food products for children and adolescents utilizing local raw materials such as nuts, seeds, whole grain cereals, legumes, milk substitutes and fish and meat complying with stipulated guidelines of the country.

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), 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.

The following research collaborations are currently in progress;

- Indo Sri Lanka Joint Research Programme with the Institute of Chemical Technology, India on Studies in surface sterilization of spices using the non-thermal process.
- Asian Institute of Technology, Thailand on biosensors development and mutual training.
- Chulalongkorn University, Bangkok, Thailand for biomedical food research engineering.
- Sri Shakthi Institute of Engineering and Technology for plasma science and food research and research training exchange.
- Coordinating Secretariat for Science, Technology and Innovation (COSTI), Sri Lanka and Korean Intellectual Property Office (KIPO), Korea Institute of Public Administration (KIPA) on the development of pre-treatment method using Red Clay granules for KIPO/KIPA Appropriate Technology Development Project – Water purification system development.
- Department of Nano Science and Technology Tamil Nadu Agricultural University Coimbatore, India on developing functional molecules based nano formulations from medicinal plants and microalgae to augment cancer therapy.
- Postgraduate Institute of Science (PGIS), the University of Peradeniya to develop scientific, research, technological and academic cooperation through collaborative research, transfer the gained knowledge and dissemination of knowledge to the community.
- National Research Council, Department of Agriculture and CIC Holdings on extraction, isolation and formulation of Plant Protection Products (PPP) from local medicinal plants for the management of sucking pests of fruits, vegetables and ornamental plants.
- National Research Council, the University of Kelaniya on new product development and community participation on the operational model to control dengue in Sri Lanka using multiple vector control interventions.
- Walpita Agriculture farm and Department of Agriculture on Curing of bamboo culm that suits to tropical environment and bamboo products development.
- Department of Agriculture Makadura Research Station on development of plant-based fungicide formulation to control anthracnose disease of mango and papaya.
- The University of Sri Jayawardenapura, Sri Lanka on Cancer, anti-diabetic and immunomodulatory effects and molecular characterization of compounds isolated from selected marine algae from Sri Lanka.
- The Open University of Sri Lanka on chemical analysis of *Gyrinops walla* geatner (Wallapatta).
- Institute of Indigenous Medicine, Sri Lanka on research on herbal drugs.

CHAPTER 5: MONITORING AND MITIGATING POLLUTION

ITI has conducted more than 170 services in various disciplines of Environmental Science and Technology including air pollution control and mitigation, wastewater treatment, solid waste management, water quality studies, hazardous waste management, Environmental Impact Assessment (EIA) and Initial Environmental Examinations (IEE) during the reviewed year.

5.1 Wastewater treatment

ITI provides demonstrations on the treatment of wastewater and consultancy on the implementation process of wastewater treatment plants. During the review year, demonstrations and consultancies were offered to construct and upgrade wastewater treatment plants in Telippalai and Point Pedro base hospitals and District General Hospital at Kilinochchi. Technical advice consultations were provided to a case at Magistrate Courts, Pugoda for improvements in the wastewater treatment of the textile industry and an air and water pollution control case against a rice mill at Polonnaruwa courts.

The wastewater treatment facility and a dust and fume extraction system were implemented at an agrochemical formulation and packaging industry of CIC under technical consultation of the Environment Technology Section of ITI. This project won the Presidential Environmental Award for the year 2020.

The first two phases of the three-phase project of implementing a wastewater treatment facility for a yarn dyeing industry operating under the department of industries, Jaffna was initiated in 2018, and completed during the reviewed year. Under these phases, the wastewater treatment facility was designed, and the construction supervision was carried out with the plant commissioning and operator training in progress.

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, continued the air quality monitoring at Sri Maha Bodhi area, Wilpattu national wildlife park, Lakvijaya power plant, Norochchalai 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 factories. An air quality assessment for Fugitive Non- Methane VOC during normal operations was conducted to assess the emission levels with the CEA standards. The annual air quality assessment was performed at 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

Indoor Air Quality Assessment

A feasibility study was conducted with respect to indoor air quality assessment for CO, CO₂, RH, DBT, TVOCs and PM₁₀ operation centers at Jones Lang Lasalle Lanka in four different locations within Colombo urban area Also, Air Quality modelling for the 350MW Combined Cycle Power Plant at Lakdanavi Ltd.

Design of Air Pollution Control Systems

ITI provides consultancy services with state-of-the-art technologies; from the designing to the commissioning stage of air pollution control systems to meet regulatory standards that are required by environmental authorities.

Two separate general exhaust ventilation systems with an activated carbon adsorption unit and stack were proposed for the main working yard and the auxiliary working yard to extract, treat and disperse fugitive non-methane volatile organic compounds (NMVOCs) emanating from the fiberglass boat manufacturing and repairing activities. Also, continued to assist Shifa enterprises and Vista Creation (Pvt) Ltd.

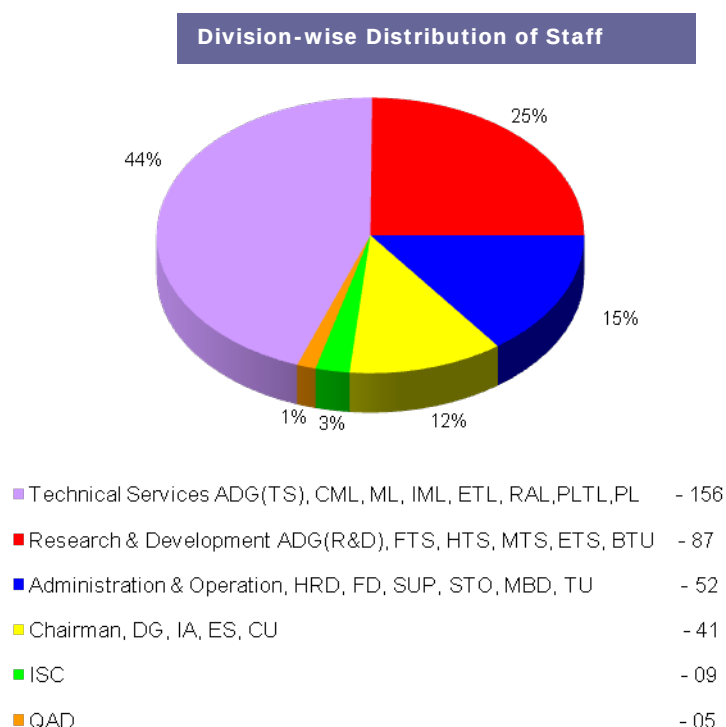
5.3 Noise Mitigation

Noise is a main environmental pollutant leading to various health hazards and disturbances. According to environmental regulations, solutions have to be taken by the Industries to prevent environmental issues of noise and vibration. ITI offers expertise and equipment for noise mitigation. During the reviewed year, a noise abatement proposal was designed for a private power plant in Horana after a detailed noise analysis of the plant. In order to obtain an environmental protection license for the PET bottle manufacturing industry, a noise mitigation proposal was submitted after doing a detailed investigation of the plant by identifying the sources of noise.

CHAPTER 6 – SUSTAINABLE DEVELOPMENT

6.1 Employment Statistics

ITI has recruited 17 employees for the newly established Petroleum and Lubricant Testing Laboratory and Pharmaceuticals Laboratory, thus the total permanent staff is now 350. Total permanent staff is 156 (44%) in Technical Service Division, 87 (25%) in Research and Development Division and 52 (15%) 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 comprise 55 (16%) of permanent staff. The Chemical & Microbiological Laboratory is the largest section of the Institute with 59 (16.8%) of the total staff. Employment statistics are presented in the following pie-chart.

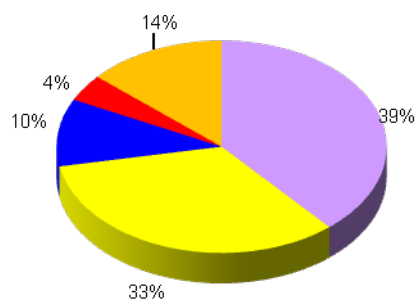


Distribution of Staff

Technical Divisions comprise 94 Technical Staff, 81 Research Staff, 25 Administrative and Management Assistants and 33 other staff and 10 Senior Managers.

Support divisions comprised 39 Administrative and Management Assistants, 24 Primary Level staff, 16 Technical Staff, 05 Research Staff, 16 Craftsmen and 7 Senior Managers. The distribution of staff is presented in the following pie-charts.

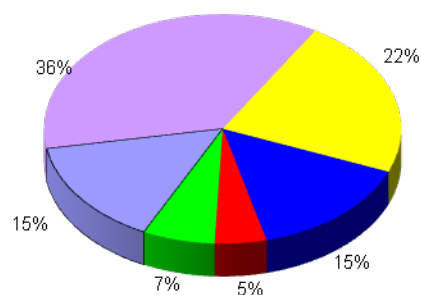
**Category-wise distribution of Staff
Technical Divisions**



■ Technical
■ Research
■ Administrative & Clerical
■ Management
■ Others (Aides, Helpers)

- 94
 - 81
 - 25
 - 10
 - 33

**Category-wise distribution of Staff
Support Divisions**



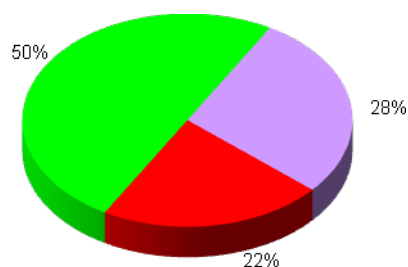
■ Administrative & Clerical
■ Others (Drivers, Helpers)
■ Technical
■ Research
■ Management
■ Craftsmen (Skilled and Semi skilled)

- 39
 - 24
 - 16
 - 05
 - 07
 - 16

Research staff

The research Staff comprised 94 Scientists and 16 Engineers at the Institute. Among the Research staff, 22 are qualified with Ph.Ds. and 28 are with MSc/MPhil/PG Diplomas. The educational background of the Research Staff is presented in the following pie-charts.

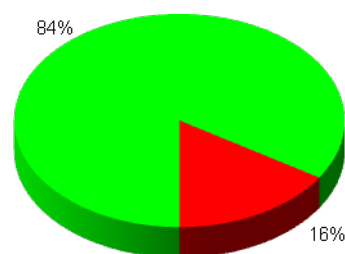
Research Staff - Educational Background



■ Bachelor's degree
■ MSc/MPhil/PG Diploma
■ Doctoral degree

- 50
 - 28
 - 22

Research Staff - - Scientists / Engineers



■ Scientists
■ Engineers

- 84
 - 16

The expertise of the research staff

The Research and Development Division of the Institute comprises five sections, Food Technology, Herbal Technology, Materials Technology, Environment Technology and Biotechnology. The research staff carry out 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 research staff also has expertise in Information Management and Quality Management Systems.

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. During the review year, two important testing areas: Petroleum & Lubricant and Pharmaceutical were initiated.

Trend analysis

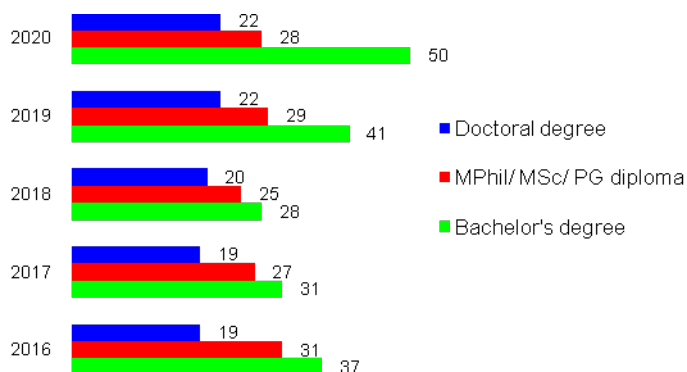
A total of 39 staff, including 17 for the newly established Petroleum and Lubricant Laboratory and Pharmaceuticals Laboratory were recruited. The total permanent staff of the institute increased to 350 against the 439 approved cadre. During this period the percentage of research staff remained constant while the technical grade staff showed a slight increase of 3%. The administrative, clerical, craftsmen and other positions showed a marginal decrease.

PhDs and post-graduates remained constant from 2015 to 2020. The ratio of Research Scientists to Research Engineers remained constant at 1:5.

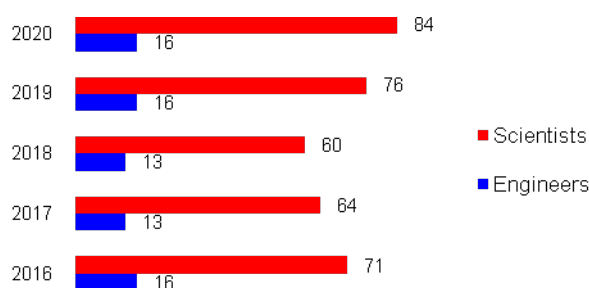
Category wise distribution of Staff 2016- 2020



Educational Background of Research Staff



Scientist /Engineers ratio 2016-2020



6.2 Quality Assurance

ISO/IEC 17043: 2010 Accreditation for Proficiency Testing

ITI 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 provides 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. Proficiency Testing Accreditation status was maintained by conducting a cement proficiency testing program for the local industry in 2020.

Enhancing the quality infrastructure of ITI

ITI's existing laboratory quality management system ISO/IEC 17025:2017 was maintained by conducting internal audits and expanding the scope for pesticides by more than 100 parameters. Accreditation status was applied to the newly establish packaging laboratory with the assistance of UNIDO.

6.3 Information Services

The Information Services Centre (ISC) continued to maintain and increase its wide range of resources which includes over 22000 books, standards, over 100,000 reprints, online databases and other miscellaneous publications. The center continued to subscribe to four sections of the Science Direct database; Chemistry, Materials, Agriculture and Biological Sciences and Pharmacology, Toxicology and Pharmaceuticals Science. Science Direct continued to be the most popular information source even with external users. During the COVID-19 pandemic lockdown, publishers offered remote access to all journals and books on Science Direct and the researchers were able to access the database from their homes.

During the year, 4 books were purchased and 31 were received as donations totaling up to 35 books. ISC continued to develop its e-book collection, and 37 books were uploaded to the server allowing internal users to access the books through I.net. Standards were purchased at the request of staff and 72 local and international standards were purchased during this period. Membership to EDB was also continued and this was helpful to obtain trade statistics when required.

Soft copies, scanned documents and publications by ITI staff were entered into the D-Space digital repository database which is linked to the ITI website. During the reviewed year, 122 research articles were uploaded to the D-Space digital repository.

Due to the COVID-19 pandemic, the library was closed to any reference work after March but borrowing books were allowed. During the period under review, 240 users visited the library and a total of 118 books and 60 standards have been issued.

6.4 Awards

- Mr. K. V. T. Gunawardena, Ms. A. W. D. Priyangani and Mr. A. A. N. Lalantha won the Gold Medal in the Commercialized category under the technical field of Food Technology for the development of the instant rice product “Ezy Rice” at the awards ceremony organized by the Sri Lanka Inventors Commission.
- Prof. R. M. Dharmadasa won the Gold Medal in the Open Category under the technical field of Agriculture for the development of Natural Agricultural Pest Control Agents (NAPCA) by using Sri Lankan-grown medicinal and aromatic plant extracts for the control of sucking agricultural pests at the award ceremony organized by the Sri Lanka Inventors Commission.
- Dr Kaushalya Abeysekara won the GRC Post Graduate Research Award presented by the Sri Lanka Association for Advancement of Science (SLAAS).
- Dr. Wasundara Divisekera won the GRC Post-Graduate Merit Award presented by the Sri Lanka Association for the Advancement of Science (SLAAS) (Section D).
- Dr. Sachindra Perera won the GRC Post Graduate Merit Award presented Sri Lanka Association for Advancement of Science (SLAAS).

