Annual Report 2012

Industrial Technology Institute

Your Partner in Technological and Industrial Growth

Contents

ITI Quality Policy

"The management of the Industrial Technology Institute is unreservedly committed to maintain the ISO 17025 Quality Management System for the Testing and Calibration services and ISO 9000 Quality Management System for the entire Institute, in keeping with the National Quality Policy, thus providing customers with services of the highest professional standards.

All ITI staff has been made fully aware of the Quality Systems operated within the Institute and are therefore committed to provide services in keeping with the International Standards.

The entire staff of the Institute endeavors to achieve the highest level of customer satisfaction and continual improvement of services by meeting the requirements of the Quality Systems as per ISO 17025 for the Technical Services & ISO 9000 for Quality Management"

Act & Legislation

The Industrial Technology Institute (ITI) is a statutory board, which came into existence on 01 April 1998 by virtue of the Science and Technology Development Act No. 11 of 1994. ITI is the successor to the Ceylon Institute of Scientific and Industrial Research (CISIR), which was established in 1955. The ITI that operates as a market-oriented partner to its clients and stakeholders is a wholly owned Institute of the Sri Lankan Government with its own Board of Management and functions within the purview of the Ministry of Technology and Research.

Mandate

The Science and Technology Development Act No. 11 of 1994 that came into effect on 01 April 1998 describes our mandate as follows:

“The Technology Institute shall be demand driven. The object of the Technology Institute shall be to elevate the level of technology in Sri Lanka to the level required for rapid industrialization."

Vision

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

Mission

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

as at 31st December 2012

Board of Management and Committees

Chairman

Prof. Vijaya Kumar

Members

Dr. A.M. Mubarak
Director/CEO, ITI

Mr. Nihal Abeysekera
Chairman, Japan Lanka Industrial Development Centre

Mr. J.A.G. Anandarajah
Managing Director, Dipped Products PLC

Mr. E.A. Rathnaseela
Director, Department of National Planning
Ministry of Finance and Planning

Prof. B.S.B. Karunaratne
Director, Postgraduate Institute of Science, Peradeniya

Dr. C.T.S.B. Perera
Managing Director, Samson's Rajarata Tiles (Pvt) Ltd.,

Dr. K.P.A. Senaratne

Audit Committee

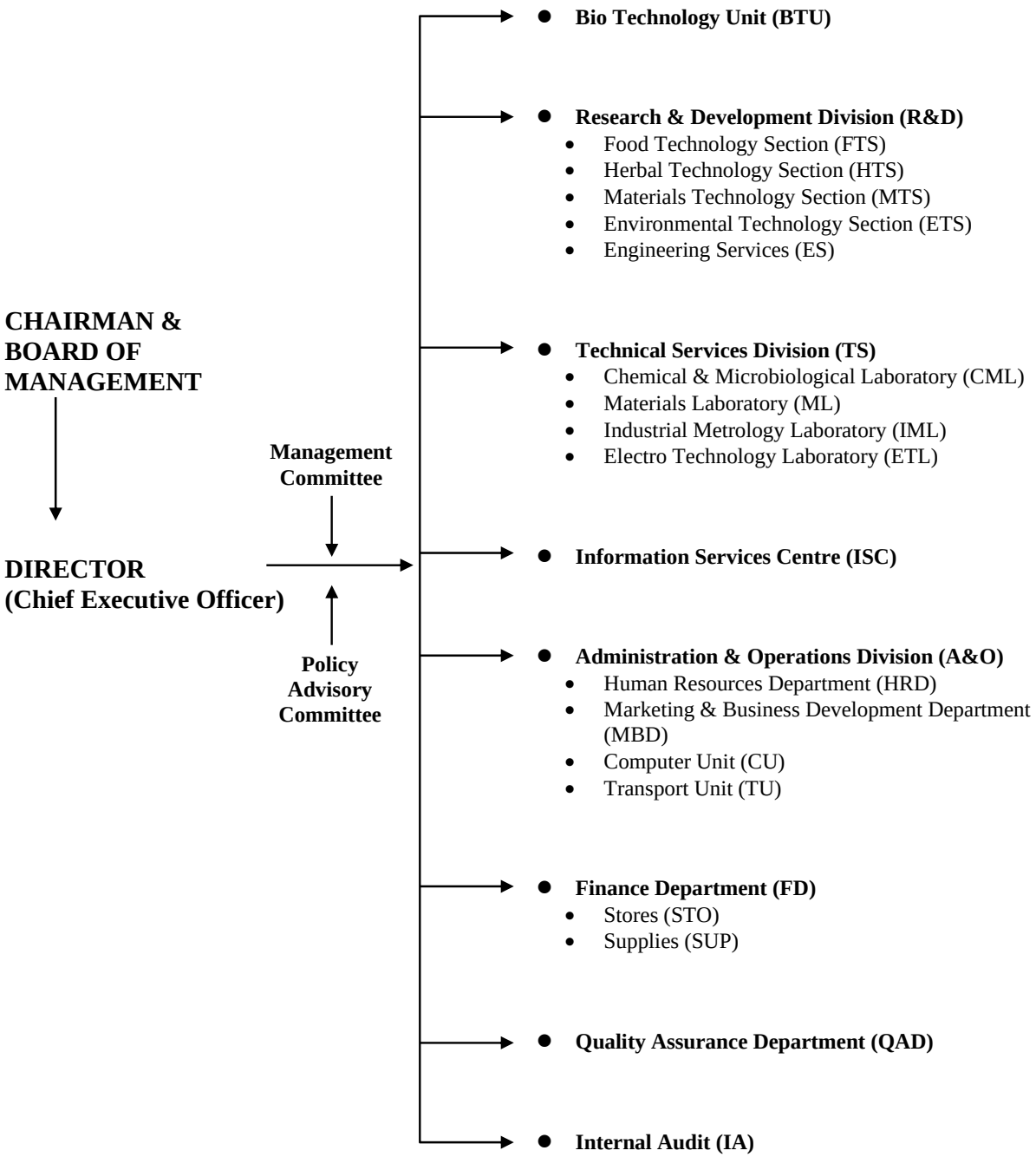
Mr. E.A. Rathnaseela
Chairman/ Board Member/Treasury Representative

Dr. C.T.S.B. Perera
Board Member

Dr. K.P.A. Senaratne
Board Member

Ms. Renuka Jayatilleke
Institute Secretary and Secretary to the Board of Management and Audit Committee

Organization Structure



as at 31st December 2012

Senior Management

DIRECTOR/CEO

Dr. A.M. Mubarak

ADDITIONAL DIRECTOR, RESEARCH & DEVELOPMENT

Dr. G.A.S. Premakumara

ADDITIONAL DIRECTOR, TECHNICAL SERVICES

Mr. A.S. Pannila

ADDITIONAL DIRECTOR, ADMINISTRATION & OPERATION

Mr. D.C.A. Sattrukalsinghe

RESEARCH & DEVELOPMENT

Dr. Ilmi G.N. Hewajulige
Senior Deputy Director, Food Technology Section

Dr. J.K.R.R. Samarasekera
Senior Deputy Director, Herbal Technology Section

Dr. I.R.M. Kottegoda
Head, Materials Technology Section

Mr. H.N. Gunadasa
Senior Deputy Director, Environmental Technology Section

Mr. A.S. Arachchie
Head, Engineering Services

Dr. S.G. Senaratne
Head, Bio Technology Unit

INFORMATION SERVICES CENTRE

Ms. Suranee Samarasekera
Senior Deputy Director, Information Services Centre

INTERNAL AUDIT

Mr. K.A.S.P. Kaluarachchi
Chief Internal Auditor

FINANCE DEPARTMENT

Mr. Johnson Solomon
Senior Deputy Director, Finance Department

TECHNICAL SERVICES

Mr. J.K.A.B. Wijegunasekara
Head, Chemical & Microbiological Laboratory

Mr. J.M.S. Jayatileke
Senior Deputy Director, Materials Laboratory

Dr. W.M.S. Wijesinghe
Head, Industrial Metrology Laboratory

Mr. R.M. Weerasinghe
Head, Electro Technology Laboratory

QUALITY ASSURANCE DEPARTMENT

Ms. M.K.D.R. Dayaratne
Head, Quality Assurance Department

ADMINISTRATION & OPERATION

Mr. Tilak Samarasekera
Senior Deputy Director, Administration & Human Resources

Senior Deputy Director, Marketing & Business Development

(Vacant)

INSTITUTE SECRETARY

Mrs. A M K R Jayatilake

- *Dr. Shanthi Wilson, BSc (Hons) (London), PhD (Cantab) served as Additional Director, Research & Development upto 09th October 2012*
- *Mrs. Damitha Rajapaksa, BSc (Hons) (SL), MSc (Sri Jayewardenapura), CChem, MIChemC served as Acting Senior Deputy Director, Food Technology Section from 16th February to 29th October 2012*
- *Dr. Jaanaki Gooneratne, BSc(Hons)(Allahabad), MSc(Bombay), PhD(SL), LIChemC served as Senior Deputy Director, Food Technology Section upto 15th February 2012*

Chairman's Message

The Institute's earnings grew by 19 % in 2012 to Rs. 188.4 m compared with Rs. 158.3 m in 2011. If the Central Bank deflator of 7.8% for 2011 and 8.9 % for 2012 is used to compare incomes in the past three years, the Institute showed an increase of 10 % in real income in 2012, compared with an increase of only 1.9 % in 2011. The Technical Services Division continued to be the biggest earner with its income improving 12.9 % to Rs. 124.2 m compared with Rs. 110.8 m the previous year. Income from Contract Projects rose substantially from Rs. 4.5 m in 2011 to Rs. 8.1 m in 2012 and so did earnings from technology transfer which grew from Rs 1.7 m to Rs. 2.8 m. The ratio of earnings to recurrent expenditure however decreased to 0.6 in 2012 from the high of 0.61 achieved last year. Personnel emoluments increased by Rs. 35.8 m or 21 % in 2012 largely due to the complete implementation of the new salary schemes, while the rise of 20% in total recurrent expenditure reflected inflationary and foreign exchange movements in the economy. These developments led to an increase in expenditure per employee by 20 % in 2012, which was much greater than the 19.6% increase shown in income generated by each employee.

The administration block at the new site for ITI at Malambe and much of the Agro-Food Technology block has been completed, with ITI's generated income being used to construct the shell of the additional floors of the Agro-Food Technology building. The road from Chandrika Kumaranatunga Mawatha to the site and the bridge is now under construction with the completion of the acquiring of the additional land necessary for this purpose. The Institute has still not been able to obtain external funding for the Advanced Materials block. The tender procedures for Phase II of the Administration block are under way.