6.5 Capacity Building

Postgraduate Studies

- Ms. Sachini Jayawardane obtained her PhD degree from the University of Colombo for studies on “Prebiotic and bioactive properties of Sri Lankan finger millet (*Eleusine coracana*) varieties” under the supervision of Dr. J. K. R. R. Samarasekera, Dr. G. H. C. M. Hettiarachchi, and Dr. M. J. Gooneratne.
- Ms. Gavini Liyanaarachchi obtained her PhD degree from the University of Colombo for studies on “Antioxidant and enzyme inhibitory activities of selected medicinal plants and chemical characterization of phytochemicals of *Artocarpus nobilis* and its topical applications” under the supervision of Dr. J. K. R. R. Samarasekera, Prof K. R. R. Mahanama and Dr. K. P. Hemalal.

- Ms. R. T. Nilusha obtained her PhD degree from Research Centre for Eco-Environmental Sciences, Chinese Academy of Sciences, China for a study on “Anaerobic ceramic membrane bioreactor for treating domestic wastewater at ambient temperature for tropical areas”.
- Mr. Sherly Ranathunga obtained his PhD degree from Research Centre for Eco-Environmental Sciences, Chinese Academy of Sciences, China for a study on “Spatial-temporal variation of rainfall and stream flow basin and associated mechanism”.
- Mr. Dineth Samarawickrama obtained his PhD degree from the University of Colombo for studies on “Development of natural fiber-based, smart packaging material to address the postharvest losses of mangoes in Sri Lanka”.
- Ms. D. M. A. Peiris obtained MSc degree in Sustainable Process Engineering from the University of Moratuwa.
- Ms. G. S. Liyanage completed MSc in Nanoscience and Nano Technology from University of Peradeniya.

On-going PhD / MSc / MPhil studies

- Ms. Himashi Karunaratne continues her PhD studies on “Microflora in different types of tea produced in three different elevations in Sri Lanka” at the University of Kelaniya.
- Ms. Upeka Rajawardane continues her PhD studies on “Isolation, identification and characterization of health beneficial bacteria and pathogenic micro-flora of dairy origin in Sri Lanka.” at the University of Colombo.
- Mr. H. D. Weeratunge continues his PhD studies on “Investigation on natural fragrances and other volatiles from Sri Lankan flora and their industrial applications” at the University of Colombo.
- Ms. G. V. V. Liyanaarachchi continues her PhD studies on “Amino acid profiling of selected Sri Lankan rice (*Oryza sativa*) varieties using liquid chromatographic techniques” at the University of Colombo.
- Ms. D. A. T. W. K. Dissanayake continues her PhD studies on “Research study on degradation kinetics of glyphosate residues, metabolites and additives in conventional fields of application and simulated environments” at the of Peradeniya.

- Ms. G. U. Chandrasiri continues her PhD studies on “Investigation on trace elements content in selected rice varieties and the uptake of toxic elements by rice under simulated environments” at the University of Colombo.
- Ms. K. D. S. M. Karunaratne continues her PhD studies on “Development of a database for mineral profiles, TLC profiles and phenolic profiles of selected traditional and widely consuming, improved rice varieties of Sri Lanka” at the University of Colombo.
- Ms. Gayathri De Silva continues her PhD studies on “Design and optimization of non-thermal plasma sterilization system for selected powdered spices” at the University of Moratuwa.
- Ms. H. H. K Achala continues her PhD studies on “Genetic and Phenotypic Studies of Synthetic Absciscic Acid Signal Modulators” at the College of Chemistry, Central China Normal University, Wuhan, Hubei, People's Republic of China.
- Ms. Madara Samaranayake continues her PhD studies on “A study on selected nutritional properties and seed chemical characteristics of a range of Sri Lankan rice varieties” at the University of Colombo.
- Ms. Ruwini Purnika Dassanayake continues her MPhil studies on “Investigation on trans fats, omega 6:3 ratio and cholesterol in selected food commodities to establish the local permissible levels of fatty acid composition” at the University of Colombo.
- Mr. L. D. C. Nayanajith continues his PhD studies on “Microwave synthesis and characterization of graphene and graphene polymer composites for conducting and other applications” at the University of Colombo.
- Mr. K. S. P. Karunadasa continues his PhD studies on “Conversion of readily available Sri Lankan natural quartz to solar grade silicon for applications in electronic industries” at the University of Peradeniya.
- Mr. R. C. W. Arachchige continues his PhD studies on “Development of Red-clay based water filter/apparatus for the removal of hardness and other contamination in the drinking water” at the University of Peradeniya.
- Eng. W. R. L. Wijesekara continues her PhD studies on “ Application of anaerobic degradation for the treatment of poultry processing wastewater and its potential for global warming due methane emission” at the University of Colombo.

- Mr. A. M. K. L. Abeykoon continues his MPhil studies on “Synthesis and characterization of nanostructures advanced materials for solar water splitting hydrogen production” at the University of Peradeniya.
- Ms. Prasajee De Zoysa continues her MPhil studies on “Evaluation and quantification of sugar and metal composition of commonly consumed foods based on WHO nutrient profile model for south-east Asian region” at the University of Colombo.
- Ms. Maheshi Jayasinghe continues her MSc with the research “Identification of potential spoilage and pathogenic microorganisms associated with the production of thermally processed king coconut water (*Cocos nucifera* var. *aurantiaca*) in Sri Lanka” at the University of Kelaniya.
- Ms. Savidya Liyanage continues her MSc at the University of Sri Jayawardenepura with the research “Physicochemical, nutritional and antioxidants properties of selected pipeline rice varieties of Sri Lanka”.
- Mr. H. M. B. I. Gunathilaka continues his MSc studies on “Development of LiCl based gel electrolyte and their applications on electrochromic devices” at the University of Peradeniya.
- Ms. S. Jayarathne continues her MSc on “Identification of aroma compounds, heavy metals and aflatoxin in value-added coconut oil and coconut oil-based cosmetic products” at the University of Sri Jayawardanapura.
- Ms. A. U. W. Dissanayake continues her MSc on “Assessment of proximate composition, physical properties and antioxidant properties of flour made from underutilized tuber crops in Sri Lanka”.at the University of Sri Jayawardanapura.
- Ms. J. A. Hasara Abeyrathna continues her studies with on MSc in Food Science and Technology at the University of Peradeniya.
- Ms. P. Manushika Kaluperuma continues her studies with on MSc in Food Science and Technology at the University of Sri Jayeawardanepura.
- Mr. S. V. Amarasena continues his studies with on MSc in Food Science and Technology at the University of Sri Jayeawardanepura.
- Ms. K. M. B. P. P. Kalaotuwawe continues her MSc in Environmental Pollution Control Engineering in the Faculty of Engineering, at the University of Peradeniya.

- Ms. H. Prathibha continues her MSc in Industrial Chemistry.
- Mr. P. D. Buddika continues his MSc. in applied electronics at the University of Colombo.
- Ms. U. I. Medawatta continues her MSc at the University of Sri Jayawardanapura.

6.6 Overseas Training Programmes

- Eng. (Ms.) D. M. H. S. Dissanayake participated webinar on “Minamata Convention on Mercury: First webinar on monitoring guidance for effectiveness evaluation” (Webex) conducted by Minamata Secretariat, Geneva, Switzerland on 15th September 2020.
- Mr. Sherly Ranathunga participated webinar on China- Pakistan corridor project discussion, organized by National Science Foundation, China on 12th October 2020.
- Ms. R. T. Nilusha participated in “The Science Diplomacy in South Asia online workshop” organized by the Science Diplomacy in South Asia working group of Global Young Academy from 21st November -13th December 2020.
- Ms. Sureka Liyanage participated in an online programme on “Massive Open Online Training on Microplastic” at Open University, Netherlands 26th October 2020 to 17th January 2021.

6.7 Local Training Programmes

- Ms. K. R. Madushani Gunaratne and Ms. W. Pubuduni Harischandra participated in a workshop on “Internal auditing of the laboratory management system as per ISO/IEC 17025: 2017” conducted by the Sri Lanka Accreditation Board (SLAB).
- Ms. Kushani Mahatantila participated in an Assessor Training on Accreditation of Testing Laboratories ISO/IEC 17025:2017 conducted by the Sri Lanka Accreditation Board (SLAB).
- Ms. M.D.Y. Milani and E.M.S. Isanka attended a workshop on “Patent searching and Prior art assessment for IP-based innovation conducted by WIPO at the National Intellectual Property Office, Sri Lanka, from 17th – 20th February 2020.
- Eng. (Ms) D. M. H. S. Dissanayake attended Stakeholder Workshop on “Development of National Action Plan on plastic waste management, organized by the Ministry of Environment and Wildlife Resources on 26th February 2020.
- Eng. (Ms) A. H. S. Jayasekara attended the capacity building workshop on air quality measuring instruments including a VOC meter and PM Analyzer.
- Eng. (Ms) D. M. H. S. Dissanayake attended a stakeholder workshop on the finalization of GHG inventory and mitigation option chapters of Sri Lanka’s 3rd National Communication on Climate Change, Sri Lanka, organized by the Ministry of Environment and Wildlife Resources from 24th -25th August 2020.

- Dr. R. C. L. de Silva and Mr. R. C. W. Arachchige attended training on “Nuclear and atomic energy” organized by Sri Lanka Nuclear and Atomic Energy Regulatory Council, 24th – 28th August 2020.
- Eng. (Ms) D. M. H. S. Dissanayake attended the consultation workshop, 24th inception workshop on the evaluation of overall policy coherence and recommendations for an optimal policy package, Organized by the Institute of Policy Studies Sri Lanka, from 18th and 24th September 2020.
- Ms. Vajira Nilukshi and Ms. Madara Samaranayake participated in the workshop on Food Safety and Regulations conducted by IFSTSL.
- Ms. Sachini Jayawardane participated webinar on “patent drafting” organized by WIPO.
- Ms. Upeka Rajawardane participated in online training on "Method validation and reference material knowledge on residue analysis for SLAB assessors, conducted by Sri Lanka Accreditation Board/PTB on 11th and 25th November and 9th December 2020.
- Ms. R. T. Nilusha participated webinar on Environmental Impact Assessment organized by the University of Peradeniya on 3rd October 2020.
- Ms. R. T. Nilusha participated webinar on Urban water management organized by the University of Peradeniya on 6th October 2020.
- Ms. R. T. Nilusha participated webinar on "Advances in wastewater treatment" organized by the University of Peradeniya on 9th October 2020.
- Ms. R.T.Nilusha participated webinar at 1st International Conference on Sustainable Built Environment (ICSBE) organized by the University of Peradeniya on 11th December 2020.

6.8 Promotional Events

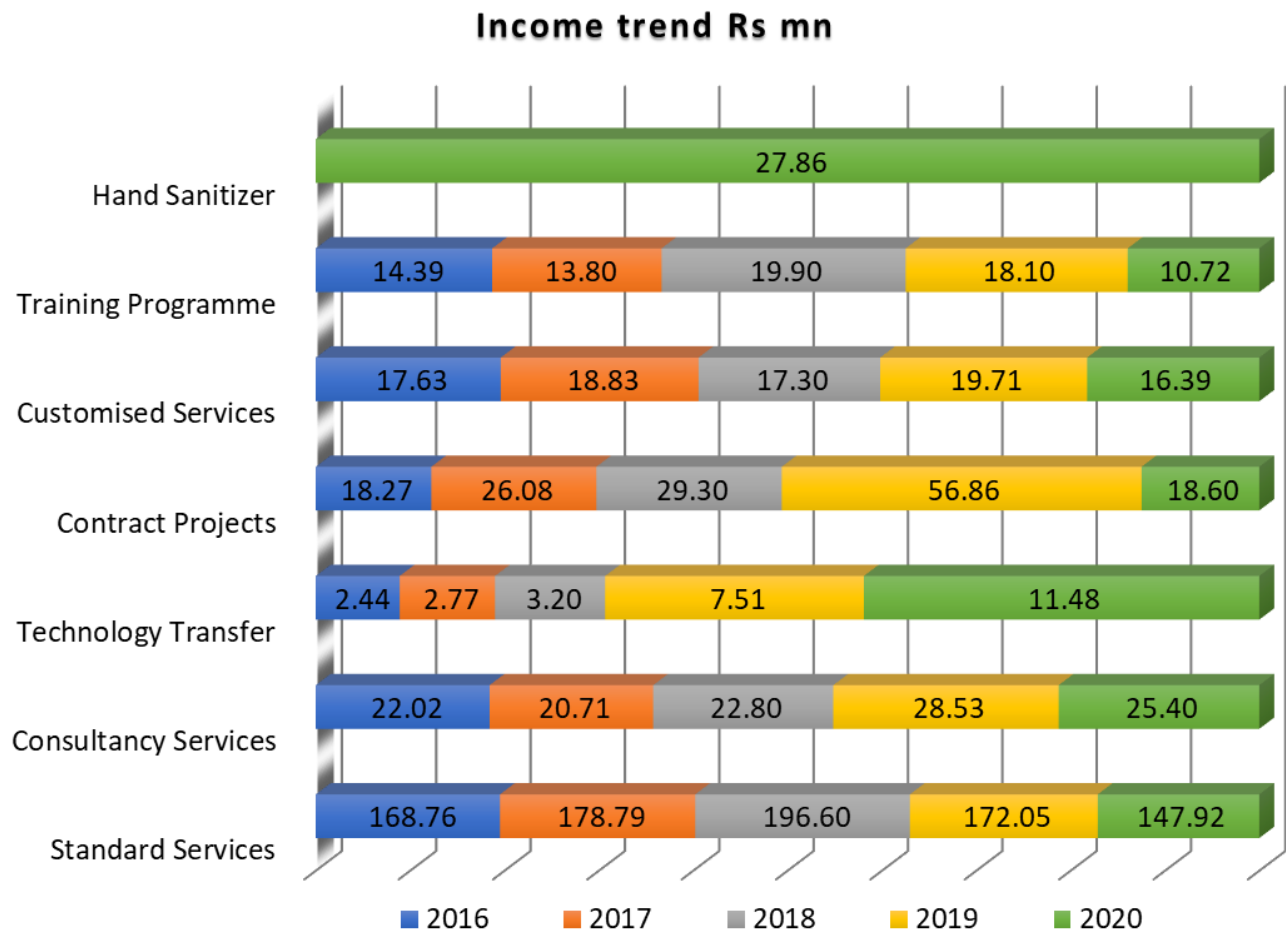
- ‘INNOTECH 2020’ National Technology and Innovation Exhibition organized by the Ministry of Higher Education, Technology and Innovation at Pitipana, Homagama on 12th -14 March 2020.
- ‘Eka Mage Rata’ TV programme on ITN.
- Investor’s forum was conducted during the COVID-19 pandemic period to popularize products at the Gangarama Temple on 27th May 2020.
- Investor’s forum was conducted during the COVID-19 pandemic period to popularize products at the Gangarama Temple on 1st July 2020.

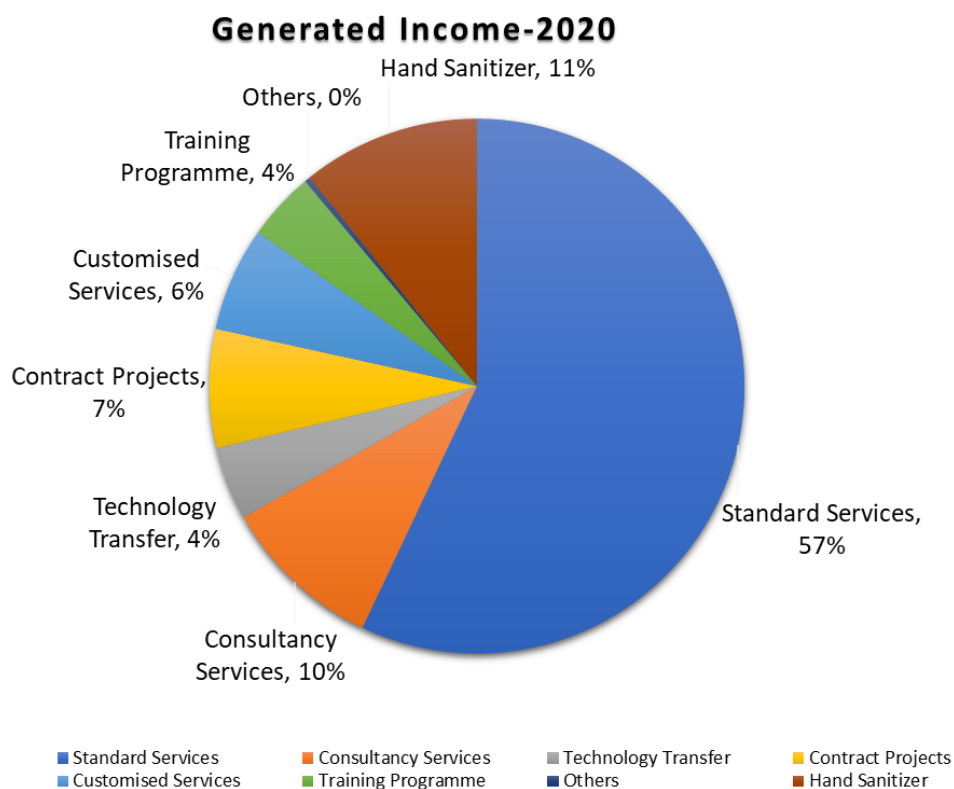
CHAPTER 07 – FINANCIAL PERFORMANCE

7.1 Financial Report

Income

Institute recorded Rs 259mn as generated income from the business activities less than Rs 45mn from the previous year's recorded income of Rs 304mn. The reason was that the country was in lockdown for almost three months due to the COVID-19 pandemic situation and which resulted in the institute's business activities such as testing, calibration of equipment, technology transfers, training, consultancies and contract projects. As a result of the pandemic situation, the institute lost Rs 72mn in income. However, the Institute was able to start a new business by producing and supplying hand sanitizers for Rs 28mn and which supported compensating the reducing the income gap by Rs 45mn.



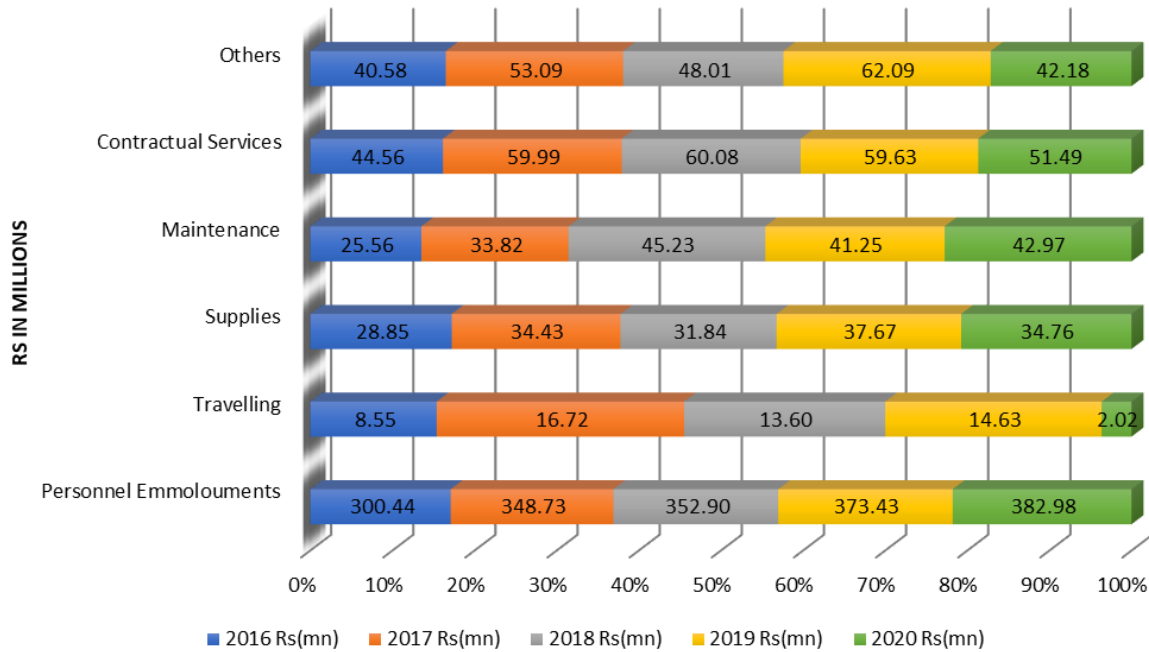


Expenditure-Recurrent

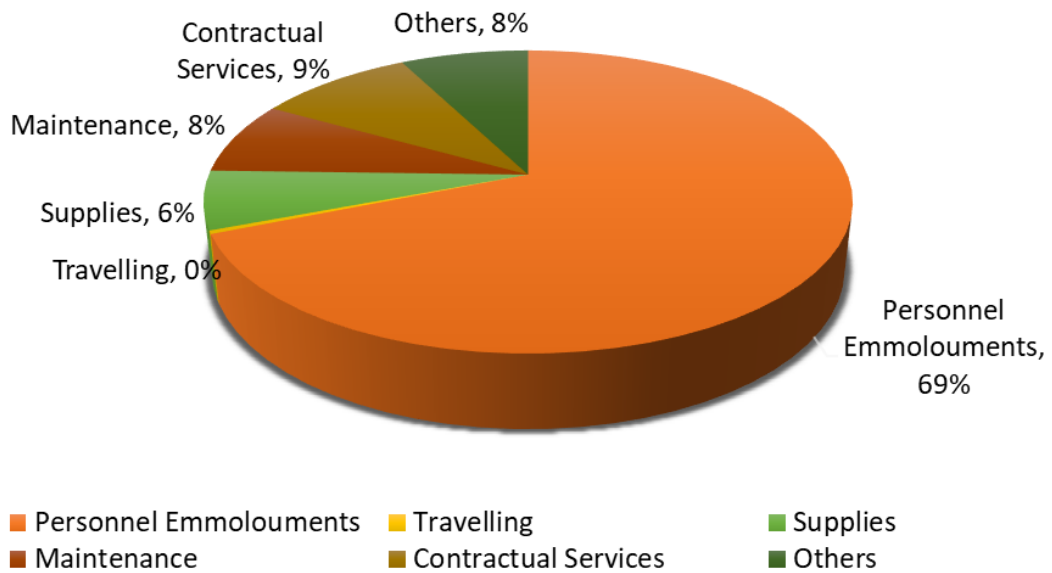
Due to the COVID-19 Pandemic situation whole country was on lockdown for 3 months period. As a result, the Institute's operational expenses were reduced by Rs 32mn compared to the previous year's operational cost of Rs 588mn. Imposed local transport restrictions and foreign travel restrictions positively contributed to reducing the cost by Rs 10mn. Other operating expenses were reduced by Rs 20mn due to the lockdown of the country by 3 months periods. The total expenses with depreciation and amortization of Rs 766mn were noted compared to Rs 813mn in the previous year.

The performance-based incentives were paid to the staff for the 18th consecutive year as the institute achieved overall income targets set for the year.

Recurrent Expenses Trend 2016 to 2020

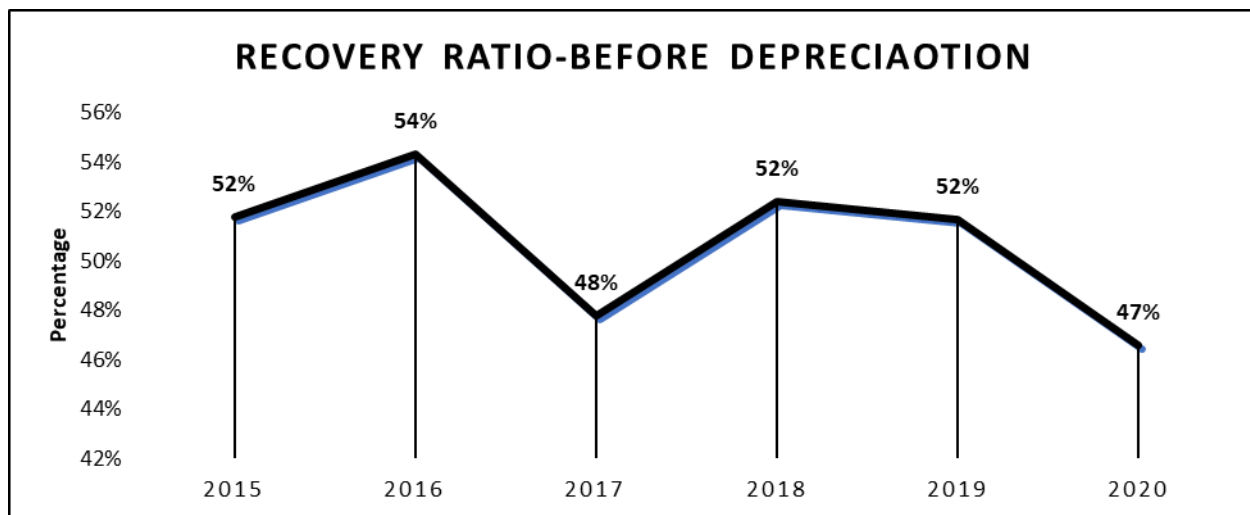


Recurrent Expenses-2020



Recovery Ratio

The Institute's income over expenses recovery ratio has been recorded as 46.6% which showed a slightly decreased from the previous year's 51.7%. The reason was net income has been decreased by Rs 44.97mn while operation cost has been decreased by Rs 32.3mn. The net adverse impact to the income over expenses was Rs 12.6mn which impact was adverse by 5%.



Grants Received

The Institute received Rs 270mn in 2020 (Rs 250mn in 2019) as recurrent grants for subsidized to personal emoluments costs.

The Government allocated Rs 212mn as Capital grants to the Institute in 2020. However, Institute manages the procurement of all Capital assets to Rs 105mn which is equal to the grant released by the Government. The Institute used more than 59% of the received funds for procuring high-end equipment which contributes enhance income in future.

Chapter 8 – Research Outputs

8.1 Publications in referred Journals

1. Abeysekera, W.K.S.M., Abeysekera, W.P.K.M., Suraweera, T.L., Samaranayake, M.D.W., Liyanage, S.L., Arachchige, S.P.G., Ratnasooriya, W.D., Abeysiriwardena, D. S. de Z. (2020). Antioxidant properties of selected pigmented and white long grain rice varieties of Sri Lanka at market available polishing rates. *Tropical Plant Research* 7(2): 415-423. DOI: 10.22271/tpr.2020.v7.i2.049.
2. Alvitigala, B.Y., Gooneratne, L.V., Constantine, G.R., Wijesinghe, R.N.K., Arawwawala, L.D.A.M. (2020). Pharmacokinetic, pharmacodynamic, and pharmacogenetic assays to monitor clopidogrel therapy. *Pharmacology Research and Prospectives* 8(6): e00686 DOI:10.1002/prp2.686.
3. Amarasiri, S.S., Attanayake, A.P., Arawwawala, L.D.A.M., Jayatilaka, K.A.P.W., Mudduwa, L.K.B. (2020). Protective effects of three selected standardized medicinal plant extracts used in Sri Lankan traditional medicine in adriamycin-induced nephrotoxic. *Journal of Ethnopharmacology* 259, 112933.
4. Amarasiri, S.S., Attanayake, A.P., Arawwawala, L.D.A.M., Jayatilaka, K.A.P.W., Mudduwa, L.K.B. (2020). Acute and 28-day repeated dose oral toxicity assessment of *Abelmoschus moschatus* Medik. In healthy Wistar rats. *Evidence-Based Complementary and Alternative Medicine*. ID. 1359050.
5. Amarasiri, S.S., Attanayake, A.P., Arawwawala, L.D.A.M., Jayatilaka, K.A.P.W., Mudduwa, L.K.B., (2020). The standardized aqueous bark extract of *Gmelina arborearoxb.* possesses nephroprotection against adriamycin-induced nephrotoxicity in Wistar rats. *Drugs and Toxicology*, DOI: 10.1080/01480545.2020.1811721.
6. Chandrakantha, M., Handunnetti, S. M., Premakumara, G.A.S., Kathirgamanathar, S. (2020). Topical anti-inflammatory activity of essential oils of *Alpinia calcarata* Rosc., its main constituents and possible mechanism of action, *Evidence-Based Complementary and Alternative Medicine: 1-19*, Article ID 2035671.
7. Comestor, K.G.R.F., Rupasinghe, A.D.J., Deshapriya, A.L., Hewajulige, I., Divisekera, W., Madage, S.S.K., Walliwala, S. Binduhewa, U. (2020). Impact of three-hour power discontinuation of refrigerators on microbiological stability of food. *CEBR & D Journal*: 23-26.
8. Dahanayake, J.M., Perera, P.K., Galappatty, P., Arawwawala, M. (2020). A mini-review on therapeutic potentials of *Phyllanthus niruri* Linn. *Trends in Phytochemical Research* 4(3): 101-108.
9. De Silva, G.B.V.U., Dharmadasa, R.M., Senanayake, R.A.S.P., Lintha, A., Sewwandi, S.K.U. (2020). Comparison of essential oil content and composition of different parts of *Cymbopogon citrates* (DC.) Stapf (Poaceae) grown in Sri Lanka.” *World Journal of Agricultural Research* (8)1: 1-5. DOI: 10.12691/wjar-8-1-1.