The Institute is still unable to attract and retain quality staff largely because government salaries and terms of employment for research staff are not competitive. Although many initiatives like research allowance and distribution of research earnings have been proposed, only the former has been implemented. Its impact has however not been very large with the research staff numbers which decreased 11% from 2010 to 79 in 2011 remaining unchanged in 2012. While technical staff numbers showed a 14% decrease from 2011 to 2012, there was an increase of 10% in the non-technical grades.

The Institute continued with its performance incentive scheme and incentive scheme for scientists. Employee relationships have been good.

ITI continues to play a major role in assisting Sri Lankan industry by providing a wide range of internationally and locally accredited laboratory services. Of these 77 are accredited by the Swedish Accreditation Agency SWEDAC and 98 by the Sri Lankan Agency SLAB.

The Institute supported local industry by providing a wide range of calibration services to industry. It also maintained its international stature by providing such services to laboratories overseas and by conducting training programmes on quality management in microbiological analysis for foreign scientists.

ITI continued to carry out research on critical problems facing the country and on problems faced by industry. The highlights of this work and of new initiatives being undertaken by the Institute are described in the following pages of the Annual Report. The Institute also plays a major role in assisting industry to monitor and mitigate the effects of industrial pollution. As described more fully in the report, this work has been in the fields of noise and vibration pollution including those on newly built ships, atmospheric emissions and solid waste and waste water management.

Director/Chief Executive Officer, Dr. Azeez Mubarak provided excellent leadership to the Institute and it was as always a pleasure for the Board to work with him. ITI will be sorry to lose him when he retires from the Institution early next year. On behalf of the Board, I wish to take this opportunity to thank him for his remarkable contribution to the Institute during his period of over ten years as Director. I wish to also thank the staff and management of the Institute for their efforts in not only helping to maintain ITI's position as the premier industrial research institute in the country but also their endevours in building up confidence in industry on the capabilities of the Institute as a reliable research partner.

Vijaya Kumar (Prof.)
Chairman

Executive Report

The performance of the Institute during the year under review, and some of the significant research and technical services carried out during this period are highlighted.

R&D FOR ELEVATING THE LEVEL OF TECHNOLOGY IN INDUSTRY

Technology Transfer: An agreement was signed with Arogya Farm Pvt Ltd for for the exclusive transfer of knowhow for the production of Omega 3 rich eggs. High cholesterol levels are an increasing health issue in combating non communicable diseases in Sri Lanka and around the world. Consumption of Omega 3 rich eggs will help lower cholesterol.

Process know-how for the production of Bottled King Coconut Water was transferred to Tropic Fruits Ltd. King Coconut is a popular refreshing drink and also good remedy to prevent dehydration, due to it's high content of potassium and salts. The product should have a high demand in world markets in the bottled form.

Five more technologies were transferred to private sector during the year, namely Process for the extraction of Chitosan from Prawn shells to ESCOSAN (Pvt) Ltd., Technology for production of Flavoured Isotonic Drink to Gower Street Holdings Pvt Ltd., Product development work relating to the Instant Rice Product to Keels Food Products PLC. (KFP) Processing technology, know how, guidance and training for the production of "Pectin" on commercial basis to Majesty Natural Food and Chemical Export (Pvt) Ltd

During the year ITI successfully completed two turnkey Wastewater Treatment Plants. One for Prym Intimate Sri Lanka (Pvt) Ltd of MAS Holding Group of Companies where an efficient solution for the removal of colour from the wastewater was provided. Another design for an Effluent Treatment Plant for Galoya Plantations (Pvt) Limited formerly Hingurana Sugar Industries Ltd, was also provided where sugar production is to be run in parallel to a distillery operation generating highly concentrated wastewater creating a great threat for the inland water pollution. Over 128 services have been provided for industrial pollution control covering the areas of air pollution control, wastewater treatment, improvement of combustion system & ventilation facilities, risk evaluation & hazardous waste management and Environmental Management.

Improving Small and Micro enterprises through Science and Technology: ITI continued to support the government in its quest to uplift the rural economy by actively participating in the Vidatha and Divi Neguma Programmes. During the year several officers from the Vidatha Centres were trained as master trainers on a range of technologies - Value addition to herbal raw materials, Postharvest technology, Soya meat flavours & Spice products, Sample testing & hygienic practices, Mushroom cultivation, Milk based products, Rice based products , Fruit processing - manufacture of jam, cordial and ready to serve drinks, Fish processing , Liquid hand wash, mosquito repellent incense sticks, decorative articles with clear plastics, fabric softener and pastel & crayon . Under the 'Divi Neguma' Programme over 1000 persons were trained at programmes held in Mannar , Ratnapura, Kandy, Batticaloa, Polonnaruwa, Vavuniya, Badulla, Matale, Galle, Mullaithivu, Colombo, Jaffna, Gampaha, Anuradhapura, Kegalle, Puttlam, Hambantota in the same technologies, funding sources etc under three program lines – Divi Neguma Sensitisation Program, Divi Neguma Training and Divi Neguma Banking Clinics.

PROVISION OF INTERNATIONALLY COMPETITIVE TECHNOLOGICAL SERVICES

Improving the competitiveness of industry: As one of the leading accredited testing and calibration laboratories in the country, ITI has provided around 16000 testing and calibration services to more than 2300 clients including regulatory bodies such as CEA, BOI, Registrar of Pesticides, Dept of Fisheries, Fertiliser Secretariat, Customs and Tea Board. In addition training in Laboratory QMS, Industrial metrology, Food safety (HACCP), ISO 17025, ISO 15819 (Medical testing) were also provided to industry and research institutions.

ITI continued to maintain ISO/IEC 17025-accreditation status from both SWEDAC and SLAB for a wide range of testing and calibration services. Accreditation status for noise measurement from SLAB is also being maintained. The Information Services Centre and the R&D laboratories continued to maintain their ISO 9001-2008 certification status.

ITI continued its overseas business operations and during the year Medical Health Laboratory, Republic of Maldives was provided with calibration services.

ITI also provided calibration services to several medical laboratories of leading hospitals and thereby contributing to the much-needed accuracy of medical reports provided to patients in the country.

Performances of ITI testing services are also independently assessed by regularly taking part in third party Proficiency Testing studies in chemical, microbiological and materials analysis and calibrations.

ENHANCING COMMUNITY WELLBEING – HEALTH, NUTRITION AND ENVIRONMENT

With accumulated knowledge in a wide range of fields, ITI continues to play a key role in many national issues dealing with consumer safety and welfare.

ITI supported a major waste to energy project at Karadiyana ; for cement and power plants in the Jaffna District and a construction site for a Regional Cultural Center in a Hambantota , with noise and vibration measurements.

Several R and D projects were carried out to develop technologies at affordable cost for products, for utilization of waste, for basic amenities to support the rural communities. Among them are

Low-cost Continuous Flow Solar Reactor for Purification of Bacterial/Organic Contaminated Water; Enhancing the Quality of 'Jaadi' ; Pectin from Waste Tamarind Seed Kernel for the food industry, low cost water filter from red clay. Similarly several Testing services were provided for national programs such as Determination of toxicity levels of sludge in Wellawatta canal, and of beach sand in southern area for a community development program.

A VIBRANT R&D SYSTEM AT ITI

Modern R&D Complex for ITI at Malabe IT Park: The construction of the basement, first and second floors of the biotechnology complex under the 2KR Agro-Food Technology has been completed and action has been initiated to establish laboratory and internal fittings. The upper three floors of the Biotechnology complex is near completion using ITI generated funds. A revised project proposal for the construction of the Advanced Materials Complex has been submitted to the NPD seeking Donor Funds.

Increased R&D capacity: Realising the importance of post-graduate research degrees in enhancing research capacity, ITI continues to encourage its scientists and engineers to obtain post-graduate degrees in relevant areas. During the year one researcher completed Post doctoral studies in Japan, one researcher was awarded a PhD from local university and five registered for their PhD degree and eight for MSc/MPhil degrees. Six others are continuing

their PG studies covering a wide range of fields such as Food Technology including Post harvest technology, Industrial Microbiology, Medicinal plants and Materials Technology.

Publications, Patents, Awards & Recognitions: There was a significant increase in the number of refereed publications totaling 16 research papers this year. A Patent was granted for one of our innovations 'Development of Self-cleaning & Anti-Microbial Ceramic Tile' while six more applications have been filed locally.

Human Resources: Dr. Shanthi Wilson, Additional Director/Research & Development, Dr. Jaanaki Gooneratne, Senior Deputy Director/Food Technology Section and Mrs. Damitha Rajapaksa, Acting Senior Deputy Director/Food Technology section retired from service after longstanding careers at ITI. Mr. Thilak Samarasekera was appointed as Senior Deputy Director/Administration & Human Resources. Several Sectional Head posts -Industrial Metrology Laboratory, Quality Assurance Department, Materials Technology Section, Biotechnology Unit and Engineering Services - still remain vacant.

During the year, 23 Research Scientists/Engineers were recruited while 4 resigned from the institute. Recruitment/retention of quality graduates is increasingly becoming difficult, as our remuneration package cannot match what is offered to scientists/engineers by universities and public corporations. Four years ago, 14% of the institute research staff had PhDs and 40% had Masters Degree., while in 2012 the figure changed to 17% and 39% respectively. Percentage of scientists and engineers with PhDs and Masters Degrees remain low due to limited opportunities for quality PG research degrees and shortage of supervisors to guide young graduates in newer areas of science. A few foreign fellowships offered through External Resources Department are totally inadequate to cater to a cadre of about 40 junior scientists and engineers. It has to be stressed that a critical mass of quality researchers is essential if we are to nurture and sustain high quality research at ITI and without adequate long-term foreign degrees in critical areas, ITI will be lagging in latest advances that are vital for the future growth of the country.

Employee Relations and Welfare measures:

Training programmes on ICT skills, Business English and office practices were organised during the year to enhance the capabilities of our staff.

The Welfare and Recreation Club organized the traditional New Year Celebration jointly with the Buddhist Society. Our men's cricket team played 7 cricket matches. The Seva Vanitha Unit continued to provide schoolbooks for children of deserving employees and promotional sales during Christmas and Avurudu. They also arranged a dental clinic through

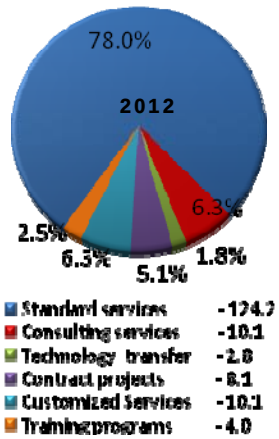
the Dental Institute of the National Hospital at concessionary rates for our staff. The donation of books and cash awards to our employee's students who excelled in studies continued. A Vesak lantern competition was organized for the fifth consecutive year. The Christian Society continued with their traditional annual Christmas party with carol singing and distribution of gifts to the children of ITI staff.