10. Dharmadasa, R.M., Jayasinghe, J.A.T.U., Arawwawala, L.D.A.M., Fonseka, D.L.C.K., (2020). Compositional analysis of volatile compounds of *Paspangiri*- A mixture of leaves of five Rutaceae plants used as an effective remedy for respiratory system microbial infections in Traditional Systems of Medicine. *World Journal of Agricultural Research* 8(3): 84-88. doi: 10.12691/wjar-8-3-3<http://www.sciepub.com/wjar/abstract/12007>.
11. Dirukshi, M.K.D.T., Dharmadasa, R.M., Abeysinghe, D.C. (2020). Selection of superior quality *Annona* species by means of bioactive compounds and antioxidant capacity. *World Journal of Agricultural Research* 8 (2): 39-44. DOI: 10.12691/wjar-8-2-3.
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13. Gobalarajah, K., Prabagar, S., Jayawardena, U.P., Rasiah, G., Rajendra, S., Prabagar, C. (2020). Impact of water quality on Chronic Kidney Disease of unknown aetiology (CKDu) in Thunukkai Division in Mullaitivu District, Sri Lanka. *BMC nephrology* November. DOI: [10.1186/s12882-020-02157-1](https://doi.org/10.1186/s12882-020-02157-1).
14. Gunathilaka, N., Perera, H., Wijerathna, T., Rodrigo, W., Wijegunawardana, N. D. A. D. (2020). The diversity of midgut bacteria among wild-caught *Phlebotomus argentipes* (Psychodidae: Phlebotominae), the vector of Leishmaniasis in Sri Lanka. *BioMed Research International* Article ID 5458063.
15. Gunathilaka, N., Ranasinghe, K., Amarasinghe, D., Rodrigo, W., Mallawarachchi, H. Chandrasena, N. (2020). Molecular characterization of culturable aerobic bacteria in the midgut of field-caught *Culex tritaeniorhynchus*, *Culex gelidus*, and *Mansonia annulifera* mosquitoes in the Gampaha district of Sri Lanka. *BioMed Research International* Article ID 8732473. <https://doi.org/10.1155/2020/8732473>.
16. Gunathilaka, T. L., Samarakoon, K., Ranasinghe, P., Peiris, L. D. C. (2020). Antidiabetic potential of marine brown algae-a Mini Review. *Journal of Diabetes Research* <https://doi.org/10.1155/2020/1230218>.
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19. Hawageegana, H.G.S.P., Hewageegana, A.U., Arawwawala, L.D.A.M. (2020). Chemical analysis on two traditional decoctions for Diabetes Mellitus. *Journal of Natural and Ayurvedic Medicine* 4(2). DOI:10.23880/JONAM-16000249.
20. Herath, H. M. T., Samaranayake, M. D. W., Liyanage, S. and Abeysekera, W. K. S. M. (2020). Horse Gram: an incredible food grain as a potential source of functional and

- nutritional food ingredients. *International Journal of Food Science and Nutrition* (5)4: 93-101.
21. Jayasinghe, J.A.T.U., Dharmadasa, R. M., Fonseka, D.L.C.K., Arawwawala, L.D.A.M. (2020). Phytochemicals and antioxidant capacity of selected Rutaceae species used in Sri Lanka. *Research Journal of Chemical Sciences* 10(3): 1-10.
 22. Jayawardana, S. A. S., Samarasekera, J. K. R. R., Hettiarachchi, G. H. C. M., Gooneratne, M. J., Choudhary, M. I., Imad, R., Naz, A. (2020). Glutathione S-transferase and β -glucuronidase enzyme inhibitory and cytotoxic activities of ethanolic and methanolic extracts of Sri Lankan finger millet (*Eleusine coracana* (L.) Gaertn.) varieties. *South Asian Research Journal of Natural Products*, 3(2):1-9.
 23. Jayawardana, S.A.S., Samarawickrama, D. S., Samarasekera, J. K. R. R., Hettiarachchi, G. H. C. M., Gooneratne, M. J. (2020). Consumer awareness and preference towards finger millet in Sri Lanka. *Asian Food Research Journal* 18(3):24-3.
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 25. Karunarathna, S., Somasiri, S., Mahanama, R. (2020). Development of minerals profile including heavy metals of selected rice varieties (*Oryza sativa* L.) consumed in Sri Lanka. *International Journal of Scientific and Research Publications (IJSRP)* 10(9):759-766.
 26. Karunarathne, Y.A.U.D., Amarasinghe, A.P.G., Weerasooriya, T.R., Samarasinghe, U.K.A., Arawwawala, L.D.A.M. (2020). *Asparagus racemosus* (Willd) of Indian origin: In terms of physicochemical, phytochemical and nutritional profiles. *International Journal of Traditional and Complementary Medicine* 3(7): 140-143.
 27. Kodikara, K. A. S., Ranasinghe, P., Irfan, A., LokuPullukuttige, J., Madarasinghe, S. K., Farid, D. G., Nico, K. (2020). Oxidative stress, leaf photosynthetic capacity and dry matter content in young mangrove plant *Rhizophora mucronata* Lam. under prolonged submergence and soil water stress. *Physiology and Molecular Biology of Plants*. <http://doi.org/10.1007/s12298-020>.
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33. Nilusha, R.T., Yu, D., Zhang, J., Wei, Y. (2020). Effects of solids retention time on the anaerobic membrane bioreactor with Yttria-based ceramic membrane treating domestic wastewater at ambient temperature. *Membranes* (IF 3.093) 10:196.
34. Nilusha, R.T.; Wang, T.; Wang, H.; Yu, D.; Zhang, J.; Wei, Y. (2020). Optimization of in situ backwashing frequency for stable operation of anaerobic ceramic membrane bioreactor. *Processes* (IF2.75)8, 545.
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38. Perera, H. D. S. M., Samarasekara, R., Handunnetti, S., Weerasena, O.V.D.S., Maharjan, R., Chaudhary, M.I. (2020). Investigation of beta-lactamase enzyme inhibitory, anti-bacterial and anti-fungal bio-activities of *Dillenia retusa* Thumb: An endemic medicinal plant to Sri Lanka. *South Asian Research Journal of Natural Products*, 3(4): 1-12.
39. Prabagar, S., Nanthakumar, J., Thuraisingam, S., Prabagar, J. (2020). Antimicrobial activity of leaf and bark extracts of *Cassia fistula*. *World Journal of Agricultural Sciences* 16 (4): 227-232. DOI: 10.5829/idosi.wjas.2020.227.232.
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42. Prabagar, S., Nanthakumar, J., Thuraisingam, S., Prabagar., J. (2020). Evaluation of the antimicrobial activity of aqueous extracts of *Acalypha indica*. *International Journal of Agriculture and Biological Sciences*: 162-169 DOI [10.5281/zenodo.3986633](https://doi.org/10.5281/zenodo.3986633).svg.
43. Ranasinghe, R.L.D.S., De Silva, R.H.S.K., Arawwawala, L.D.A.M., Wijesiriwardhana, H.G.S.G. (2020). Phytochemical variation of a polyherbal formula according to its preparation method: Qualitative & Quantitative analysis. *Journal of Complementary and Alternative Medical Research* 9(1); 22-28.
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46. Wakkumbura, H.P., Wickramaarachchi, W.M.D., Arawwawala, L.D.A.M., Liyanage, J., Rajapakse, R.P.V.J. (2020). Assessment of the quality and evaluation of the antioxidant potential of a novel Sri Lankan Ayurvedic polyherbal formulation. *Evidence-Based Complementary and Alternative Medicine*. ID:2319315.
47. Wathsara, H.P.T., Weeratunge, H.D., Mubarak, M.N.A., Godakumbura, P.I., Ranasinghe,P.(2020). In Vitro Antioxidant and Antidiabetic Potentials of *Syzygium caryophyllatum* L. Alston. *Evidence-Based Complementary and Alternative Medicine*, 15 pages, <https://doi.org/10.1155/2020/9529042>.
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8.2 Communications International

1. Amarasiri, A.M.S.S., Attanayake, A.P., Arawwawala, L.D.A.M., Jayatilaka, K.A.P.W., Mudduwa, L.K.B. (2020). In vitro and in vivo antioxidant potential and Phytochemical constituents of *Barleriaprionitis* Linn extracts. International Conference on Applied pure Sciences, Faculty of Science, University of Kelaniya pp.19.
2. Badanage, H.K.G.M.D., Arawwawala, L.D.A.M., Samarasinghe, U.K.A., Deeyamulla, M.P., Colonne, P.M. (2020). Characterizing *Eichornia crassipes* plant uptake of naphthalene, fluoranthene, phenanthrene and anthracene polycyclic aromatic hydrocarbons from crude oil contaminated water. *Proceedings of the International Conference on Environmental Monitoring and Management* pp.67.
3. De Silva, A.B.G.C.J. and Amunugoda, P.N.R.J. (2020). Decontamination of natural microbial load in Sri Lankan Black Pepper (*Piper niger*) using Cold Plasma – A case

study, In *First International Conference on Advances in Plasma Science and Technology*, Coimbatore, India. pp.13-14

4. Ehanathan, S., Arawwawala, L.D.A.M., Attanayake, A.P. (2020). Optimization of methods for the preparation of polyphenol-rich extracts using *Coccinis grandis* (Linn) Voigt (Cucurbitaceae). *1st International Conference on Frontiers in Chemical Technology* Institute of Chemistry Ceylon pp.16.
5. Fasna, M.I.F., Prabagar, S. Prabagar, J. (2020). Impact of agriculture practices on water quality parameters of groundwater from Valikamam area in Jaffna district, Sri Lanka. *7th Ruhuna International Science and Technology Conference*, RISTCON 2020.
6. Jayasinghe, J. A. S. M., Amunugoda, P. N. R. J., Arawwawala, L. D. A. M., Rajawardane, U., Abeyrathne, P. A. B. P. and Karunaratne, V. K. (2020). Novel approaches for mitigation of COVID-19 pandemic by food formulations enriched with antioxidant nano-carriers and nano-biosensors. *3rd Bandung International Conference on Collaborative health research*, pp. 87.
7. Jayasinghe, J.A.S.M., Amunugoda, P.N.R.J., Arawwawala, L.D.A.M., Rajawardane, U.N., Abeyrathne, P.A.B.P., Karunaratne, V. (2020). Novel approaches for mitigation of COVID-19 pandemic by food formulations enriched with antioxidant nano-carriers and nano-biosensors. *The 3rd Bandung International Conference on Collaborative Health Research* pp. 87.
8. Kumara, T.D.M.T.S., Hettiarachchi, H.U.V., Jayasuriya, W.J.A.B.N., Arawwawala, L.D.A.M., Suresh, T.S. (2020). Gastroprotective activity of Vishnukarnthi chewable granular dosage form formulated using *Evolvulus alsinoides* and its accelerated stability studies. *13th International Research Conference, General Sir John Kotelawala Defence University* pp.18.
9. Samaranayake, M. D. W., Abeysekera, W. K. S. M., Mahanama, K. R. R., Hewajulige, I. G. N. and Somasiri, H. P. P. S. (2020). Unsaturated fatty acid compositions of selected pigmented and non-pigmented new improved rice varieties (*Oryza sativa* L.) of Sri Lanka. In: *International Conference on Applied and Pure Sciences*, University of Kelaniya, Sri Lanka pp. 6.
10. Wijayawardhana, N.M., Cooray, M.M.D.U., Arawwawala, L.D.A.M., Jayasuriya, W.J.A.B.N. (2020). Development of a herbal soap using selected medicinal plants and evaluation of its antimicrobial activity. *13th International Research Conference, General Sir John Kotelawala Defence University* pp. 52.

8.3 Books, Book Chapters and Guidelines

1. Dharmadasa, R.M., Arambepola, S. and Nawagamuwa, U.P. (2020). Role of medicinal plants in nature-based landslide mitigation. In Guidance document: Nature-based solutions for site-specific landslide risk mitigation. Asian Disaster Preparedness Centre (APDC), Thailand. September 2020. ISBN 978-624-5298-03-7.

2. Dilhari, M.H.T. and Hewajulige, I.G.N. (2020). Chitosan: an antimicrobial coating to reduce pre and postharvest diseases of fruits and vegetables. *In Bio-Management of Postharvest diseases and mycotoxigenic fungi*, CRC Press, Taylor and Francis Group. pp 57-70.
3. Munasinghe, M.M.E., Athapaththu, A.M.M.H., Fernando, L.K., (2020). Magnetic and quantum dot nanoparticles for drug delivery and diagnostic systems, *In Colloid Science in Pharmaceutical Nanotechnology*, UK. ISBN 978-1-78985-596-8.
4. Premakumara, G.A.S. and Abeysekera, W.P.K.M. (2020), Chapter 12: Pharmacological properties of Ceylon cinnamon *In Cinnamon: Botany, Agronomy, Chemistry and Industrial Applications*, Springer International Publishing, Switzerland.
5. Weerasundara, Lakshika, Mahatantila, Kushani and Vithanage Meththika (2020) E-waste as a challenge for public and ecosystem health. Eds. Majeti Narasimha Vara Prasad, Meththika Vithanage and Anwasha Borthakur. *In Handbook of electronic waste management*. Butterworth-Heinemann. pp101-117.

8.4 Patents

1. Aruma Baduge Gayathri Chathurika Jeevani De Silva, Sudeepama Gamage Walliwala, Ranaweera Mudiyansele Nuwan Chinthana Bandara Ranaweera and Mahavidanage Janaki Gooneratne. Manufacture of natural vinegar using rotating bed aerobic reactor. Patent No: 17283.
2. Appuwadu Mesthrige Champika Udayani Binduhewa, Pathmasiri Ranasinghe, Walimuni Kanchana Subhashini Mendis Abeysekera and Ilmi Ganga Namali Hewajulige. Carbonate herbal drink with Thebu (*Costus speciosus*) extracts. Patent No. 18156.

8.5 Patents Applied

1. Milani M. D. Y., Arachchige R. C. W., De Silva R. R. L., Sooriyaarachchi A., Domestic apparatus for converting biodegradable food waste into compost within 24 hours and method of converting thereof. Patent Application No. 20614.
2. Karunadasa K. S. P., Manoratne, C. H. Stable composite electrode based on graphite and clay for high-temperature and general electrochemical applications. Patent Application No. 20844.
3. Kottegoda I. R. M., Abeykoon A.M. K. L., Gunathilaka H. M. B. I, Colombage H. C. D. P. An apparatus and process to convert low purity graphite into high purity graphite by low cost eco-friendly physical technique. Patent Application No. 20921.
4. Samarawickrama, D. S. Apparatus and method for preparation of charcoal from low and moderate density carbonaceous material. Patent Application No. 20955.

5. Ranasinghe P., Weeratunge H.D., Somasiri H.P.P.S. *et al.* Natural herbal mouthwash for prevention of respiratory viral infections and oral care and process thereof. Patent Application No. 21071.