Financial performance: The state grant for recurrent expenditure was reduced while the capital grant was increased from last year's budget. While the recurrent grant showed an increase from 162 Mn to Rs. 169 Mn, the capital grant decreased from Rs. 141 Mn to Rs. 97.2 Mn.

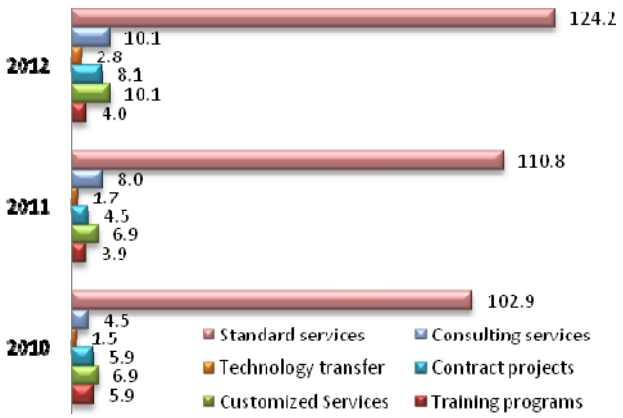
Institute income showed a significant increase of 19% from Rs. 158.5 Mn in 2011 to Rs. 188.4 Mn in 2012, while the recurrent expenditure increased by 20.4% from 261 Mn to 314.3 Mn. The income/recurrent expenditure ratio showed a downward trend from 61% to 60%. Testing and calibration services contributed 12.1% (Rs. 124.2 Mn) of the generated income while income from contracts and consulting services showed an increase from 12.5 Mn in 2010 to 18.2 Mn this year. Revenue from technology transfer showed a marginal increase from last year's figure of Rs. 1.7 Mn to 2.8 Mn. Income generated per employee increased significantly from Rs. 481,800 to Rs. 576,300 while the expenditure per employee also increased from Rs. 793,500 to Rs. 961,162 The performance-based incentives were paid to the staff for the 9th consecutive year as the institute achieved the overall income target set for the year.

High percentage of generated income of the institute is from testing and calibration services while income from technology transfer and R&D remains around 5%. This reflects the low demand that exists for R&D services from the industry. Although double tax deduction was introduced to promote outsourcing R&D by the private sector, it still has not had a significant impact in increasing demand for R&D. With Sri Lanka aspiring to become a regional knowledge hub by 2016, it is imperative that Institutions like ITI make strong endeavors to play a key role in this area.

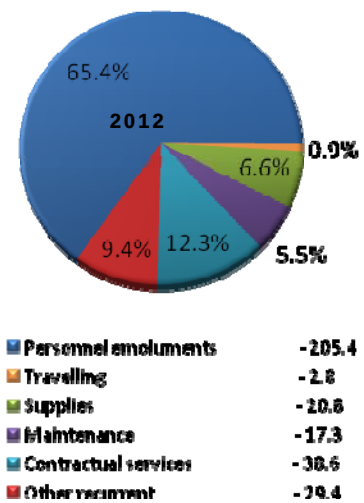
Income – Business Activities (Rs. Mn)



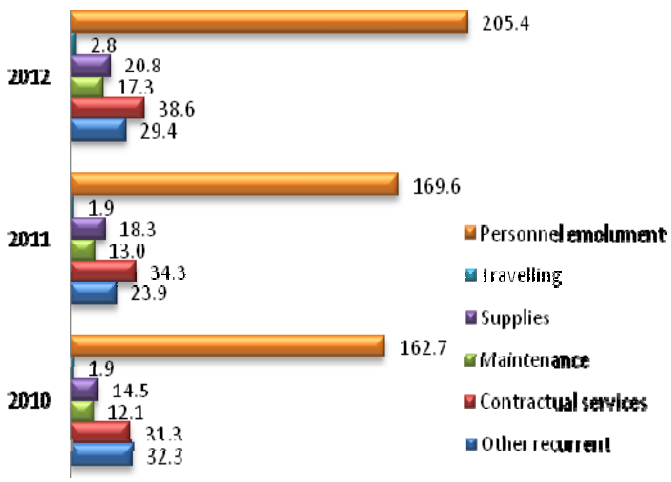
Income on Business Activities – Trend (Rs. Mn)



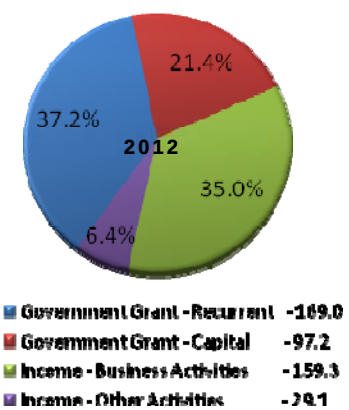
Recurrent Expenditure (Rs. Mn)



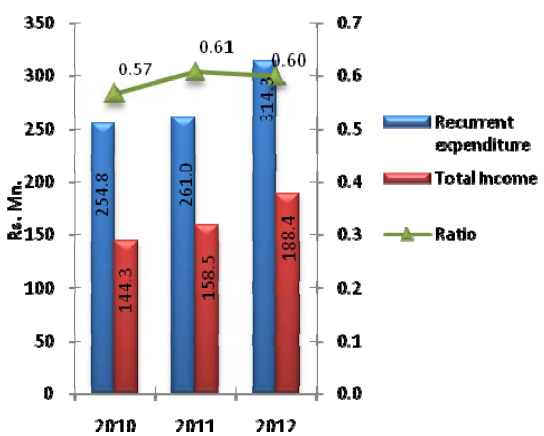
Recurrent Expenditure – Trend (Rs. Mn)



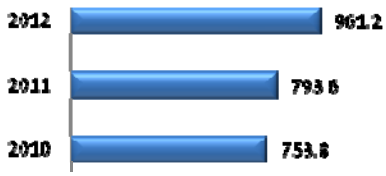
Operating Revenue (Rs. Mn)



Total Income vs. Recurrent Expenditure

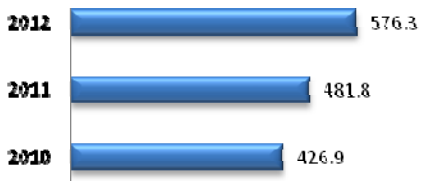


Expenditure per employee



Rs. '000

Income generated per employee



Rs. '000

Performance Highlights

Proposed Waste to Energy Project – Karadiyana

Central Engineering Consultancy Bureau requested ITI to develop a noise map for the proposed Waste-to-Energy project at Karadiyana. At the initial stage, approximately 1,300 metric tons of municipal solid waste per day, is dumped at site and this will be used to produce electricity using Advance Thermal Gasification System. Noise mapping was carried out to identify the highest noise impacted areas within and out of the site to take steps to mitigate the noise pollution.

Noise mapping for Holcim Lanka Ltd

Graphical representation of noise in an area or a noise map is an important step in building factories to be on par with green concepts. With the view of reducing the impact of noise on the environment Holcim Lanka Ltd. requested ITI to prepare a noise map for their proposed Clinkerization Plant at Aruwakkalu, Puttalam.

This noise map was used to identify the most predominant noise sources of the proposed factory which had a significant impact in and outside the factory. It will also be the basis for the implementation of future activities of noise management of the clinkerization plant. During the noise mapping, identification of 'high noise spots' inside and outside the factory, demonstration of 'Noise Hazards Areas' inside the factory and educating the workers on requirements of ear protection were also carried out.

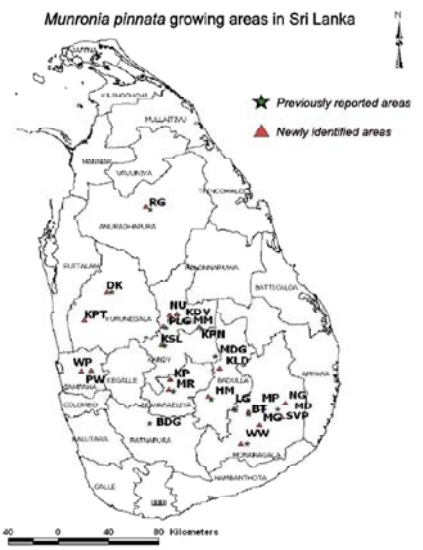
Wastewater Treatment

Prym Intimate Sri Lanka (Pvt) Ltd, is a company operating under MAS Holding Group of Companies which manufactures accessories for garments using nylon based material. Wastewater originating from the dyeing operation of nylon fittings is a major pollution issue for this industry, particularly removal of colour. The first effluent treatment plant of this industry was built in 2002 also with ITI consultancy and is still in operation successfully with some amount of colour removal efficiency. A new contract has been awarded to ITI for expansion of this treatment plant to the total capacity of 200m^3/d. The new design includes photo-catalytic

oxidation for colour removal considering the necessity for enhancement of colour removal efficiency.

Geographical distribution and conservation of Binkohomba plant *Munronia Pinnata* (wall.) Theob. (meliaceae) in Sri Lanka

For the first time an extensive systematic survey on the distribution of *M.pinnata* in Sri Lanka was carried out by ITI Scientists. 10 new localities including three in the wet zone were identified. It shows that this plant could be cultivated in the wet zone though it has been previously recorded only from the dry and intermediate zones. This study revealed that this rare and valuable medicinal plant could easily be cultivated in different parts of Sri Lanka under various climatic conditions, opening up an avenue to establish large growing areas of *M. pinnata* in places where it has not been reported or cultivated before. This provides for it's industrial/ayurvedic medicinal value to be exploited.



Antimalarial activity of *binkohomba*

Munronia pinnata (Wall) Theob. (*Binkohomba*) is a Sri Lankan medicinal plant used in traditional medicine. There are 16 ecotypes of *M. pinnata* and each were subjected to Brine shrimp bio assay and the toxicity was evaluated. Two ecotypes with the highest toxicity were selected and tested against malaria. Both types were found to have antimalarial activity. The scientist's work lead to a PhD, awarded by the University of Sri Jayawardenapura.

Bioactivity of authentic Ceylon Cinnamon

– **Anti-oxidant, anti-diabetic and anti-ageing properties of leaf and bark extracts**

In a research project carried out at the Herbal Technology Section of ITI, anti-oxidant, anti-diabetic and anti-ageing properties of leaf and bark extracts of authentic Ceylon Cinnamon were tested and reported. This is the first time in the world that these three properties for authentic Ceylon Cinnamon leaf and anti-ageing activity of the bark have been researched. Though the anti-oxidant and anti-diabetic activities were reported earlier for Ceylon Cinnamon bark, the cinnamon samples used in those studies were not authenticated as Ceylon Cinnamon.