Executive Staff

as at 31st December 2020

DIRECTOR GENERAL / C.E.O

Dr J K R R Samarasekera (Ms)
*BSc(Hons)(Colombo), PhD(Rothamsted), CChem,
MChemC, 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

(Vacant)

RESEARCH & DEVELOPMENT

BSc.(Spl) (Sri Jayawardenepura), PhD (Colombo)

FOOD TECHNOLOGY SECTION

Senior Deputy Director, Food Technology Section

(Vacant)

Principal Research Scientist

Dr H M T Herath (Ms)
*BSc(Hons)(Peradeniya),
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MChemC,*

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BSc(Spl)(Peradeniya), PhD(Open University)

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Research Scientists

S S K Madage
BSc (Peradeniya)

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BSc(Peradeniya), MSc (Sri Jayawardenepura)

K V T Gunawardhana
BSc(Spl)(Hon)(Peradeniya)

Dr D M W D Divisekara (Ms)
BSc (Bangalore), MSc (Bangalore), PhD (Colombo)

M M N P Gunasekera
BSc(Spl)(Hons)(Colombo)

W D W Samaranayake (Ms)
BSc(Spl)Hons(Sri Jayawardenepura)

Dr S A S Jayawardene (Ms)

D V A Nilukshi (Ms)
BSc(Spl)(Hons)(Sri Jayawardenepura)

Research Engineer

A B G C J de Silva (Ms)
BSc(Eng)(Moratuwa), MSc (Moratuwa)

Senior Research Technologists

M G D S Perera (Ms)
LTCC(ICChemC), Dip.Aagri(Aquinas)

W U D Medis
LTCC(ICChemC)

Research Technologist

A W D Priyangani (Ms)
NDT(Moratuwa), PGD (Colombo)

T M D A Jayawardena (Ms)
BSc (Open University)

Management Officer

M D L C Gunathilake (Ms)

HERBAL TECHNOLOGY SECTION

Senior Deputy Director, Herbal Technology Section / Research Fellow

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*BSc(Hons)(Peradeniya), MPhil(Colombo),
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Research Fellow

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Ayurved University)*

Principal Research Scientists

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Dr L D A M Arawwawala (Ms)
BSc(Hons)(Peradeniya), MSc(Sri Jayewardenepura), MPhil(Peradeniya), PhD(Kelaniya), MIBiol, MChemC,

Senior Research Scientist

H D Weeratunga
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Research Scientists

Dr H D S M Perera (Ms)
BSc.(Spl)(Colombo), PhD (Colombo)

U I Medawatta (Ms)
BSc(National university, Republic of Korea)

L A G Dilkhushi (Ms)
BSc (Wayamba)

S A D P S Jayawardena (Ms)
BSc (Colombo), MSc (Colombo)

Senior Research Technologist

P I P K Fernando (Ms)
LTCC (ICChemC), B.tech (UNIVOTEC)

V S Bandara (Ms)
LTCC(Merit)(ICChemC), Grad IChemC, MRSC(UK)

Management Officer

M D L C Gunathilake (Ms)
B.com (Sri Jayewardenepura)

MATERIALS TECHNOLOGY SECTION

Senior Deputy Director - Materials Technology Section/ Research Fellow

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BSc(Colombo), MPhil(Sri Jayewardenepura), PhD(Colombo)

Senior Research Scientists

L D C Nayanajith
BSc(Chem)(Hons)(Peradeniya), MSc(Peradeniya)

Dr C H Manaratne
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BSc, MBA, MPhil(Open University), PhD(Colombo)

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M D Y Milani (Ms)
BSc(Spl)(Colombo), MSc(Moratuwa)

K S P Karunadasa
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A M K L Abeykoon
BSc (Sabaragamuwa)

H M B I Gunathilake
BSc (Sabaragamuwa)

Research Technologist

D S Samarawickrama
MBA (Open University), Grad.IChem.C

R C W Arachchi
BSc (Open University)

Research Engineer

H C D P Colombage (Ms)
BSc(Eng)(Moratuwa)

ENVIRONMENTAL TECHNOLOGY SECTION

Senior Deputy Director, Environmental Technology Section/Principal Research Engineer

N A T D D Gunasekera
BSc(Eng)(Moratuwa), Associate Member (IESL)

Senior Research Scientist

Dr. P Subramaniam
Bsc (Jaffna) PhD(UK)

Research Scientists

R T Nilusha (Ms)
Bsc(Spl)(Sabaragamuwa)

R D S S Ranatunga
BSc(Spl)(Sri Jayawardenepura), Phil(Sri Jayawardenepura)

Principal Research Engineer

W R L Wijesekera (Ms)
NDT(Che.Eng.Tech)(Moratuwa), ECE (Che.Eng)(UK) MSc(Colombo)

Senior Research Engineers

D M H S Dissanayake (Ms)
BSc(Eng)(Hons)(Moratuwa), Msc(Moratuwa)

Research Engineer

K A N Kumarasinghe (Ms)
BSc(Eng)(Peradeniya)

H L G S Liyanage (Ms)
BSc.Eng (Moratuwa)

A H S Jayasekera (Ms)
BSc.Eng (Moratuwa)

Senior Research Technologist

J A P V Jayasinghe
NDT(Moratuwa)

BIO TECHNOLOGY SECTION

Senior Deputy Director - Bio Technology Unit / Research Fellow

Dr R M Dharmadasa
*BSc(Hons)(Ruhuna), MPhil(Sri Jayewardenepura),
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Senior Research Scientists

Dr (Ms) W W P Rodrigo
*BSc(Open University) MSc(Peradeniya),
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Dr (Ms) A M M H Athapattu
BSc(Colombo) PhD(Kelaniya)

Research Scientists

H H K Achala
BSc(Spl)(Colombo), MSc(Bio Tech)(Peradeniya)

W T G S L Withana (Ms)
BSc(Ruhuna)

B J G Jayawardhane (Ms)
BSc(Peradeniya), M.Phil(Peradeniya)

OFFICE OF THE ADDITIONAL DIRECTOR GENERAL – RESEARCH & DEVELOPMENT

Management Officer

W S K Fernando (Ms)

TECHNICAL SERVICES

CHEMICAL & MICROBIOLOGICAL LABORATORY

Senior Deputy Director - Chemical & Microbiological Laboratory/Research Fellow

Dr H P P S Somasiri
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(Colombo), MChemC., CChem*

Senior Research Scientist

K S Weerakkody
BSc(Peradeniya), MSc(Kelaniya)

S H S Karunaratne (Ms)
BSc(Bangalore), MSc(Kelaniya)

Dr W D K Mahatantila (Ms)
BSc(Sabaragamuwa), MPhil(PGIS), PhD(Japan)

Research Scientists

P S F Perera (Ms)
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S K Liyanage (Ms)
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H P E de Zoyza (Ms)
*BSc(Spl)(Sri Jayawardanepura) Prof. Diploma(CIM)
Diploma in Quality Management (SLSI)*

R A P S De Alwis (Ms)
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S I Weerasekera (Ms)
BSc (Kelaniya)

Dr W C Prasadini (Ms)
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(Kelaniya)*

D R C Perera
BSc(Uva Wellassa)

T G Vithanage (Ms)
BSc(Colombo)

D M D M Dissanayake (Ms)
B.Sc (Kelaniya), M.Phil (Peradeniya) ,

Senior Research Technologists

P K G De Alwis (Ms)
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H K Alahakoon (Ms)
LTCC(ICChemC), BSc(Open University)

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C Vidyaratne (Ms)
B Sc(Open University)

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M M C B Nawarathna
DTLC(ICChemC)

V J Chithran
LTTC(ICChemC)

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A L S Malwenna (Ms)
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RESIDUE ANALYSIS LABORATORY

Senior Deputy Director – RAL / Principal Research Scientist

M N A Mubarak
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Research Scientists

G V V Liyanaarachchi (Ms)
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G U Chandarasiri (Ms)
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A U W Dissanayaka (Ms)
BSc(Sri Jayawardenepura)

Ms K D Madushani (MS)
BSc(Ruhuna)

Senior Research Technologist

H A A Perera
LTTC(ChemC), Dip. In Management Programme

Research Technologist

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MATERIALS LABORATORY

Senior Deputy Director, Materials Laboratory / Principal Research Engineer

A A M T Adikari
BSc(Hons)(Eng)(Moratuwa)

Research Engineers

C N Vitharana (Ms)
BSc(Hons)(Eng)(Moratuwa)

P A A S Karunarathne (Ms)
BSc(Hons)(Eng)(Moratuwa)

L S R Widuranga
BSc(Eng)(Moratuwa)

R A K Kumara
BSc(Eng)(Moratuwa)

Research Scientist

K K K H Amaranayake
BSc(Spl)(Kelaniya)

K W Prasadini (Ms)
BSc (South Eastern University)

M V K Munasinghe (Ms)
*BSc (Sabaragamuwa), MPhil (Peradeniya)
ICChemC(Licentiate)*

Research Technologists

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

W A M Priyanwada
DLTC(ICChemC)

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 Jayawardenepura), MSc(USM, Malaysia), PhD(UST, Korea), MIP(SL), CPhys(SL),

Senior Research Scientist

G D T A Pathiragoda (Ms)
*BSc(Spl)(Hons)(Colombo)
PGD(Kelaniya), MSc(Colombo), MA*

Research Scientists

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

M D R De Costa
BSc(Sri Jayawardenepura)

L G R C Lewangama (Ms)
BSc(Ruhuna)

K B G K I Kariwasam (Ms)
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

Management Officers

B L U R Kumari (Ms)

R P D Vonhagt (Ms)

K D M M Dissanayake (Ms)
BSc(Ruhuna)

W A D S V Wettasinghe
BSc(Sri Jayawardanapura)

K A Nimasha (Ms)
BSc(Ruhuna)

ELECTRO TECHNOLOGY LABORATORY

Senior Deputy Director - Electro Technology Laboratory/Principal Research Engineer

Dr R M Weerasinghe
BSc(Eng)(Peradeniya), MSc (AIT -Thailand), PhD
Senior Research Scientist
C M Kalansuriya
BSc(Hons)(Open University), MPhil(Colombo)
LIP(SL)

Research Engineer

R P K Wijewardena
BSc(Eng)(Moratuwa)

Research Scientist

K A C Perera
BSc(Spl)(Hons)(Ruhuna)

K D U H Abeywickrama
BSc(Colombo)

Senior Research Technologist

W L D D C Jayaratne

Research Technologist

K K N Dharshana

PHARMACEUTICALS LABORATORY

Research Scientist

G A D Hasantha
BSc (Colombo)

PETROLEUM & LUBRICANT TESTING LABORATORY

Principal Research Scientist

Dr A D M Damayanthi (Ms)
BSc(Open University), Grad.ICHEM, MSc(Colombo), CEMBA (Open University), PhD (PGIS)

Research Scientist

F N Zavahir (Ms)
BSc(Sri Jayawardanapura), MPhil(Sri Jayawardanapura)

OFFICE OF THE ADDITIONAL DIRECTOR GENERAL - TECHNICAL SERVICES

Senior Customer Liaison Officer

R A R R Perera (Ms)
BSc (Wayamba), MBA (Kelaniya)
Customer Liaison Officer
K N Kalupahana (Ms)
NDT (Moratuwa)

Management Officers

W M L Swarnalatha (Ms)

A G A H Abeysinghe (Ms)

ADMINISTRATION & OPERATIONS

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)

Accountant

R Malavipathirana (Ms)
IAB(London)

Accounts Officers

L A M S P Menike (Ms)

H A N Perera (Ms)
AAT (Intermediate II)

STORES

Senior Stores Officer

G H K G L Kushan
HNDA(SLIATE), MPA(Sri Jayawardanapura)

Stores Officer

A P Edirisooriya

SUPPLIES

Senior Supplies Officer

Mr H P R Kumara
BSc(Business Management)
(Accountancy)(Kelaniya), MSS (Colombo)

Supplies Officers

B P N Peiris (Ms)
DipSupMatMang

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

W A D De Alwis (Ms)

HUMAN RESOURCES DEPARTMENT

Senior Deputy Director – Administration & Human Resources

Vacant
Senior Administrative Officers (HR)

U A Thilakasiri
BLE(Colombo)

Senior Administrative Officers (HR)

Vacant

HR Officer

W V P Sarojinie (Ms)

Administrative Officer

L N Perera (Ms)
Dip. (Kelaniya)

MARKETING & BUSINESS DEVELOPMENT DEPARTMENT

Senior Deputy Director, Marketing & Business Development

N G M Wijemanne (Ms)
BSc(Open University), MBA(Australian Inst. of
Business Administration)

Senior Industrial Liaison Officer

C M Ranwala (Ms)
BSc(Sabaragamuwa), MBM(Colombo)

Industrial Liaison Officer

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

Marketing Officer

N P K Wanniarachchi
BSc(Sri Jayawardanapura)

ENGINEERING SERVICES

Chief Engineer

A S Arachchi
BSc(Eng)(Moratuwa), PG (Dip)

Assistant Engineers

W H R J Jayakody
NDT, Dip. In Info. Tech (SLIT)

U I Gamhewa
NDT (Moratuwa)

OFFICE OF THE ADDITIONAL DIRECTOR GENERAL – ADMINISTRATION & OPERATION

Management Officer

A I Bandara (Ms)

QUALITY ASSURANCE DEPARTMENT

Senior Deputy Director - Quality Assurance Department/Principal Research Scientist

W A J Sajeewika Perera (Ms)
BSc(Spl)(Hons)(Kelaniya), MSc(Kelaniya)

Research Scientists

H G T H Jayatunga (Ms)
BSc(Hons)(Kelaniya)

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

Quality Assurance Officer

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

INFORMATION SERVICES CENTRE

Senior Deputy Director, Information Services Centre / Principal Research Scientist

P M Jayasinha (Ms)
GradIChemC, MPhil(Open University), MIChemC,
CChem, ASLLA

Senior Research Scientist

E M S Isanka (Ms)
BSc(Spl)(Hons)(Peradeniya), MSc(Colombo)

Librarian

Vacant

Assistant Librarian

W W P N Geekiyanage (Ms)
ASLLA

W W R L Fernando (Ms)
ASLLA, 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)

Senior Computer System Administrator

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

OFFICE OF THE DIRECTOR GENERAL**Confidential Secretary**

H H S M R Wijenayaka (Ms)
BCom (Sri Jayawardenepura)

Senior Legal Officer

J A S Maduwanthi (Ms)
LLB(Colombo), LLM (Colombo), MHRM (Colombo),
Attorney-At-Law

CHAIRMAN'S OFFICE**Confidential Secretary**

H A A U Dias (Ms)
BCom(Sri Jayawardanepura)

INTERNAL AUDIT**Chief Internal Auditor**

Vacant

Senior Internal Audit Officer

Vacant

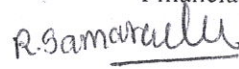
Internal Audit Officer

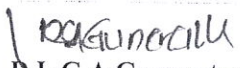
S P Haputhanthri
Nat.Dip in Finance (SLIATE)

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
STATEMENT OF FINANCIAL POSITION AS AT 31ST DECEMBER, 2020

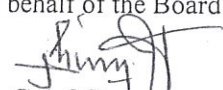
	NOTE	2020	2019
<u>ASSETS</u>			
Current Assets	3		
Cash and Cash equivalents	3D	426,406,001	497,110,346
Trade and other receivables	3B	256,302,577	192,769,960
Inventories/Stocks	3A	22,966,848	25,143,890
Prepayments	3C	9,846,091	14,354,390
		<u>715,521,517</u>	<u>729,378,585</u>
Non-current Assets			
Property, Plant and Equipment	1	1,745,803,897	1,617,460,790
Other Assets (Work-in progress)	2	374,455,203	575,948,496
Investments	3D	110,000,000	110,000,000
		<u>2,230,259,100</u>	<u>2,303,409,287</u>
Total Assets		<u>2,945,780,617</u>	<u>3,032,787,872</u>
<u>LIABILITIES</u>			
Current Liabilities	4		
Payables	4A	168,203,968	183,774,234
Accrued Expenses	4B	166,041,747	177,530,504
Provision for Gratuity	5C	3,217,280	11,270,531
		<u>337,463,044</u>	<u>372,575,320</u>
Non-Current Liabilities	5		
Payable	5A	19,520,122	19,520,122
Differed Income	5B	790,081,425	941,578,871
Provision for Gratuity	5C	123,152,736	108,432,373
		<u>932,754,283</u>	<u>1,069,531,416</u>
Total Liabilities		<u>1,270,217,328</u>	<u>1,442,106,736</u>
Total Net Assets		<u>1,675,563,289</u>	<u>1,590,681,136</u>
<u>NET ASSETS / EQUITY</u>			
	6		
Accumulated Fund	6A	809,130,799	696,394,363
Reserves - Donations	6B	712,990,061	740,844,345
Revaluation Surplus	6C	153,442,429	153,442,429
Total Net Assets / Equity		<u>1,675,563,289</u>	<u>1,590,681,136</u>

The Accounting policies on pages 05 to 07 and Notes on pages 08 to 32 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.