– **Effects on blood glucose and lipids in a diabetic and healthy rat model**

In a study conducted jointly with Colombo Medical Faculty, the effect of Ceylon Cinnamon on food consumption, body weight, glycemic control and lipids on healthy and diabetic rats were studied. Results revealed that Ceylon Cinnamon reduced both blood glucose and LDL cholesterol level in experimental rat model. Clinical studies to prove it's effectiveness on humans is being carried out.

Contribution made to National Issues

ITI was requested to carry out tests to identify the cause for the fuel blockage of vehicles supposedly due to low quality of diesel imported to the country. The contaminated diesel samples were collected from Sri Lanka Railway and Sri Lanka Ports Authority and tested. The results indicated microbial contamination by a fungi and the report was submitted to Ceylon Petroleum Corporation.

Development of Red-clay based water filter for the removal of Fluoride and other Pollutants

Kidney failure disease is fast spreading in North Central Province (NCP) of Sri Lanka and in some other parts in South. One of the suspected causes for the disease is high accumulation of fluoride, in water. Fluoride content in water is very high particularly in the NCP and as a result dental Fluorosis is a problem. ITI fabricated a pilot scale filter from red clay for removal of pollutants such as fluoride, bacteria and other pollutants. This filter can be fabricated at a low

cost and will be effective in addressing this health hazard. Pilot scale trials of the water filter for the fluoride removal in water have been successful and the project is seeking partnership with industry for technology transfer. The product has been submitted for patenting.

Bti local bacterium developed by ITI is now used in Sri Lanka

An indigenous strain of *Bacillus thuringiensis isralensis* (*Bti*) was discovered and the technology was patented and commercialized for mosquito control especially dengue control in Sri Lanka in 2009. This local bacterium is now being used in the country by Ministry of Health and CMC. It is sprayed in the Colombo Municipality area, outer Colombo areas and in Galle and Kegalle to control dengue mosquito larvae. The results are promising.

Bti commercialization initiated a new biotechnology driven industry in Sri Lanka

Development of super absorbent material from banana fibre for feminine hygienic products

Banana fibre waste found in considerable quantities in rural areas, is hither to unutilized. The ITI carried out a research project to find ways to make use of this waste as a raw meterial for an industrially useful product. The white sorbent fiber from banana waste was developed as an absorbant medium for blood and urine absorption in feminine personal care products. Absorbent properties of this fibre were found to be more efficient than the conventional materials used in this industry. The technology is ready for commercialization.

Technology Transfers during the year

Seven Agreements/Memorandums of Understanding with leading companies were signed during the year .

Bottling of King Coconut Water

The technology for bottling of king coconut water for export market was transferred to Tropic Fruits Ltd. In this process, king coconut of maturity between 6 months and above can be used. The product has a shelf life of one year at room temperature. The factory layout was modified/designed to meet ISO 22000:2005 requirements. The process transferred is for both bottled and bag-in-box production of king coconut under UHT conditions. ITI also supported the company with staff training and preparation of samples for export markets.

Producing omega-3 enriched chicken eggs

On an agreement signed with Arogya Farm Pvt. Ltd., ITI commenced trial production of omega-3 rich feed for poultry. Quality evaluation of eggs from 300 hens fed with feed developed at ITI is in progress. Company staff were trained on poultry feed processing, hygiene and sanitation, and standards and regulations of feed processing. Concerns related to cholesterol in eggs will be cleared with Omega-3 rich eggs when the product is available in the market.

Attribute	Omega -3 enriched egg	Normal egg
Omega -3 fatty acid content(mg / 100 g of egg)	200 – 300	60 – 70
DHA content (mg / 100 g of egg)	130 – 230	50 – 60

More technology transfers...

- ESCOSAN (Pvt) Ltd.

Extraction of Chitosan from Prawn shells

- Holcim Lanka Ltd.

Environment Parameter Monitoring/ Measurements

- Gower Street Holdings Pvt Ltd

Production of Flavoured Isotonic Drink

- Keels Food Products PLC. (KFP)

Development of Instant Rice Products.

- Majesty Natural Food and Chemical Export (Pvt) Ltd.

Production of food ingredient Pectin on commercial basis.

Overseas Calibration Services - Medical Health Laboratory, Republic of Maldives

On the request of Medical Health Laboratory, Food and Drug Authority of Republic of Maldives, ITI calibrated their ovens, incubators, autoclaves, balances, water baths and refrigerators. Equipment calibration is a major step in obtaining ISO 17025 and Maldivian Authorities are working towards obtaining this certification.

In addition a presentation was also made to the staff of the Medical Health Laboratory to create awareness on the services available at ITI.

Quality Infrastructure

SLAB and SWEDAC Accreditation for ISO 17025

As the leading research and development institute of the country, ITI is fully committed to the provision of quality technical services to the industry.

Accreditation status of Chemical and Microbiological analysis

Chemical & Microbiological Laboratory of ITI maintained its accreditation status for testing awarded by SWEDAC and SLAB consecutively for 10 and 5 years. ITI Continues to maintain 77 SWEDAC and 98 SLAB accredited chemical and microbiological testing parameters in water, wastewater, food and fertilizer.

Chemical and Microbiological Laboratories participated in 27 rounds of Proficiency Testing (PT) programmes conducted by PT Services providers such as FAFAS, CSIR-CFTRI, Magruda, Qatest 3, LEAP, Livsmedels Verket National Food Administration, Sweden & PTA, Australia covering all the accredited and none accredited areas of microbiological and chemical analysis. Proficiency testing results proved the accuracy of CML testing services.

Accreditation for Materials Testing

Swedish Board for Accreditation and Conformity Assessment (SWEDAC) accreditation for rubber product testing of ITI, which had been in place from year 2007 was extended further for the year 2012 / 2013 considering the high level of performance and maintenance of ISO 17025 quality system.

The results produced by Materials Laboratory during the proficiency testing programme were within the range accepted by SWEDAC.

Further the SLAB accreditation of Materials Laboratory for Mechanical & Chemical testing (Rubber products and Lead & Cadmium release test) was extended for the year 2012/2013.

Accreditation continues for Metrology Testing

A surveillance audit in the areas of mass, thermometry, electrical, dimension and volume was conducted by SWEDAC and the second surveillance audit in the areas of volumetric, micro pipette calibration, was conducted by SLAB. The SWEDAC and SLAB certifications for services provided by the Industrial Metrology Laboratory of ITI, were extended for the next year.

Expansion of scope for construction site noise measurements

Electro Technology Laboratory (ETL)of ITI expanded its scope of testing by securing accreditation for construction site noise measurements in addition to mechanical testing obtained in 2010, by the Sri Lanka Accreditation Board for Conformity Assessment (SLAB) as per the requirement of ISO/TEC 17025:2005. The surveillance audit for scope expansion was successfully conducted in November 2012. The ETL testing scope expansion improved its competitiveness in the market.

ISO 9001:2008 Certification

The R&D Sections and Information Service Center continued to maintain ISO 9001:2008 certification in 2012.

Documentation and training

Training programme on ISO 9001: 2008 system implementations to Quality Representatives (QRs) of the sections was conducted as a continual improvement measure and to prevent system drawbacks. During this training QRs were made aware on relevant quality matters required to close non-conformities raised by internal auditors. The sectional QRs contributed in improving the quality formats issued by the Quality Assurance Department (QAD). The QAD was restructured to improve efficiency of the Institutes Quality Monitoring System.

Internal Auditing

Six internal audits were conducted by the QAD during the year as a requirement of the ISO 9001:2008 Quality Management System (QMS). The audits covered the areas of quality management system, management responsibility, resource management, service realization, measurement analysis and improvement and a vertical audit. Non-conformities raised by sectional staff members and internal auditors were successfully rectified. Several sectional members contributed to the implementation of institutional QMSs (ISO 9001-2008 and ISO 17025: 2005) in the capacity of Lead Auditors, Auditors and Observers during the internal audits.

Accelerating Industrial Technology Development

Radio signal based Street Lamp Controller

As the second phase of the street lamp project, developing a remote controlled ON/OFF switching system to street lamps was initiated. After several laboratory scale trials ITI reached an innovative solution. This system consists of a simple Radio Frequency (RF) receiver and a filter circuit along with a controller unit. A predefined signal pattern transmitted over the conventional radio channel triggers the ON/OFF signals through the filter circuit ultimately switching ON/OFF the street lamps as requested.

At present pilot scale trials are being carried out. The street lamp switching ON/OFF signals are transmitted daily by the Sri Lanka Broadcasting Corporation through their Sinhala Commercial Service. So far these tests are successful and ITI is planning to start the field trials with the collaboration of Colombo Municipal Council and Lanka Electricity Company in near future.

Cost-effective fly ash control system for biomass boiler

Use of biomass as an alternative fuel is one of the solutions to meet the growing fossil fuel crisis mainly for thermal applications. Most of the small-scale boilers mainly use either sawdust or rice husk as a fuel. Even though various furnace designs are available to improve the fuel combustion efficiency, fly ash carryover with flue gas is one of the main pollution issues of such systems which negatively affect the successful continuation of the operation.

A simple wet scrubber system has been introduced for small-scale boilers since capital investment and operational costs are significantly low compared to the bag filter system installed in large-scale combustion systems.

Wet scrubber system had been developed and tested by the ITI and installed in HMDR Rice Mill, Wariyapola and Jayakody Mills (Pvt) Ltd, Dankotuwa. These two systems are functioning successfully.

Evaluation of wooden gift boxes as a packaging material for tea

Gift tea boxes came in various materials such as ceramic, cardboard, metal, natural fibres, wood etc. These tea packages are subjected to varying climatic conditions in the world markets. A tea

exporter requested ITI to evaluate the suitability of wooden gift tea boxes under varying climatic condition. Test parameters were identified based on clients needs and methods were established. Now these tests are carried out on request for industry.

Onboard Noise/vibration Measurements for Newly Built Ships by Colombo Dockyard PLC

For the third consecutive year Colombo Dockyard PLC has requested ITI to measure onboard noise/vibration of their newly built ships. Noise and vibration was measured on three newly built Multipurpose Platform Supply Vessels by Colombo Dockyard during 2012 for Singapore's Greatship Global Offshore Services. This task was performed in order to obtain the "CAC 3 notation", which certifies the quality of the ship.

A 6 member team performed the testing operation as per the procedure prescribed in IMO resolution A.468(XII), "Code on noise levels on board ships" and the vibration as per the procedure prescribed in ISO 6954:2000(E) "Mechanical Vibration - Guidelines for the measurement, reporting and evaluation of vibration with regard to habitability on passenger and merchant ships".