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


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

On behalf of the Board of Directors:


Dr. G.A.S.Premakumara
Chairman


Member of the Board

INDUSTRIAL TECHNOLOGY INSTITUTE
STATEMENT OF FINANCIAL PERFORMANCES
FOR THE PERIOD ENDED 31ST DECEMBER, 2020

	NOTE	2020	Budget	2020	2019
Operating Revenue					
Recurrent Grant		260,000,000	270,333,000		250,000,000
Amortization of Government Grants - Depreciation	5A1	198,000,000	177,012,665		168,739,413
R & D Projects & HRD	5A1	13,000,000	4,133,918		45,029,526
Rehabilitation & Improvements	5A1	19,500,000	19,518,335		10,788,244
Income - Revenue	7A	275,621,865	259,342,229		304,250,050
- Other Income	7B	20,000,000	24,869,137		30,423,996
		786,121,865	755,209,284		809,231,229
Operating Expenses					
	8				
Personnel Emoluments	8A	370,009,600	382,984,490		373,430,949
Travelling	8B	6,000,000	2,024,865		14,635,988
Supplies and Consumable used	8C	28,687,362	34,768,795		37,670,704
Maintenance	8D	37,306,062	42,976,223		41,258,914
Contractual Services	8E	52,070,738	51,499,781		59,635,064
R & D Projects & HRD	8F	13,000,000	13,298,918		45,029,526
Depreciation	8G	198,000,000	177,012,665		168,739,413
Other Operating Expenses	8H	41,548,061	35,692,790		54,622,110
Rehabilitation & Improvements	8I	19,500,000	19,518,335		10,788,244
Disposal & write Offs			6,497,720		7,193,852
Damage & Losses			-		285,384
Total Operating Expenses		766,121,824	766,274,583		813,290,149
Surplus/(Deficit) from Operating Activities		20,000,041	(11,065,299)		(4,058,920)
Net Surplus / (Deficit) for the period		20,000,041	(11,065,299)		(4,058,920)

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
THE STATEMENT OF CHANGES IN EQUITY FOR THE YEAR ENDED
31st DECEMBER , 2020

	Accumulated Fund	Reserves Donations	Re-Valuation Surplus
	Rs.	Rs.	Rs.
Balance as at 01.01.2020	696,394,363	740,844,345	153,442,429
<u>Changes in Equity for 2020</u>			
Surplus for the period	(11,065,299)		
Shedule Adjustment	18,801,735		
Donation received during the year		21,313,188	
Amortization of Non - Current		(49,167,472)	
Addition during the year (Capital Grant)	105,000,000		
Balance as at 31.12.2020	809,130,799	712,990,061	153,442,429

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
CASH FLOW STATEMENT FOR THE YEAR ENDED 31ST DECEMBER, 2020

	2020 (Rs.)	2019 (Rs.)
Cash Flow From Operating Activities		
Operating Surplus/(Deficit)	(11,065,299)	(4,058,920)
<u>Adjustment for</u>		
Depreciation / Amortization	177,012,665	168,739,413
Profit/Loss on Property Disposal		
Gratuity Provision	22,350,655	20,624,734
Incentive Provision	17,810,364	44,819,617
Provision for Audit Fee	1,536,000	1,536,000
Interest on Investments	(19,386,234)	(17,089,735)
Bad Debts Provision	29,694,658	23,196,938
Capital Grants Amortized	(200,664,918)	(224,557,183)
Operating Surplus/(Deficit)	17,287,892	13,210,864
<u>Change in Working Capital</u>		
(Increase)/Decrease in Investments		
(Increase)/Decrease in Inventories	2,177,042	(9,693,376)
(Increase)/Decrease in Debtors	(63,532,618)	(7,803,703)
(Increase)/Decrease in Prepayments	4,508,300	(3,585,387)
(Decrease) /Increase in Payables-Non Current	(73,150,186)	(37,681,244)
(Decrease) /Increase in Payables-Current	(27,059,024)	76,602,212
(Decrease) /Increase Accrued Expenses	(8,053,251)	22,946,883
Cash Generated from operating Activities	(147,821,846)	53,996,249
Gratuity & Incentive Paid	(57,951,346)	(44,993,165)
Net Cash Flow From Operating Activities	(205,773,192)	9,003,085
<u>Cash Flow From Financing Activities</u>		
Capital Grants Received	105,000,000	121,000,000
Interest Received	20,928,013	22,406,172
Net Cash Flow From Financing Activities	125,928,013	143,406,172
<u>Cash Flow From Investing Activities</u>		
Acquisition of Property Plant & Equipment - Purchases	(284,042,583)	(107,407,082)
Other Assets (Work In Progress)	293,183,418	(90,644,241)
Net Cash Flow From Investing Activities	9,140,835	(198,051,323)
 Net Cash Flow	 (70,704,344)	 (45,642,067)
 Cash as at beginning of the year	 336,884,345	 382,526,412
Deposits below 03 months beginning of the year	160,226,000	160,226,000
Cash at the end of the year (Note - 22)	426,406,001	497,110,345

ACCOUNTING POLICIES AND SIGNIFICANT EVENTS – 2020

1. GENERAL

The Statement of Financial Position as at 31.12.2020 and the related Financial Statements have been prepared on the historical cost convention, in accordance with the Sri Lanka Public Sector Accounting 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 not externally funded.

2. BASIS OF PREPARATION

The financial statements have been in accordance with the Sri Lanka Public Sector Accounting Standards for the year ended 31st December 2020.

3. ACCOUNTING FOR GOVERNMENT GRANTS

- A. Recurrent Grant from the General Treasury has been recognized as revenue in the statement of financial performance. Since year 2003 Capital Grant has been shown under deferred income in conformity with the formats specified in Circular No. PED/19. Depreciation for the year is 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%
Land Improvement	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 31.12.2020 is. Rs.804,936,305/-

4.1.1

Assets received as donations or purchased with Government Grant are amortized at the rates of 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 , SVAT 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 keeping according to PED Circular No.56

4.6 Crown Land

The Land occupied by the institute (Colombo Premises) is referred as Crown land and belongs to the state. Land at Malambe belongs to the Institute.

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 60 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/ Exhibitions

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

11. New Interior (Pvt) Ltd has sent a memorandum to the company regarding the recovery of the performance bond and the late payment of the final bill.
12. Initially Income target was 347Mn for the year of 2020. Due to COVID-19 lockdown Income target has revised in August 2020 to Rupees 275Mn . But again ITI had been closed nearly one month due to 2nd wave of COVID-19 pandemic.

NON -CURRENT ASSETS

NOTE - 01

	Land	Land Improvement 5%	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
<u>Cost</u>												
Balance as at 01.01.2020	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
Additions -												
Purchases	43,711,424	146,907,523	43,746,752	-	47,833,180	1,016,854	-	613,170	213,680	-		284,042,583
Donations				-	18,500,000	-	-	-				18,500,000
Donations - TG					2,813,188			-	-	-		2,813,188
Re-Valuation			-			-	-					-
Less:												
Write - Off					-	-		-				-
Adjustment			-		-		-	-		-		-
Balance as at 31.12.2020	83,711,424	146,907,523	307,489,884	889,143,459	1,393,856,360	90,927,029	122,804,891	84,742,670	84,480,368	49,058,425	4,512,594	3,257,634,628
<u>Less :</u>												
<u>Depreciation</u>												
Balance as at 01.01.2020		-	163,917,467	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
Add:												
Depreciation for 2020		6,600,776	13,993,028	44,457,173	79,291,432	3,745,664	15,930,960	9,771,501	1,832,948	1,389,181		177,012,665
Less:												-
Re-Valuation							-					-
Disposal					-	-		-				-
Adjustment					-							-
Balance as at 31.12.2020	-	6,600,776	177,910,496	206,078,928	782,800,851	35,815,394	100,671,470	80,360,605	69,228,841	47,850,777	4,512,594	1,511,830,731
Balance as at 31.12.2020	83,711,424	140,306,747	129,579,389	683,064,531	611,055,509	55,111,635	22,133,421	4,382,065	15,251,528	1,207,648	-	1,745,803,897

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT OF FINANCIAL POSITION AS AT 31ST DECEMBER 2020

	2020	2019
	Rs.	Rs.
<u>Other Assets (work in progress) - (Note - 2)</u>		
Work in Progress - General		1,625,537
Modern R & D Complex, Malambe	-	536,084,946
Work in Progress - ES Preparation of 5 Nos. Fume Cupboards		456,020
NCE in Food Research , Technology and Food Safety		102,177
NCE for Chemical and Residual Analysis		102,177
NCE for Natural and Indigenous Knowledge based products		102,177
Business Centre on the Ground floor of the library building		9,816
Treasury Grant Projects	-	-
	-	538,482,850

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT OF FINANCIAL POSITION AS AT 31ST DECEMBER 2020

	NOTE	2020 Rs.	2019 Rs.
<u>Current Assets (Note - 3)</u>			
<u>Consumable Stores</u>			
Chemical		6,448,122	6,112,591
Laboratory Ware		11,984,622	13,363,734
Mis. Supplies		496,424	524,973
Electronic Components		6,013	6,013
Stationery		855,630	945,386
Industrial Gases		99,109	156,076
Toners & Cartridges		3,076,928	2,842,518
Goods in Stores (Direct DGN)			1,192,598
	(Note - 3A)	22,966,848	25,143,890
Purchase Advances - Local Supplies	15A	19,784,583	9,476,908
Purchase Advances - Foreign Supplies	16	21,222,203	29,969,744
Sundry Debtors	17	40,587,772	40,633,361
VAT Receivable		-	183,187
VAT Receivable from Inland Revenue		34,861,120	33,452,869
Receivable from BOC (Donation)		-	100,000
Welfare Receivable		806,250	806,250
Provision for Welfare receivables		(806,250)	(336,250)
Receivable from STC - Hand Sanitizer Project		27,929,826	
Trade Debtors	18A	15,950,457	8,898,943
Staff Advances	20	36,549,719	40,466,670
Deposits	21	5,042,454	4,942,454
Funded Projects	23	53,433,451	23,234,804
Obsolete Assets for Disposal		941,019	941,019
	(Note - 3B)	256,302,577	192,769,961
<u>Pre-payments</u>			
	(Note - 3C)		
Fidelity Bonds (LCs), Gratuity Obligation & Reserve for Working Capital (Over 06 months)	19	9,846,091	14,354,391
		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	266,180,001	336,884,346
	(Note - 3D)	426,406,001	497,110,346

	NOTE	2020 Rs.	2019 Rs.
<u>Current Liabilities (Note - 4)</u>			
Trade Creditors	18B	6,103,852	6,097,745
Sundry Creditors	15B	88,110,384	102,441,454
Tender & Security Deposits	24	787,695	792,695
VAT Payable		4,066,757	
Staff Group Medical Insurance Employee Control A/C		1,485,335	1,565,075
Funded Projects	23	67,649,918	72,877,265
	(Note - 4A)	168,203,968	183,774,234
Accrued Expenses	(Note - 4B)	131,180,626	144,077,635
Provision for VAT Receivable		34,861,120	33,452,869
Provision for Gratuity	(Note - 5C)	3,217,280	11,270,531
<u>Non-Current Liabilities</u>			
Provision for Gratuity	(Note - 5C)	123,152,736	108,432,373
Reserves - Bond Defaulters		16,907,162	16,907,162
Science Award Fund (Originated by Prof. Vijaya Kumar)		393,445	393,445
Staff Activity Fund		2,199,449	2,199,449
Kasper Unit Fund		20,065	20,065
	(Note - 5A)	19,520,122	19,520,122

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO FINANCIAL POSITION AS AT 31.12.2020

		2020		2019	
<u>Amortization of Government Capital Grants (5A1)</u>		Rs.	Rs.	Rs.	Rs.
<u>(A/C - 604440-70700)</u>					
Depreciation	:- Non-Current Assets Upto 2002			-	
	Non-Current Assets 2003 Onwards	127,845,193		115,945,950	
	Non-Current Assets Donated	49,167,472	177,012,665	52,793,464	168,739,413
R & D Projects & HRD	:- Treasury Granted	740,519		23,526,215	
	Research & Development	306,530		354,042	
	HRD - Training			1,072,047	
	Membership fee	1,492,450		3,719,738	
	Library Science Directory			9,164,563	
	Quality System Improvement & Silp	1,594,419		7,192,921	
	R & D Expenditure		4,133,918	-	45,029,526
Rehabilitation	:- Building & Structure	18,497,543		9,317,611	
& Improvement	Plant Machinery and Equipment	1,020,792		1,083,597	
	Improvement of Vehicles			199,500	
	Improvement of Other Capital Assets		19,518,335	187,535	10,788,244
		200,664,918		224,557,183	

Differed Income (Note - 5B)

Government Contribution - Capital - 2003 Onwards)

(A/C - 300102 & A/C - 300104)

Balance as at 01.01.2020	941,578,871		992,342,590	
Additions during the year-Capital Grant for MRDC				
Capital Grant for ITI		941,578,871	121,000,000	1,113,342,590
Schedule Adjustment				
Amortization (Depreciation of Non-Current Assets)	(127,845,193)		(115,945,950)	
Amortization (Research & Development- Accreditation)	(306,530)		(354,042)	
Amortization (Treasury Granted Project Expenditure)	(740,519)		(23,526,215)	
Amortization (Rehabilitation Expenditure)	(19,518,335)		(10,788,244)	
Amortization (HRD)			(1,072,047)	
Amortization Library Science Directory- Annual Sub			(9,164,563)	
Amortization Membership Fee	(1,492,450)		(3,719,738)	
Amortization Quality System Improvement & Silpa Sena	(1,594,419)		(7,192,921)	
Amortization R & D Expenditure		(151,497,446)	-	(171,763,719)
Balance as at 31.12.2020	790,081,425		941,578,871	

Accumulated Fund (Note - 6A)

Government Contribution Capital - Upto 2002 and
Income & Expenditure Account Balance)

(A/C - 300101-30000 & A/C - 300300-30400)

	2020		2019	
	Rs.	Rs.	Rs.	Rs.
Government Contribution Capital Upto 2002 - 01.01.2020	619,826,595		619,826,595	
Income & Expenditure Account - 01.01.2020	76,567,767	696,394,362	80,889,950	700,716,546
Additions during the year- Capital Grant for ITI	105,000,000	105,000,000	121,000,000	
Capital Grant for ITI trf to Differd Income			(121,000,000)	
Schedule Adjustment		18,801,735		(263,263)
Surplus (Deficit) for the period of 2020	(11,065,299)		(4,058,920)	
Balance as at 31.12.2020	809,130,799		696,394,362	

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)