Previous two years measurements were carried out in full load condition. In 2012 the Dynamic Positioning (DP) condition which allows the ship to stay in one place without anchoring was also measured. Full load condition is the normal sailing condition with engine room fans and necessary equipment running, as well as the HVAC-system in the accommodation. In DP condition, in addition to equipment running as in full load condition, all thrusters and propellers running at 40% load, increasing the noise and vibration levels.

Novel Rain guard Sealant for Rubber trees

ITI has developed a novel rain guard sealant for sealing the gap between the rubber tree and the polythene rain guard. Features that are new in this sealant compared to the traditional sealant were ease of preparation without applying heat, applicably in wet conditions, low cost, resistance to heat and sunlight, bio-degradability and reusability of the polythene. Field studies have been successfully completed and the technology is available for transfer.

Value addition to fruits and vegetables using membrane filtration technology and process modeling

Fruits & Vegetables juices found in the local market are not clear juices. Clear juice products from carrot, pineapple and soursop were prepared using membrane filtration techniques to concentrate the bio active components in juices.

The antioxidant activity of carrots, snake gourd, ladies fingers, gotukola and mukunuwenna were also determined.

High iron and protein containing rice products

A nutritious biscuit was formulated using high iron brown rice whole grain, green gram, ground nut, non-fat milk powder and other food ingredients. With a high iron and protein content this biscuit would uplift the nutritional status of children of the country.

Synthesis of graphene and graphite oxide from natural graphite

Sri Lanka exports natural graphite with high purity at a very low price of about 1 US$ per kilogram. However, graphene made out of this graphite is valued at more than 100,000 US$ per kilogram. Advanced materials such as graphene can contribute significantly to the GDP of Sri Lanka.

Graphite oxide is an intermediate product of graphene which also has a high commercial value. The study focuses on the development of low cost, scalable graphene and graphite oxide synthesizing methods and is seeking a partner for pilot studies and technology transfer.

Bio technology to control pests in fruits & vegetables

***Bacillus thuringiensis kurstaki* (*Btk*)**

Bacillus thuringiensis kurstaki (*Btk*) technology to control lepidopteran pests in vegetables was developed through intensive R&D work, and is ready for technology transfer.

***Bacillus thuringiensis* aizawai (Bta) and *Bacillus thuringiensis* morisoni (Btm)**

Indigenous strain of *Bacillus thuringiensis* aizawai (Bta) and *Bacillus thuringiensis* morisoni (Btm) was identified to control root insects; white grubs and root maggots of fruits (strawberry) and vegetables (crucifers, leeks, beet root and radish). **This is a** Biological method to control root pests in fruits and vegetables.

Preparation of fermented glucose from starch

Studies on producing ethyl alcohol using corn starch as a raw material were carried out for Acme Lanka Distillers (Pvt) Ltd. Enzymatic hydrolysis and fermentation with yeast were used in the processing methods.

Preparation of technical report on alcohol from fruit sources

The possibility of using natural fruit sources which are commercially available for manufacturing ethyl alcohol was investigated. Technical know-how was transferred to Wawulugala Distilleries Ltd.

Red clay based decorative items

The technology for fabrication of decorative articles from red clay was developed using locally available raw materials. The technology is being transferred to relevant personals on non-exclusive basis**.**

Test kit for the detection of Pertussis (Whooping Cough)

Whooping cough or pertussis disease is mainly caused by a bacterium *Bordetella pertussis*, which is highly contagious, mostly infecting unvaccinated young infants. In Sri Lanka, only culture methods are used for pertussis detection. However, due to high intake of antibiotics by patients with symptoms of pertussis infection, culture methods often provide false negative results. Although more sensitive detection kits are available in the market, often these test kits are expensive and requires experts for testing. The ITI Biotechnology Unit has developed a molecular biology based Pertussis detection kit, which is highly sensitive and cost effective. This kit detects both *Bordetella pertussis* and the lesser known *Bordetella parapertussis* infections in a single test. Currently, work is underway to test clinical samples using optimized assays. The assays will be introduced to Sri Lankan hospitals as a new molecular biology based diagnostic kit for detection of pertussis infections.

Troubleshooting Material Failures/Damages

Understanding the cause of failure/damage is the key to improve the product quality and building of customer satisfaction. ITI has provided this service for several customers in different areas namely Metallic products, Cement and Concrete.

Identification of cause of corrosion of Telecom towers.

Some of the telecom towers, developed corrosion patches causing discolouration. The material supplier had specified that the materials used in fabricating the towers were non corrosive. Investigations were conducted and it was found that the corrosion was due to the interior quality of material.

Cause and removal of rust on galvanized cable trunks

Galvanized cable trunks used in a high-rise building were found to be rusting. The material and the rust were analysed and the cause of rust formation was identified. A liquid was formulated to remove the rust.

Identification of cause of shrinkage of yarn bobbin

Yarn bobbins are used in the garment and textile industry extensively. Some of the bobbins were found to shrink during winding. A new test method was developed to study the flattening properties of the plastic cylinder in the center of the bobbin. The tensile force of the yarn and its effects were also studied to identify the cause of shrinkage.

R&D for Industry

- Rice bran snacks rich in antioxidents
- Extending storage life and improving quality of pineapples for export
- Quality Plan for GMP certificate
- Technology on Manufacture of Mayonnaise
- Technology on preparation of cereal legume mix
- Technology on bottled Welpenela
- Consultation to essential oil distillers
- Trial preparation of value added products from essential oil distillate
- Consultancy on upgrading product quality of Ayurvedic Manufacturing Company with the assistance of the Ministry of Technology and Research.

Benchmarking for Competitiveness

Being the main government owned testing service provider, ITI offered its numerous accredited testing services to the public and private sector organizations and supported in uplifting the country's economy.

Over 16000 testing services were carried out by the ITI testing laboratories namely Chemical & Microbiological Laboratory, Materials Laboratory, Industrial Metrology Laboratory, Electro Technology Laboratory and Herbal Technology Services.

Some of the key activities are listed below:

Testing of Noise and Vibration

South Asia Association for Regional Cooperation Cultural Centre Nawimana, Matara

Navimana, Matara was identified as the most suitable location for the SAARC Cultural Centre to be established in Sri Lanka. However, there were several metal quarries operating in the land adjoining the location. Fly rocks and excessive noise and vibration due to blasting activities in these quarries caused problems for the construction work of the Cultural Centre and on-going blasting activities were a safety concern of the users of the Centre.

The Central Environmental Authority, Ministry of Cultural Affairs and Divisional Secretariat, Matara requested ITI to assess and advice, together with the Geological Surveys and Mining Bureau (GSMB), on the continuation of operation of these metal quarries.

A group of ITI officers scheduled a series of test blasts from each quarry and measured the ground vibration and air blast over pressure at the site. Recommendations made based on the results of the test blasts were handed over to the authorities.

Testing facility to evaluate physical quality of fish feed and assessment of imported feed quality in Sri Lanka

An apparatus which could simulate and control the water current and waves in water tanks, ponds and lagoons was designed and developed at ITI in order to estimate water stability of feed pellets. Methods to evaluate durability, water stability and sinking property of pelleted feed were developed and standardized. The same properties in imported feed samples available in the

market were evaluated. With this new facility, ITI will be able to undertake customized test services on feed property evaluation in the near future.

Quality assurance of glass fiber reinforced plastics used for boats and ship building.

Boat and ship building industry has captured a good market in the region. Quality assurance of the material used in the industry is one of the major requirements. Since these products compete in the international market, leading manufactures were sending their product overseas for quality assurance, expending high costs. Materials Laboratory initiated to provide this service at ITI and also provided facilities for the staff of Lloyd's Survey to witness the processes of quality assurance prior to registration. This service was obtained by Morex Lanka (Pvt.) Ltd., Solas Marine Lanka (Pvt.) Ltd., and Neil Fernando & Co. (Pvt.) Ltd.

Heat shock resistance of glass

Heat shock resistance is an important factor for glass cups and mugs, since they are exposed to high temperatures. Generally manufacturers of glass items do not provide certificates for this property. On a customer request heat shock resistance and temperature at which fifty percent break (T_{50}) occurs, were evaluated using an in-house developed test method.

Accredited Calibration Services

ITI's Industrial Metrology Laboratory provides industrial calibrations to government/ public/ private sector organizations as well as to testing laboratories to maintain the quality of their products and services sold to local and export markets. The laboratory continued to maintain international accreditation awarded by SWEDAC in the areas of mass, thermometry, dimensional, electrical and volumetric and local accreditation by SLAB for micro pipette calibration. In addition, the laboratory continued to provide non-accredited services to the local industrialists for proper maintenance of international traceability**.** Most of the clients are exporters to international markets who contribute substantially to the country's economy and ITI's contribution is considerable even though indirectly.

During the period under review, a total number of 5500 services have been provided to industry- an increase compared to 5350 services during the year 2011. In addition internal services to the Chemical and Microbiology and Materials laboratories were provided. A Fluke multiproduct calibrator worth approx 12 million was purchased during the year.

Some Technical Highlights

Overseas services - for Food and Drug Authority in Republic of Maldives

A request was received from Medical Health Laboratory, Male of Food and Drug Authority of Republic of Maldives to calibrate their laboratory equipment that are used for testing purposes. The main purpose of this request was to obtain the accreditation for their laboratory as per ISO 17025. Two technical staff members were sent to Maldives along with the reference equipment to carry out the calibrations. The laboratory equipment including ovens, incubators, autoclaves, balances, water baths and refrigerators were calibrated in Maldives.

In addition a presentation was also made to the staff of the Medical Health Laboratory to create awareness on the services available at ITI.

Accredited Calibration Services to Medical Sector

The main medical testing laboratories in Sri Lanka, Nawaloka Hospitals (Pvt) Ltd, Asiri Hospitals (Pvt) Ltd and Lanka Hospitals Corporations PLC continued to obtain accredited calibration services from the ITI Metrology Laboratory with the main objective of improving the accuracy and thus the quality of test reports that are submitted to patients who seek medical advice.

Services to local industry

Special mention should be made of the following customers who sought the assistance of ITI to maintain the quality of their services and products, some on an annual basis. Calibration of digital multi-meters, resistance meters, LCR meters, watt meters, industrial ovens, digital thermometers, HV testers etc. Calipers, measuring vessels, balances, RH meters, pressure gauges,. temperature measuring equipment, including temperature indicators, heating equipment, electrical measuring equipment. weights, clamp-on-meters, simulators, power analyzers, glass thermometers, cylinders etc.

- ***Kelani Valley Plantation PLC***

For the first time a major tea plantation company requested ITI to calibrate the instruments used in tea processing to obtain the ISO certificate for their main product of tea. The company obtained ISO 9000 certification making them better equipped to compete with international markets and contributing to national income.

- ***Noratel International (Pvt) Ltd & Noratel Lanka (Pvt) Ltd***

The Noratel Group is a major worldwide supplier of Toroidal Transformers and Inductors. All products of the Noratel Group are the result of expertise in design, engineering and manufacturing, thus assuring the highest quality of their products.

- ***MAS Holding Group***

The MAS Holding Group with Slimtex Division, Slimline Division and Body line, is a leading garment manufacturing company in Sri Lanka catering to export market.

- ***Fonterra Brands Lanka (Pvt) Ltd***

This is a leading dairy products company in the country catering to the local market and quality maintenance is very essential during the process of manufacturing.

- ***Loadstar (Pvt) Ltd***

This is a leading solid tyre manufacturing company in Sri Lanka catering to the international market.

Identification of medicinal plants

Studies on the "Establishment of comparative quality standards for groups of controversial/endemic /rare medicinal plants, *Rauvolfia serpentina, Rauvolfia canescence* and *Rauvolfia densiflora; Munronia pinnata, Andrographis panniculata, Withania somnifera, Ruelia tuberose, Plectranthus zeylanicus* and *Plectranthus amboinicus* were carried out to make standards for correct identification. Quality standards for all 4 plant species were established and these standards will help in avoiding errors in identification of medicinal plants which have similar appearance. The said standards could be used by interested institutions or individuals.

Identification of 'True' Asamodagam spirit

Asamodagam spirit is a herbal preparation given to children to ease gastrointestinal problems. True Asamodagam spirit is a water distillate of *Trachyspermum roxburghianum* (Family: Apiaceae) fruits and Thymol is the major component. Some drug manufacturers dissolve Thymol crystals in water and market as Asamodagam spirit. This problem surfaced at several fora as a serious health issue and brought to the attention of the scientists of ITI. They have identified quality control and standardization parameters and methods for Asamodagam spirit which now are awaiting documentation.

Maintenance and repair of laboratory equipment

Maintenance and repair services of ITI's laboratory equipment are provided by the Electro Technology Laboratory and help to reduce the downtime of the instruments resulting in uninterrupted testing and research activities.

In addition to above, large-scale repairs were undertaken for government research laboratories mainly the laboratories of the Department of Agriculture. On-site services were provided to the Bathalagoda, Mahailuppallama, Aralaganvila and Agunakolapelessa Agricultural Research Stations saving millions of rupees to the government. Electro Technology Laboratory continues to offer this service to several private sector laboratories as well.

Technical report for Alcohol

Seven consultancies were provided to study and issue technical reports for industries which use alcohol as a raw material in their manufacturing process. This service was under taken on the request of the Excise Department of Sri Lanka.

New test methods

- Testing of flexural and compressive strength of fiber glass "I" beam.
- Testing of bonded powder content, and mat weight of glass fiber mats.
- Testing of grease used as an insulator for overhead power lines for adherence for the Ceylon Electricity Board.

- Determination of dry density of polymer modified cement mortar used in deck floor construction of ships.
- Determination of Hardness of wood based on a ASTM test method for timber. Required accessories were designed and fabricated by the Materials Laboratory of ITI.
- Quality testing of Barbecue Charcoal Briquettes for calorific value, proximate analysis, burning time & temperatures, etc for overseas buyer.
- Determination of photo-catalytic activity of self cleaning fabric.

Technology for Human Welfare and Socio-economic Upliftment

Low-cost Continuous Flow Solar Reactor for Purification of Bacterial/Organic Contaminated Water

A novel solar reactor was designed for domestic water purification and its antibacterial and photocatalytic activities were tested. The preliminary investigations have been completed and further development of photocatalytic coating and the reactor structure are in progress.

Pectin from Waste Tamarind Seed Kernel for the food industry

Tamarind seed which is waste material was studied for the possibility of using it in the food industry. Powdered pectin and liquid pectin extracted from tamarind seed kernel were used in preparation of mango jam and orange marmalade. The sensory properties and the quality of the product were ranked higher than in the commercial products. The technology is ready for transfer to industry.

Enhancing the Quality of 'Jaadi' in Sri Lanka

"Jaadi" a traditional fish preparation available in the local market and also exported, was found to be of low quality. Scientific information on this product was not documented and hence a field survey was conducted among manufacturers along the Western coastal belt to evaluate the quality and to gain an in-depth knowledge of the process. Molecular level identification of micro-organisms associated with the samples was carried out and revealed that most of the samples were contaminated with harmful micro-organisms. Also it was found that the preservation technique of the product is not fermentation but osmotic dehydration. Based on the findings, ITI's Food Technology Section developed an improved standard process using suitable inoculums for manufacturing good quality Jaadi modifying the traditional method.

Quality assurance of covers for cricket grounds

Covers for cricket turfs is an essential material in the cricket world. This material should exhibit high tearing resistance, puncture resistance, permeability resistance, low density etc. to give good performance. Sri Lanka Cricket Board requested ITI to test samples of covers prior to purchasing. Test methods were designed to evaluate the materials for suitability. The

recommended product is presently being using as ground covers satisfactorily by the Sri Lanka Cricket Board.

Determination of toxicity levels of sludge of and beach sand

Studies were done to evaluate the present levels of toxicity of the sludge in Wellawatta canal. In this study the quantity of Pb, Cd, Cr, Cu, Ba, Mo, Ni, Zn, etc were determined. The same study was carried out for beach sand from Uswetakeiyawa where a children's park was to be constructed. Both samples were also tested for particle size distribution and toxic elements.

Suppression of fungal attached in Palmyrah leave base products

Tender Palmyrah leaves are traditionally used to produce decorative items and woven containers. The industry uses traditional knowhow from past generations. There were some issues observed in these products such as fungal attack and the deterioration of the product in humid conditions at storage. A request was received from the National Design Centre to study the causes and find a remedy to solve the problem. Our investigations revealed that a chemical treatment should be incorporated to the existing process to minimize the fungal attack as well as the deterioration. ITI recommended a suitable treatment using food grade preservatives and less toxic chemicals, to be added to the currently used method.

Monitoring and Mitigating Pollution

ITI, through its Environment Technology Services provides demand driven environmental services and undertake R&D projects to develop technologies to find effective solutions for critical environmental problems of Sri Lanka to catalyze rapid industrialization. Apart from being a trusted advisor to the Sri Lankan government on policy regarding sustainable development activities, the Environment Technology arm of the ITI together with the Noise & vibration Services provided by the Electro Technology Laboratory, are leading providers of Best Practicable Technology (BPT) for local industries. With a strong commitment and social responsibility these services provide innovative and effective solutions to the problems faced by the country.

448 services have been provided during the year covering the following areas - air pollution control, wastewater treatment, solid waste management, improvement of combustion system & ventilation facilities, risk evaluation & hazardous waste management, noise & vibration and environmental management.

Wastewater Treatment

Design Effluent Treatment Plant for Sugar Industry

Galoya Plantations (Pvt) Limited was formed in year 2007 for the purpose of restoring the former Hingurana Sugar Industries Ltd, which was closed down since year 1997. Renovation of the factory commenced in year 2007 and sugar cane crushing and production has been started since July 2012. They are also planning to start the operation of the distillery to produce ethanol using the molasses generated from sugar manufacturing process by the end of year 2013. The designed capacity of the sugar mill is 2,000 tons per day but at present the mill operates at a rate of 30,000 tons per month. The Sugar manufacturing operation with parallel distillery operation generates highly concentrated wastewater creating a great threat for the inland water pollution. This emphasises the need for a high investment for treatment of wastewater. A design has been given for the treatment of wastewater with direct land disposal options as an alternative solution.

Solid Waste utilization

Assessment of Site suitability for proposed waste to energy project

Five Elements Capital Ltd, Zurich, Switzerland put forward their proposal to set up Delta Energy Holdings Ltd, in Sri Lanka, a facility to generate energy from municipal solid waste.

The project has been planned for the solid waste generated from the municipal councils in the Western Province of Sri Lanka including Colombo Municipal Council. According to the project proponent a 50 ac land is required in the Western Province and the Urban Development Authority (UDA) proposed Baduwila Estate, Piliyandala as one of the possible sites for the project. The project proponent requested ITI to assess the suitability of the site for this activity.

However the proposed project area is in the high risk range of flooding and hence the site will be prima facie unsuitable for this project where buildings, equipments, solid waste bays/heaps and land fill will be present. Hence ITI recommended to consider an alternative site with a lower flood risk. A point to note is that ITI's Environmental Technology Services have been recognized by global companies involved in environmental management.

Noise and Vibration Pollution Control

The ITI continued to provide noise measurement services and consultations to meet the enhanced demand for noise monitoring, control and pollution mitigation, environmental impact analysis and noise mapping/modelling to the industry and construction sector, thermal power plants, building acoustic/vibration, mining activities, ship building industry and for legal issues.

CENTIC Crusher Plant - Southern Expressway Project

Southern Expressway is one of the major national projects in progress. The main contractor, China National Technical Import Export Corporation setup a crusher plant and a batching plant in Weligama to supply aggregate base course and batching requirements.

The operation of the crusher was not in line with the guidelines issued by the Central Environmental Authority and several residential areas were affected by the excessive noise. Therefore ITI was requested to propose a method for noise abatement to acceptable levels. After measuring the noise levels ITI recommended the noise barriers which have effectively reduced the noise pollution in the crusher plant premises and the vicinity.

Noise Abatement Proposal for Eu-Rtec

Eu-Rtec (Pvt) Ltd is a company manufacturing solid tyres for the export market. The production processes involves recycling used solid tyres by passing through a crushing

machine to form fine dust particles. This powerful crushing machine generated a huge noise both while in operation and idling.

Since the plant operates round the clock, neighbouring houses are exposed to an inconveniently high noise. Therefore, the factory officials requested ITI to submit a noise abatement proposal for their crushing machine.

During the preliminary investigation of the factory, it was also revealed that the noise was at a very harmful level for the machine operators. After implementation of ITI's noise abatement proposal, the noise near the crushing machine and in the neighbouring areas was reduced significantly to a safer level.

The satisfied customer Eu-Rtec (Pvt) Ltd requested ITI to submit further noise abatement proposals for other areas of the factory in order to improve occupational health conditions.

Environmental Monitoring Program - Outer Circular Highway

TAISEI Corporation, the main contractor of the Outer Circular Highway Northern Section 1, requested ITI to deploy a permanent environmental monitoring team on-site to ensure adherence to the guidelines laid by local regulatory authorities. Two technical persons from ITI were deployed to measure noise, vibration and dust during construction.

ITI performed the scheduled measurements of noise, vibration and dust as per the environmental management action plan.