DONATIONS AND GRANTS AS AT 31ST DECEMBER, 2020

NOTE - 6B

Donations	A/C No.	Balance 01.01.2020	Additions during the year	Amortizations during the year	Balance 31.12.2020 Rs
Other Donation	300204	53,072		26,536	26,536
Capital Reserves	300205	1,523,209		-	1,523,209
ADB Donation	300207	3,366,507		1,122,175	2,244,332
Gift from JICA - FP 42	300213	22,122		7,374	14,748
Gift from MHIM - FP 36	300214	1,775		592	1,183
Gift from CARP FP 48	300215	1,350		450	900
Gift from TVEC	300219	8,742		2,914	5,828
Japanese 2KR Project	300222	16,247		1,731	14,516
NSF - Accessories to SEM	300228	111,000		111,000	-
Common Fund commodities	300231	132,513		43,138	89,375
Treasury Grant Vehicle Cab (MOTR)	300232	970,110		970,110	-
Donation to BTU	300234	587,814		195,938	391,876
Gift from Lion Brewery	300237	5,599,187		1,120,451	4,478,736
NRC Waters-HPLC	300238	1,962,877		350,000	1,612,877
NSF Donation	300239	316,748		52,791	263,957
Dept. of Ayurveda	300240	25,500		4,250	21,250
2KR Japanies Counterpart fund	300241	706,565,778		41,562,693	665,003,085
NSF FP 99	300242	302,428		37,804	264,625
Gloria Mundi Energy Institute FP 112	300243	117,560		14,695	102,865
Korean Institute of Ocean Science Technology FP 117	300244	50,378		6,297	44,081
NSF FP 113	300245	304,077		40,780	263,297
NRC-FP 106	300246		1,197,413	-	1,197,413
NRC-FP 111	300248		1,615,775	-	1,615,775
CIDA - IDRC Project	300403	18,805,352		3,495,754	15,309,597
Ministry of Trade	300404	-	18,500,000	-	18,500,000
TOTAL		740,844,344	21,313,188	49,167,472	712,990,060

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
REVALUATION BALANCE AT AT 31.12.2020

Note -6C

	2020	2019
	Rs.	Rs.
2008 Re-Valuation		
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 2020

	2020		2019	
<u>Revenue (Note - 7A)</u>	Rs.	Rs.	Rs.	Rs.
Standard Services	148,244,004		172,564,965	
Less: Refund	323,038	147,920,966	533,168	172,031,797
Consultancy Service		25,404,178		28,531,332
Technology Transfer		11,485,600		7,515,894
Contract Projects	18,613,729		57,013,235	
Less:-Sub Contract Projects	6,000	18,607,729	155,345	56,857,890
Customised Services		16,397,612		19,719,157
Training		10,725,524		18,078,448
Royalty Received		933,650		1,515,532
Hand Sanitizer Project		27,866,970		
		259,342,229		304,250,050
<u>Other Income (Note - 7B)</u>				
<u>Other Operating Income</u>				
Income-Library	96,385		140,074	
Income - Other / General	4,405,594	4,501,979	11,069,641	11,209,715
<u>Other Non Operating Revenue</u>				
Interest on Staff Loan	874,450		1,351,337	
Interest on Investments (Working Capital, Gratuity, LC Dposit)	19,386,234		17,089,735	
Contribution from Projects	-		-	
Exchange Gain & losses	106,474		9,809	
Profit/(Loss) Sale of Assets	-	20,367,158	763,400	19,214,282
		24,869,137		30,423,996

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)

NOTES TO STATEMENT OF INCOME

FOR THE REPORTING PERIOD ENDED 31ST, DECEMBER 2020

	2020	2019
<u>Personnel Emoluments (Note - 8A)</u>	<u>Rs.</u>	<u>Rs.</u>
Salaries & Wages	268,117,509	232,130,192
Casual Wages	2,933,113	9,288,246
Assingment Base Salaries	-	5,473,684
R & D Allowances	18,458,511	18,310,576
Employee Provident Fund	35,531,682	31,930,327
Employee Trust Fund	7,119,175	6,384,501
Gratuity	22,350,655	20,624,734
Overtime	6,733,040	11,840,672
Honorarium - G.B. Members	617,740	480,300
Medical Reimbursement	485,823	2,965,171
Incentive (PBIS)	5,176,056	4,725,445
Incentive (PF-380)	11,430,364	26,648,870
Staff Group Medical Insurance	4,030,823	2,628,232
	<u>382,984,490</u>	<u>373,430,949</u>

Travelling (Note - 8B)

Travelling - Local	959,094	1,638,522
Travelling - Foreign	2,568	9,640,927
Travelling - Pool Transport	1,063,203	3,356,539
	<u>2,024,865</u>	<u>14,635,988</u>

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT INCOME
FOR THE REPORTING PERIOD ENDED 31ST, DECEMBER 2020

	2020	2019
<u>Supplies and Consumable used (Note - 8C)</u>	Rs.	Rs.
Chemicals	12,525,284	10,687,571
Labware	8,586,127	8,208,573
Electronic Components	154,455	273,926
Stationery	4,029,933	6,257,108
Other Supplies	1,091,354	1,572,419
Other / CRR	228,914	2,738,042
Safety Measures	1,032,708	315,502
Uniforms - Watchers, Drivers, Etc.	914,895	952,849
Welfare Including Sports	83,463	123,217
Fuel Charges	6,121,663	6,541,497
	34,768,795	37,670,704

Maintenance (Note - 8D)

Buildings & Premises	15,104,067	15,139,592
Plant & Machinery	15,705,590	7,457,416
Furniture & Equipments	1,872,266	2,918,675
Library Books	241,525	-
Laboratory ware	20,784	97,142
Computer	4,227,638	7,150,008
Canteen	18,500	69,530
Generator	364,017	1,374,107
Vehicles	5,421,836	7,052,445
	42,976,223	41,258,914

Contractual Services (Note - 8E)

Electricity charges	27,006,137	32,249,501
Telephone & Internet charges	10,738,428	13,504,864
Postage Expenses	343,676	396,694
Rate & Taxes	2,023,560	2,023,560
Security Services charges	10,283,223	10,086,189
Water charges	1,104,757	1,374,256
	51,499,781	59,635,064

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT INCOME
FOR THE REPORTING PERIOD ENDED 31ST, DECEMBER 2020

	2020	2019
	Rs.	Rs.
<u>Projects & HRD (Note - 8F)</u>		
TG Expenditure	740,519	23,526,215
Research & Development (Accreditation)	306,530	354,042
HRD - Training	-	1,072,047
Membership Fee	1,492,450	3,719,738
Library Science Directory Annual Sub	9,165,000	9,164,563
Quality System Improvement	1,594,419	7,192,921
	13,298,918	45,029,526

Depreciation & Amortisation Expenses (Note - 8G)

Buildings	58,450,201	56,717,152
Land Improvement	6,600,776	
Plant & Machinery	79,291,432	68,917,543
Furniture & Equipments	3,745,664	3,599,122
Computers	9,771,501	8,305,885
Vehicles	15,930,960	17,525,960
Software	1,389,181	11,662,482
Library Books	1,832,948	2,011,269
	177,012,665	168,739,413

Rehabilitation Expenditure (Note - 8I)

Rehabilitation of Building and Structures	18,497,543	9,317,611
Rehabilitation of Plant Machinery and Equipments	1,020,792	1,083,597
Rehabilitation of Improvement of Vehicles		199,500
Rehabilitation of Improvement of Other Capital Assets		187,535
	19,518,335	10,788,244

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT INCOME
FOR THE REPORTING PERIOD ENDED 31ST, DECEMBER 2020

	2020	2019
<u>Other Operating Expenses (Note - 8H)</u>	Rs.	Rs.
Staff Training Expenses	89,700	1,030,673
Sampling Charges	3,347,275	4,717,365
Subsistence charges	1,766,975	3,020,427
Subscription Expenses - Local / Foreign/Other	160,591	222,271
Laboratory Membership Fee (Local)	-	275,818
Honorarium Expenses	622,812	1,257,118
Medical Examination Fee (New Recruits)	114,000	324,900
Entertainment Expenses	114,714	460,529
Insurance Expenses	1,882,682	2,237,729
Printing Charges	382,240	1,054,956
News Papers & Subs.	126,796	79,878
Audit Fees	1,536,000	1,536,000
Out source Employees' Salary	618,930	
Legal Fee	125,000	303,000
Bank Charges	84,283	124,143
Credit Card Commission	143,047	166,930
Advertising	883,644	1,828,714
Publication - Annual Reports	121,425	396,279
Promotional & Publicity	7,430	578,904
Disallowed VAT	1,410,745	8,762,398
National Building Tax	-	1,337,351
Survey Fee - Board of Survey	168,725	229,820
Patency & Consultancy Fee	289,570	940,422
Expenditure- Standard Services	549,971	964,769
Expenditure -Consultancy Services	756,745	825,742
Expenditure -Technology Transfer	545,155	316,272
Expenditure -Contract Project	1,356,603	2,854,274
Expenditure -Customised Services	299,032	394,677
Expenditure -Training	612,106	3,395,908
Expenditure_ Hand Sanitizer	16,025,214	
R & D & TS General Expenditure	65,374	183,431
NVQ Level - 4 Certificate Course.	134,993	
Clearing Charges	22,332	130,666
Annual Research Symposium R & D	-	1,579,426
Exhibition Expenses (ITI)	532,628	246,927
Exhibitions / Vidhatha/ Ministry works	295,171	1,457,420
Exhibition"Shilpa Sena"	344,646	7,147,498
COMSAT Meeting expenses	-	16,640
Stamp Duty	58,800	61,850
Provident Fund Stationeries	74,751	178,433
Miscellaneous Expenditure	22,684	34,316
CENTEC Expenditure -% Contribution	-	184,000
Quality Infrastructure Facilities	-	3,718,318
Moving Expenditure	-	45,918
	35,692,790	54,622,110

NATIONAL AUDIT OFFICE

My No.}IMT/C/ITI/FA/2020/14 Your No.}

Date} 08th March 2022

The Chairman,
Industrial Technology Institute

The Auditor General's Report on the Financial Statements and, other legal and regulatory requirements of the Industrial Technology Institute, for the year ended on 31st December 2020 in terms of 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 as at 31st December, 2020 comprised with the Statements of Financial Position, Financial Performance, Change of Stock, Cash Flow and the Notes related to such Financial Statements as at the same above date, and the summary of important accounting policies, was audited within my supervision in terms of Article 154(1) of the Constitution of the Democratic Socialist Republic of Sri Lanka to be read with the provisions of the National Audit Act, No.19 of 2018 and the Finance Act, No.38 of 1971. My Report will be tabled in Parliament in accordance with Article 154(6) of the Constitution in due course.

My Report, except the effect incurred by the matters described in the Part basis for the qualified opinion, envisages my opinion that the financial position as at 31st December, 2020, financial operation for the year ended as at 31st December, 2020 and cash flows reflect a true and fair position in accordance with the Sri Lanka Public Sector Accounting Standards (SLPSAS).

1.2 Basis for the qualified opinion

- (a) Even though the cost of stock ought to have been calculated on any of the methods out of the First in First Out (FIFO) method or Weighted Average Cost (WAC) in accordance with the Sri Lanka Public Sector Accounting Standards paragraph 09 (35), the Institute had calculated and recorded the value of the stock by using General Average Cost method without having recourse to either of the above methods. The value of the Consumer Goods of the Institute had accounted for Rs.22,966,848 as at 31st December, 2020. However, the reason for following general average cost has not been disclosed.
- (b) Even though it is required to identify the productive life of the assets as per No 03 of Sri Lanka Public Sector Accounting Standards, the productive life of the fixed assets with the value of Rs. 804,936,305 has not been reviewed and included in the financial statements.
- (c) In line with the Financial Statements, the capital grants of Rs. 619,826,595 from the treasury belonged to the period from 2022 to 31st December 2019 which were unutilized have been included into the accumulated fund and the organization has not taken actions to disclose in this regard as per No 11 of Sri Lanka Public Sector Accounting Standards.

- (d) The capital grant of Rs. Million 219 from the General Treasury granted to ITI between the period of 2017 to 2019 for the purpose of establishing petroleum laboratory and medical laboratory and the expenses born with the funds had been indicated as credit and debit in two different project accounts deviating from prescribed accounting procedure and therefore the value of the laboratory equipment amounting to Rs. 211.2 million which were purchased using the capital grant is not properly represented in financial statements. Further, the depreciation of the above equipment has also not been included in the financial statements.
- (e) Even though a multi employee plan was followed to pay employee gratuities (post service benefits), it has not been disclosed in the financial statements as per the directions No 19 of Sri Lanka Public Sector Accounting Standards.
- (f) Even though the error of accounting the value of the cost of land in Malabe where the Research and Development building is located, under buildings in the final accounts statement of year 2017, has been corrected the error of overcalculating the annual depreciation by Rs. 2,000,000 on depreciating the land by 5% of the cost, has not been corrected in the year under review.
- (g) Unidentified direct bank debits of Rs. 12,756,253 until 31st December 2020 has still not been identified by the institute and the expenses payable has been indicated in the financial statements under current liabilities.
- (h) Since the variations of the working capital has not been indicated in the correct manner, the net cash flow from the operating activities in the cash flow statement has been indicated less Rs. 81,203,438. Further the net cash flow from work in progress investment activities has been overstated by Rs. 91,690,122.

1.3 Other Information included in the Annual Report 2020 of the Institute

Information included in the Annual Report 2020, but not included in the Financial Statements which are to be produced to me later and the information not included in my audit report in that regard are intended by the term Other Information. The Management is responsible of this other information.

My opinion on the financial statements do not cover the other information and I do not provide my opinion or certification on the same.

In relation to my audit on financial statements, my responsibility is to read the other information when available and to consider whether the other information comply with the financial statements and whether there is any quantitative mismatch as per my knowledge gained at the audit or by any other means.

When the annual report 2020 is read, if I conclude that there is any quantitative misrepresentation, the matters should be forwarded and communicated to the parties involved. If there are further misrepresentations, I may include them in the report tabled at the Parliament as per section 154 (6) of the Constitution.

1.4 The responsibility of the Management and the parties in control over Financial Statements

It is the responsibility of the Management for preparing and fair presentation of these Financial Statements in accordance with the Sri Lanka Public Sector Accounting Standards and to determine the internal control required for preparing the Financial Statements free of quantitative error statements which might occur due to frauds and defaults.

In preparing the Financial Statements, it is the responsibility of the Management to decide the sustainability of the Institute. And, unless the Management is of the view to liquidate the Institute or to terminate the operations in the absence of any other alternatives, it is also a responsibility of the Management to disclose the matters pertaining to book keeping and the sustainability of the Institute, on sustainability basis.

The parties in control are vested with the responsibility on the Financial Reporting process of the Institute.

In terms of subsection 16(1) of the National Audit Act, No.19 of 2018, the books and reports on income, expenditure, assets and liabilities must be duly maintained enabling to prepare the annual and periodical Financial Statements of the Institute.

1.5 The responsibility of the Auditor on auditing of Financial Statements

It is my target to provide a fair confirmation that the Financial Statements in whole, are free of quantitative erroneous statements which occur due to frauds and defaults, and to issue the auditor's report inclusive of my opinion. Even though fair confirmation amounts to that of high standard, it may not confirm that the same will always expose the quantitative misstatements when carrying out the audit in terms of the Sri Lanka Audit Standards. The quantitative misstatements may occur due to the individual or collective frauds and defaults and it is anticipated that the same may cause effect on the economic decisions taken up by those who make reference of it based on these Financial Statements.