Having an on-site monitoring team helped the construction company to minimize the environmental issues. This is the second on-site monitoring project ETL under took in major national development projects.

AIR POLLUTION CONTROL

Cost-effective Bad Odour Abatement Method for Broiler Poultry Sheds

Control of bad odour is the biggest environmental issue faced by broiler farmers since several thousands of birds are nurtured in one shed using artificial ventilation systems. The exhaust fan emissions carry volatile organic matter generated in the poultry sheds creating a bad odour in the entire vicinity.

Oxidative scrubbing of exhaust gases is a cost-effective solution for poultry sheds due to operational simplicity and low capital investment than the bio-filter system. The designed unit includes complete wetting of exhaust gases in a room with an oxidant.

Two such units have been established for Five Star Broiler Growers (Pvt) Ltd, Chilaw and Kent Poultry Farm (Pvt) Ltd, Veyangoda.

Air Dispersion Modelling

Air dispersion modelling is one of the key decision making tools to evaluate the dispersion of atmospheric emissions. AERMOD View is a US Environmental Protection Agency approved air dispersion modelling software used by the ITI to make predictions on atmospheric pollutant dispersion accurately.

Two air dispersion modelling studies were carried out during the year for the possible air pollutant dispersion from the proposed cement plant at Arruwakkalu, Puttalum and Jaffna power plant.

Risk Assessment for Paranthan Chemicals Co. Ltd,

Paranthan Chemicals Co. Ltd, situated at Fullerton Industrial Estate, Kalutara has been engaged in importing, storing and re-filling chlorine since 2008. The entire chlorine requirement of the Water Supply and Drainage Board is provided by Paranthan Chemicals Co. Ltd. The company also re-fills 68 kg chlorine cylinders for re-sale.

An accidental chlorine leak took place in April 2004 and as a result the Environmental Protection Licence (EPL) was cancelled by the CEA. Chlorine re-filling was temporarily outsourced. After implementing several control measures Parathan Chemicals has appealed to CEA to re-issue the EPL to restart the chlorine re-filling.

At the same time Paranthan Chemicals Co. Ltd requested ITI to carry out preliminary risk assessment to estimate the area that will be affected by an accidental chlorine release considering the worst case scenario and other possible scenarios. Studying the simulated situations, ITI advised Paranthan Chemicals Co. Ltd the possible areas under threat in an accidental chlorine release.

Training Programs & workshops

Training programmes on the following areas were conducted for Industry, Government Agencies and Research Centres during the year.

Institution/Company Training

- Pre-harvest and post harvest technology for pineapple for Nidro Supply (Pvt) Ltd
- Awareness programme on Food Technology for Aitken Spence Hotel Management Pvt. Ltd
- Industrial metrology covering the areas of Temperature, Dimension and Pressure Metrology for Apparel Technologies (Pvt) Ltd
- Fish processing, for Food and Agriculture Organization & National Aquaculture Development Authority of Sri Lanka.
- Determination of the aniline point and FT-IR analysis of hydrocarbon oil sample for Sri Lanka Customs
- Industrial metrology for Sri Lanka Air Force
- Workshop for teachers on food technology theory and practice for National Institute of Education
- Proximate analysis of food for Grain Legumes and Oil Crops Research and Development Centre

Group Training

- Manufacturing of liquid hand wash
- Manufacturing of decorative articles with clear plastics
- Value addition to herbal raw materials, herbal balm, herbal tea, blended herbal oil for new entrepreneurs and ayurvedic doctors.
- Food Technology Certificate course for Industry
- Manufacture of RTS beverage
- Manufacture of instant string hopper flour
- Postharvest technology on fresh fruits and vegetables

- Manufacture of liquid hand wash, mosquito repellent incense sticks, incense sticks, decorative articles with clear plastics and fabric softener
- Bio-assay techniques
- Skill development training program was carried out for effluent treatment plant operators.

Vidatha Restructuring Programmes

51 participants from small, medium and micro enterprises were trained at regional level through Divisional Secretariats and other agencies, under the Vidatha program.
Training areas were

- Value addition to herbal raw materials
- Postharvest technology
- Soya meat flavours
- Spice products
- Sample testing & hygienic practices
- Mushroom cultivation
- Awareness program on technologies
- Milk based products
- Rice based products
- Fruit processing - manufacture of jam, cordial and ready to serve drinks
- Fish processing
- Liquid hand wash
- Mosquito repellent incense sticks
- Incense sticks
- Decorative articles with clear plastics
- Fabric softener
- Pastel & crayon
- e-farms website demonstration

ITI contribution to the Divi Neguma Program

ITI supported the governments quest for economic upliftment of the community through Sensitization Programmes, Training programs and Banking Clinics. Over 1000 persons were provided with 31 training program held during the year. Divi Neguma Sensitization Programmes were conducted in 13 locations, Divi Neguma Training Programmes were conducted in 11 locations and Divi Neguma Banking Clinics were conducted in 7 locations.

Undergraduate training

Students from following Universities and Institutions were trained;

- Three students from Institute of Indigenous Medicine, University of Colombo
- Two students from Institute of Chemistry
- Two students from Wayamba University
- Two students from University of Rajarata
- One student from Siddhayurvedha University of Jaffna
- One student from University of Sabaragamuwa
- One student from University of Ruhuna
- University of Uwa Wellassa
- Practical session conducted for MSc students of Open University of Sri Lanka

Capacity Building & Productivity Improvement

Post Doctoral Training

1. Dr. Ilmi Hewajulige was awarded a Post Doctoral Fellowship by the Japan Society for the Promotion of Science (JSPS) and trained at the National Food Research Institute, Tsukuba, Japan. Research Title - "Optimization of chitosan coating for papaya based on biotic and abiotic effects".

PhD studies

1. R. M. Dharmadasa was awarded a PhD by the University of Sri Jayewardenepura. Thesis - Evaluation of taxonomic status of *Munronia pinnata* (Wall.) Theob. (Meliaceae) in Sri Lanka and its antimalarial properties.

2. Theja Herath continued her PhD at the University of Kelaniya. Thesis - Improvement of Bio-availability of iron in some locally grown rice varieties.

3. C. H. Manoratne continued his PhD studies at the University of Colombo. Thesis - Synthesis and characterization of graphene and graphene composites for application in Lithium ion batteries.

4. Kanchana Abeysekera continued PhD studies at the University of Colombo. Thesis - Physicochemical and Bioactive Properties of some Sri Lankan Traditional Rice Varieties.

5. W.P.K.M. Abeysekera continued PhD studies at the University of Colombo. Thesis - Assessment of potential health benefits of Ceylon Cinnamon (*Cinnamomum zeylanicum* Blume) by studying selected bio activities.

6. Ruwan Weerasinghe registered for a PhD at University of Colombo. Thesis - Automated Acid rain Monitoring Station.

MSc/MPhil studies

1. L.D.C Nayanajith continued his MPhil at University of Colombo. Thesis – Synthesis and characterization of graphene and composites for application in photovoltaic cells.

2. M.S.M. Aroos continued his MSc studies at Sri Lanka Institute of Information Technology. Thesis - The energy consumption and effective usage of desktop computers in workplace.

3. K.H.T. Abesekara continued her Master of Library Science in University of Colombo. Thesis - Identification of the Information Needs of Local Herbal Industry Using Critical Success Factors Approach.

4. E.M.S. Isanka continued her MSc in Analytical Chemistry in University of Colombo. Thesis - Identification of food composition of commonly used agricultural products in Sri Lanka

5. Wasundara Divisekera registered for an MPhil at University of Colombo. Thesis - Formulation of therapeutic probiotic food as an alternative treatment for *Helicobacter pylori* infection

6. S.S.K. Madage registered for an MPhil at Postgraduate Institute of Agriculture, University of Peradeniya in Animal Science.

7. K.V.T. Gunawardhane registered for an MPhil at Postgraduate Institute of Agriculture, University of Peradeniya in Food Science & Technology.

8. D.S. Samarawickrama registered for an MSc at University of Colombo. Thesis - Development of a natural fiber based, "smart" packaging material to address the post harvest losses of Mangoes in Sri Lanka

PG Diploma

1. Nisala Gunasekera completed a PG Diploma in Manufacturing Management, University of Colombo

2. N. Geekiyanage registered for PG Diploma in Library & Information Science at NILIS, University of Colombo

Short term training

1. Ramya Wijesekara participated in a three day workshop on 'Design principles on wastewater collection, treatment & disposal, Reuse & storm water drainage system' conducted by ICTAD. (April 2012)

2. Hasanthi Dissnayake participated in a two day WIPO regional forum on 'IP & EST' conducted by National Intellectual Property Office. (May 2012)

3. C.K. Nanayakkara & Thilak Gunasekara participated in a one day workshop on 'Renewable and alternative energy towards for facing fuel crisis' conducted by Institute of Chemistry. (June 2012)

4. W.J.K.D. Ranpatige participated in a four day program National workshop on OPRC convention & OPRC-HNS Protocol' conducted by MEPA & IMO. (June 2012)

5. Sudeepama Walliwala participated in a Training on 'Bamboo cultivation, processing and utilization for developing countries' offered by China National Bamboo Research Center, China (20 June – 14 August 2012)

6. P.V. Jayasinghe & C.K. Nanayakkara participated in a one workshop on 'Leading to Higher Productivity & better environment' organized by IIESL. (July 2012)

7. S.P.I. Ulluwis Hewage participated in a one year program on 'Preparation and characterization of filler reinforced Polyamide 66 composites for engineering applications' conducted by University of Sri Jayawardenepura.

8. A. Ratnakumar participated in a program on 'Instrumentation & General Training' conducted by Institute of Chemistry, Ceylon

9. H.H.K Achala participated in a training programme on 'Basic SPSS' organized by Institute of Applied Statistics. (14, 22, 29 July and 5 August 2012)

10. Thilak Gunasekara & P.V. Jayasinghe participated in a five day training programme on 'Conformity Assessments on vehicular emission testing centres' conducted by SLAB (August 2012)

11. W.M.V.P. Weerasinghe participated in a Training program on 'Information Technology for Information Management' organized by NISCAIR & SAARC Documentation Centre, New Delhi (September - December 2012)

12. Thilak Gunasekara & P.V. Jayasinghe participated in a one day training programme on 'Energy conservation in buildings' conducted by ICTAD (September 2012)

13. SAGL Perera participated in a five day training program on 'Secretarial Practices' conducted by NIBM. (September 2012)

14. Ramya Wijesekara participated in a one day workshop on 'Disaster Management' organized by Disaster Management Centre. (October 2012)

15. D. Medis participated in a 'Multi country Observational Study Mission on Best Practices and Systems for Food Safety and Quality Applicable to Food Processing SMEs' conducted by Asian Productivity Organization. (12 - 17 November 2012)

16. H.H.K. Achala and Ayanthika Fernando participated in a workshop on 'Bioassay Techniques' organized by HTS, ITI (8 -20 December 2012)

17. Nisala Gunasekera, Ms. Gayathri De Silva, Ms. Sudeepama Walliwala participated in an 'E Learning Course on Food Safety and Traceability' conducted by National Productivity Secretariat, Ministry of Productivity Promotion. (11-13 December 2012)

18. Karuna Aponso participated in a training programme on ‘Super 5S and Kaizen Management’ organized by National Institute of Labour Studies.