I carried out this audit with professional edict and doubt, in accordance with the Sri Lanka Audit Standards. Further,

- * In order to avoid the risks which occur due to frauds and defaults by scheduling appropriate audit criteria as and when required in recognition and valuation of the risks of quantitative erroneous statements which may occur in the Financial Statements due to frauds and defaults, the receipt of sufficient and suitable audit evidence provides a basis for my opinion. The impact of a fraud is more powerful than the same generated out of quantitative erroneous statements. Corrupt association, preparing forged documents, intentional ignorance or avoidance of internal controls cause fraud.
- * Even though an understanding on the internal control was perceived to schedule audit criteria as timely required, it is not expected to express a view on the productivity of internal control.
- * Assessment of the fairness in the accounting policies and estimates used and the appropriateness of the related revelations by the Management.
- * The relevance of the use of the basis of sustainability of the Institute for accounting purposes was decided on the audit evidence obtained as to whether there exists a quantitative inconsistency on the sustainability of the Institute due to incidents and circumstances. In case I assume that there exists a sufficient inconsistency, attention should be paid to the disclosures on same in the Financial Statements, and if such disclosures are insufficient

my opinion should be modified. However, the sustainability may terminate on incidents or circumstances in future.

- * The presentation of Financial Statements inclusive of disclosures, structure and content were evaluated and the evaluation to the effect that the transactions and incidents affecting the same in an appropriate and fair manner.

The parties in control were apprised of the important audit findings, major internal control weaknesses and other matters recognized during my audit.

2. The Report on other legal and regulatory requirements

2.1 Special provisions have been incorporated in the National Audit Act, No.19 of 2018 on the following requirements:

- 2.1.1 In terms of the requirements provided in section 12(a) the National Audit Act, No.19 of 2018, all information and explanations required for the audit, except the impact caused by the matters described in the part basis for the quantified opinion in my Report, were obtained by me, and in view of my investigation, the Institute had maintained proper financial records.
- 2.1.2 In accordance with the requirement provided in section 6(1) (d) (III) of the National Audit Act, No.19 of 2018, the Financial Statements of the Institute are consistent with the preceding year.
- 2.1.3 In accordance with the requirement provided in section 6(1) (d) (iv) of the National Audit Act, No.19 of 2018, the recommendations made by me in the previous year except the matters referred to in paragraph (b) of this report, have been incorporated in the Financial Statements so presented.
- 2.2 No matter was encountered to declare the following, based on the action taken and evidence obtained, and within the limitations of quantitative matters.
 - 2.2.1 As per the requirement in section 12 (d) of the National Audit Act, No.19 of 2018, that any member of the governing body of the Institute has any direct or indirect interest in any contract pertaining to the Institute outside general business circumstances;
 - 2.2.2 As per the requirement in section 12 (e) of the National Audit Act, No.19 of 2018, that except the following observations, action has been taken not in compliance with any applicable written laws or other general or special orders issued by the governing body of the Institute.

Reference to the laws and rules/provisions	Description
(a) Section 15 of the National Audit Act No 19 of 2018	Even though the financial statements should be submitted to the Auditor General before lapse of 03 months of each financial year, the institute submitted the financial reports on 22 nd October 2021, which is after 07 months from the date to be submitted.
(b) Financial Circulars revised by the Public Financial Circular 03/2015 dated 14 th July 2015	Even though the balance amount in an interim imprest should not be delayed till 31 st December of the year in which the imprest is

issued, the advance amount of Rs. 1,188,770 issued in year 2020 had not been settled. The adhoc interim imprests should also be settled within 10 days of completing the relevant task, that has taken a period of 1 months to 7 months.

- (c) Section 396 (c) of Sri Lanka Financial Regulations 51 cheques for Rs. 1,599,117, issued till December 2020 which were not presented to pay for 06 months had been credited to 02 months cheque validity expired creditors account, but no actions were taken in line with the above financial regulation.

2.2.3 As per the requirement in section 12 (g) of the National Audit Act, No.19 of 2018, that action has been taken not in compliance with the powers, functions and duties of the Institute.

2.2.4 As per the requirement in section 12 (h) of the National Audit Act, No.19 of 2018, that the resources of the Institute have not been procured and utilized economically, efficiently and effectively within the time frames and in compliance with the applicable laws.

3. Other Matters

- (a) Balances receivable amounting to Rs. 14,535,683 for a period of 1 year to 7 years have not been recovered.
- (b) An amount of Rs. 16,799,429 which are to be recovered from 20 officers who have breached the conditions of the agreements, had not been recovered as at 31st December 2020.
- (c) The institute had entered into an agreement with a contractor on 14th December 2017 to carry out and complete outdoor improvement activities such as preparing internal roads, erecting the fence, car park and garden beautification within a period of 05 months for an estimated amount of Rs.217 million it had not been completed until year 2020.
- (d) It was observed that around 09 months to 01 year was delayed purchasing equipment approved by the Technical Evaluation Committee to establish petroleum and lubricant testing laboratories and an amount of Rs. 2,562,464 more than the amount recommended by the Procurement Committee had been spent to procure 12 equipment.
- (e) 06 bank accounts were maintained in dormant status with an amount of Rs. 6,443,743/-
- (f) One of the purposes in establishing this laboratory as to prevent spending a large amount of fees to obtain medicine testing laboratory services. However, since the goal has not been met, further expenses were born to obtain these services spending foreign currency.

(g) Even though income has been generated by issuing test reports for manufacturing samples of the private sector, consumers are not guaranteed of the quality of the goods supplied to the market since it is not the responsibility of the laboratory to maintain the quality confirmed by the sample test report. It was observed at the audit that actions have not been taken to prevent this situation coordinating with other institutions involved.

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 2018 on the Financial Statements of Industrial Technology Institute for the year ended on 31st December 2020 and other legal and regulatory requirements.

No	Matters in the Report of the Auditor General	31.12.2020 Explanation of the Institute
01	Financial Statement	
(a)	Even though the cost of the stocks is to be calculated using either First in First Out (FIFO) Method or Weighted Average Cost And Method (WAC as per para 09 (35) of Sri Lanka Public Sector Accounting Standards, it has not been followed and the institute has used simple average cost method to evaluate and account the stocks for Rs. 22,966,848 as at 31st December 2020. Even so, the financial statements did not reveal the reasons for adopting the simple average cost method.	In the existing computer system, the simple average method is used for the stock audit as there are no necessary facilities to carry out the stock audit according to the average cost. The new computer system with this facility has been installed at present. From the year 2022, the stock audit can be done using the average method.
(b)	According to Sri Lanka Public Sector Accounting Standard No. 03, the effective life of the assets should be correctly identified and the correction of the accounting estimates should be made, but the effective life of the fixed assets, which was fully depreciated but still in use, was not reviewed and included in the financial statements.	This information is included in the Change of Equity Statement According to Section 88 of Public Sector Accounting Standard 1, the information should be presented in an identifiable manner, which is stated as “net assets/shares attributable to owners of the controlling entity”. Since 2009, the details of the provisions have been presented as above. Rs. 105,000,000/- which was a provision from the General Treasury should have been transferred from the capital grant account to the deferred income account, but because of the omission, the accumulated fund has increased. This was simply due to an omission of an account note. This adjustment has been made in the accounts of the year 2021.
(c)	According to the financial statements, from the year 2002 to December 31, 2019, unused treasury capital grants of Rs. 619,826,595 had been added in the accumulated fund and in this regard, the institution had not made the disclosures that should be made according to Sri Lanka Public Sector Accounting Standard No. 11.	Although fully depreciated, but currently used assets should be revaluated, it has been difficult to do this due to the practical difficulties for revaluation of these assets and the prevailing situation in the country. However, efforts are being made to get the services of an experienced client.

Report of the Auditor General as per the Section 12 of the National Audit Act No 19 of 2018 on the Financial Statements of Industrial Technology Institute for the year ended on 31st December 2020 and other legal and regulatory requirements.

No:	Matters in the Report of the Auditor General	31.12.2020 Explanation of the Institute
(D)	For the establishment of the Petroleum Oil Laboratory and the Pharmaceutical Laboratory, the Industrial Technology Institute received Rs. 219 capital grants from the General Treasury for the period 2017 to 2019 and the expenses incurred by it were recorded as debit and credit in two project accounts and the capital grant and the amount of Rs. 2112.2 laboratory equipment value was not represented in the financial statements. Also, the depreciation expense for the above equipment, which is already in use, was not included in the financial statements.	The Petroleum Oil Laboratory and the Drug Testing Laboratory are maintaining the related provision receipts and incurred expenses as separate project accounts and have been transferred to the respective asset accounts in the year 2021 when the project has been completed and operations started.
(e)	Although the ITI adopted a multi-employee plan for employee gratuity (post-service benefits), it was not disclosed in the financial statements in accordance with the provisions of Section 141 of Sri Lanka Public Sector Accounting Standard No. 19.	Industrial Technology Institute has done accounting work for gratuity in the same way as it was done in previous years in the year under review (2020). This has been presented in the accounting notes.
	Reference to legal and regulatory requirements	
(a)	The financial statements of the government should be forwarded to the Auditor General by the secretary before the end of each fiscal year of the government, but the financial statements were submitted to the audit by the institution on October 22, 2021. It is after 07 years of the due date of submitting the accounts for the financial year.	In the year 2020, due to the lockdown caused by COVID-19 (Corona) epidemic, the activities of the financial sector could not be carried out properly. Due to the fact that some of the employees of the financial sector were infected with the virus, the Finance Division had to be closed, so the submission of account statements was delayed.
(b)	Although the unspent cash balance of an interim imprest issued should not be delayed beyond December 31 of the fiscal year in which the imprest was issued, an advance amount of Rs. 1,188,770 issued in year 2020 was not settled and after issuing an interim imprest, it should be settled again within 10 days after the completion of the relevant	These advances were given for emergency programs conducted at the ministerial level, and the advances were given to a senior official in the Marketing and Business Development Division. However, we are working within the maximum advance limits set by the Public Finance Circular 03/2015.

Report of the Auditor General as per the Section 12 of the National Audit Act No 19 of 2018 on the Financial Statements of Industrial Technology Institute for the year ended on 31st December 2020 and other legal and regulatory requirements.

	works. However a period of 01 months to 07 months had been delayed to settle the advance amount of the year under review.	
(c)	51 checks issued during the period up to December 2020, which have aged beyond 06 months amounting to Rs.1,599,117 had been disposed of in an account called "02 Months Check validity Expired creditors" but the expired checks had not been dealt with according to the cash regulation.	Due to the closing down of the institution due to the COVID-19 (Corona) epidemic in 2020, it was difficult to proceed in the manner stated in F.R 396 due to the difficulty of obtaining the necessary confirmations about the expiring checks. Also, many suppliers are aware of their checks and due to the difficulty of carrying checks due to the situation, FR 396 was not followed. Further, 02 Months Checks Validity Expired Creditors account is maintained for the convenience of re-issuance of checks, after updating the date.
Other Audit Observations		
(a)	1 to 7 year old total in receivable balances Rs. 14,535,683 sundry debtor balances were also not recovered during the year under review.	The State Ministry of Science and Technology has requested several times to provide the rent based on the time spent in the Industrial Technology Institute. Management Information System, Sri Lanka Insurance Corporation, Oxygen House, WHT Tax, VAT WHT are balances from 10 years ago and it has been difficult to recover these balances. The relevant parties have been informed to pay the money for the refundable air tickets and if the money is not paid, legal proceedings will be taken.
(b)	An amount of Rs 16,799,429 should be recovered from 20 officials who violated the terms of the foreign scholarship agreements. However it had not been recovered by 31 December 2020.	Rs 4,020,392/- out of this amount is related to 17 officers and measures were taken to recover the related money from the officers who violated the agreement, but those procedures were futile because the officers have left the island, many of their guarantors have also left the island and some are not alive. A timeline analysis of the officers who breached the agreements is given below. Officers more than 30 years 04 Officers more than 20 years 08 Officers more than 10 years 06 Necessary arrangements are being made with the Attorney General's Department for the two officials who breached the

Report of the Auditor General as per the Section 12 of the National Audit Act No 19 of 2018 on the Financial Statements of Industrial Technology Institute for the year ended on 31st December 2020 and other legal and regulatory requirements.

		contracts worth Rs 12,541,165/-. One of these officials has arranged to pay this amount according to the agreement.
(c)	The estimated value of 217 million for the external development works of Malabe premises of the Industrial Technology Institute such as the construction of internal roads, the construction of fences, the car park and the beautification of the garden etc. was assigned to the contractor on December 14, 2017 to be completed in 05 months, but it took time until the year 2020 to complete the related works.	Due to external works and additional work in land development works, scope was varied and time extensions were given for the project in 04 cases due to acceptable reasons. Due to bad weather conditions, election activities, time delays from external parties in marking the boundaries etc., the extension of time was given on the recommendations of the consulting company. Due to this, it was difficult to complete these projects on the expected date.
(D)	It was observed that there had been delays of 9 months to 01 year for ordering equipment from the date of approval by the Technology Evaluation Committee for the procurement of machinery for the installation of the Petroleum and Lubricant Testing Laboratory and Rs. 2,562,464 more than the price recommended by the procurement committee had to be spent in procuring 12 pieces of equipment.	There was no change in the recommended prices (US \$) of the selected suppliers' equipment (12) and due to the delays Rs. 2,562,464/- million more had to be paid as a result of the increase in the price due to the depreciation of the exchange rate between the rupee and the dollar. The reasons for this situation were that the amount of Rs.100 million approved from the national budget was not received on time, the entire amount of Rs.100 million was not received and spent more time comparing prices on technicalities.
(e)	A Value of four bank account balances amounting to Rs. 6,443,743 had been maintained as dormant bank accounts for over 06 years.	No. 000-0351 Account 567 is for a project jointly run by the Institute of Industrial Technology and several institutions that manufacture ceramics and bricks. This project was inactive for several years and now the relevant project is active again. A written request has been made to obtain this amount again. The account bearing 000-2876-229 was used for the coir project, and the accounts bearing no 000-9283-122 and 000-8174-439 are the accounts of the EEPEx project which is currently halted.
(f)	Although the purpose of establishing this laboratory was to prevent from having to spend a large fee to foreign countries in obtaining drug testing laboratory services, it was not possible to prevent foreign exchange from being spent.	As there is no regulatory authority for our laboratory, all samples are not received by our laboratory. This process is within the basic objective and since it is a national need, actions are being taken to implement it on the commitment of the Ministry of Energy and the

Report of the Auditor General as per the Section 12 of the National Audit Act No 19 of 2018 on the Financial Statements of Industrial Technology Institute for the year ended on 31st December 2020 and other legal and regulatory requirements.

		Public Utilities Commission of Sri Lanka and the decision of the Cabinet of Ministers.
(g)	The services provided by the laboratory have generated income by issuing test reports for the samples of the private sector products, but the laboratory is not responsible for maintaining the quality confirmed by the sample test report while making those products, so the consumer is not protected from the products supplied to the market. In order to avoid this situation, it was observed during the audit that no actions were taken to work together with the other associated establishments.	Income is obtained by issuing reports for the private sector, but regular sample testing is done according to the needs of the private sector. We are not in a legal position to constantly monitor quality as confirmed by sample testing.