19. W.M.S. Wijesinghe participated training program ‘High precession Multiproduct calibrator in the area of Electrical Metrology’ organized by Fluke South East Asia Pvt Ltd.

20. S. Samarasekera and Ms. P.M. Jayasinha participated in a workshop on ‘Commercializing Modern Scientific Research and Technology Transfer’ organized by SLAAS

21. K.H.T. Abeysekara participated in the National Conference on ‘Library and Information Science’ organized by NILIS

22. S. M. Samarasekara, E.M.S. Isanka and G. Krishnarathana participated in the ‘NILIS Research Symposium’ organized by NILIS

23. Indira Gallage & W.M.V.P. Weerasinghe participated at the workshop on ‘Access to Information Multimedia Materials’ organized by Sri Lanka Library Association.

New Initiatives

Investigation of the Geopolymerization of alkali activated fly ash

The term "geopolymer" is used to describe a cementitious binder formed by alkali metal hydroxide activation of aluminisilicate powder. Industrial by-products such as fly ash, rice husk ash or silica fume, or minerals such as kaolinite and clays are used as the source of aluminosilicate powders for the production of Geopolymers. ASTM class F fly ash which is a waste product of coal fired thermal power plants could serve as an ideal source material for mass production of geopolymer.

The aim of this study is to investigate the effect of chemical composition of fly ash, heat treatment and effect of alkalinity and soluble silicate dosage on the process of geopolymerization, with varying parameters. The researcher has registered for a MPhil at University of Moratuwa.

Development of Self-Cleaning Concrete Surface

Concrete is widely used construction material for building and civil engineering structures with exposed surface. These concrete surfaces have high potential for direct attack and for deposits of chemicals during their service life. Because of the reactions of these chemicals with concrete, the concrete surfaces get discolored. To maintain the appearance, periodical cleaning of the concrete surfaces is required and maintenance costs are very high. In some situations maintenance is not practically possible due to the design of these structures. Therefore, it has become important to develop concrete surfaces which are self cleaning and protected from bacterial attack.

Studies were done using photocatalytic and super hydrophilic materials to prevent discoloration from organic and inorganic chemical attacks and bacterial attacks. The Photocatalytic behavior of Rutile (Titanium dioxide) in oxidizing the organic deposits on concrete surfaces under different environmental conditions was studied. Further, modification of titanium dioxide with identified modifiers to obtain super hydrophilic properties to prevent inorganic deposits on the concrete surfaces were also studied. The researcher of this project has registered for M. Phil degree in University of Moratuwa.

Enhanced preservation of fruits in South Asia - A collaborative research project with University of Guelph Canada and Tamil Nadu Agricultural University.

The IDRC/Canadian International Food Security Research Fund (CIFSRF) sponsored program commenced activities in March 2012 with a multi disciplinary team from the Food Technology Section, Materials Technology Section and the Information Services Centre of the ITI participating. It is known that the postharvest loss in mango is a major problem faced by the cultivators and traders. A project was initiated to minimize the postharvest loss in mango using an Enhanced Freshness Formula (EFF) and also study the utilization of agricultural waste as a delivery system. Three specific technologies; developing EFF impregnated nano-fibre delivery system using banana waste, incorporating EFF into packaging films for maintaining premium quality of individual fruits and optimization of EFF incorporated bio-wax will be investigated during the study. In the first phase, a baseline survey was carried out to assess the present socio-economic situation of the stakeholders of the mango industry. The Research teams developed two new derivatives of ITI edible wax and tested and evaluated their performance on mango samples. Three scientists from Food Technology and Materials Science sections will receive Postgraduate training under this program.

Purification of natural graphite of Sri Lanka for value addition

Natural graphite is exported with low value addition and purified graphite is extremely expensive and has a high demand. Developing an efficient and cost effective methodology to purify natural graphite was initiated and a purity level up to 98.9% has been obtained. The project will be commercialized by the client, in the near future.

Formulation of Probiotic food as an alternative treatment for *Helicobacter pylori* infection

Studies have been initiated to formulate a functional probiotic food as an alternative therapy to antibiotics for treating *Helicobacter pylori* induced gastric ulcers. This which will contribute to reduce the percentage of population suffering from infection with *H. pylori.* A comprehensive literature review was conducted on biochemical and cultural characteristics of *Helicobacter pylori,* culture maintenance and preservation, anti *H. pylori* effect of different lactic acid bacterial species and their metabolism, mode of action of the *H. pylori* in humans and possible infections in other animals (rats, rabbits), parameters to be controlled during fermentation process (temperature, pH, oxygen concentration, agitation and aeration, cell density etc). Fermentation of raw materials such as cereals, pulses and coconut milk was carried out and Isolation and identification of microorganisms associated with the fermented raw materials was investigated.

Corporate Awareness

Exhibitions

ITI successfully participated in following exhibitions and displayed commercialized products and new products developed by the Institute.

These exhibitions provided the opportunity for the ITI to attract customers and more services.

- Dayata Kirula (4-10 February 2012 at Anuradhapura)
- Pro Food Pro Pack 2012 (5-8 July 2012 at BMICH, Colombo)
- Sahasak Nimavum Exhibition (30 September – 2 October 2012 at BMICH, Colombo)
- Reconciliation through Research & Technology (10-11 December 2012, Open University, Jaffna)

Articles in S&T Publications

- 'Utilization of tamarind seeds for food industrial applications in Sri Lanka' published in Young Scientist Forum Newsletter
- 'A natural folklore medicine for toothache' published in NASTEC News Letter

Media Publicity to ITI Activities & Events

45 Articles were published in English and Sinhala newspapers related to ITI and its activities.

- Ceylon Cinnamon now authenticable via DNA barcode (Sunday Times – 22/1/2012)
- Munchee cultivates, conserves Kothala Himbutu (Daily News – 29/1/2012)
- Minimizing electrical energy waste on the streets (Daily Mirror – 10/7/2012)
- Street lamp management system developed (Daily News – 14/7/2012)
- ITI automated street lamp (Sunday Observer – 15/7/2012)
- විදුලිය පිරිමැසීමට අපේ පර්යේෂකයන්ගෙන් ඵලදායක පර්යේෂණයක් (Vidusara –1/8/2012)
- DNA bar code to identity indigenous plants (Daily News – 2/8/2012)
- දිවි නැගුම යටතේ පුහුණු ව්‍යවසායකයන්ට උපකරණ කට්ටල (Dinamina – 26 /10/2012)
- දිවි නැගුම ඉදිරියට ගෙන යාමේදි කාර්මික තාක්ෂණ ආයතනය වැදගත් වෙනවා (Dinamina – 31/10/2012)
- Two day skill development training course for waste (Sunday Times – 4/11/2012)

- Five Days Training workshop on Plant tissue and Cell culture (Sunday Observer – 4/11/2012)
- රතු වැස්සේ සෘජු ජීවිකු (Divaina – 17/11/2012)
- Red rain mystery under investigation (Island – 17/11/2012)
- Workshop on Bio-assays Techniques.
- Get trained to start your own Business ITI (Sunday Observer – 18/11/2012)
- "Reconciliation through Research & Technology" initiative next week (Daily Mirror – 30/11/2012)
- Reconciliation through Research & Technology (Daily News – 7/12/2012)
- SL, a Knowledge hub in Asia soon (Sunday Observer – 30/12/2012)

Electronic media

Switching ON/OFF a lamp is a simple activity. It will be even simpler if all the street lamps in the entire country can be controlled at the same time. Considering this ETL developed a new technology to control the street lamps in the entire country using an audio tone transmitted through a radio channel. This technology has been submitted for patenting to the National Authority as it is the first time such a technology has been developed in the world. The technology was launched at a media conference which was followed by articles appearing in the Daily Mirror, Sunday Observer, Sunday Island, Colombo Today and the electronic media.

Information for Industry

Supporting Industry and Research

ISC's services continued to support business and industry, academic and research communities and the entrepreneurial public in all parts of the country. ITI research was also supported with information for projects carried out by the R&D and Technical Sections. In addition, the center provided training to industry and professional bodies on topics of interest and on research information and services respectively.

Our Collection

The Centre continued to improve its collection on new areas of technology such as Bio technology and Nano technology in addition to updating its general S&T collection. The collection on peripheral areas of industry and business such as statistics, regulatory requirements, product and market trends etc. were also improved. Under the National Digitization Programme, the Centre signed a MOU with the National Science Foundation for the digitization of all ITI publications. As the first phase all the publications, including Annual Reports, Scientific Publications, Reports etc were digitized and were entered to the electronic repository using DSpace Software. This will be further shared with the existing Health Information Network (HELLIS).

Client Profile

During the year, 936 users including 520 undergraduate and post graduate students visited the Centre. 16 new members, 02 Corporate, 07 Deposit and 07 Individual members enrolled to use the centre's services. Standards and books showed heavy usage with 634 loans being made to ITI staff and 321 to public. Inter-library loan facility was also made use of to complement our own collection. Orientation programs and user surveys were organized to assess the usefulness of the Centre.

Specialised Inquiry Service

102 technical inquiries were handled during the year .Of these Inquiries 28 were for ITI staff and 74 were for business and industry.

The subject scope of inquiries received during the year are as follows - Chemistry & analytical methods – 10; Physical science – 2; Materials & energy – 10; Standards & patents – 7; Herbal & medicinal plants – 20; Statistics – 6; Food & beverage (analysis, formulae) – 29; Environment - 2; Formulae – 4; Health & nutrition – 5; Cosmetics – 3 ; General business – 2;

Value added information

Value added information packages were delivered after extensive searches on our collection, www and network counterparts

Some key topics are listed below –

Information on Coconut oil

Potassium levels of Sri Lankan fruits and vegetables

Food Industry of Sri Lanka

Traditional rice varieties of Sri Lanka

Coconut shell charcoal and manufacture

Access to information – Online databases, Science Direct, EBSCO, HINARI and a host of other databases were used extensively to access information for research. EDB's Trade Information Services and the American Centre were also accessed for statistical and American based resources respectively. For the seventh consecutive year four sectors of Science Direct was subscribed to: Chemistry, Materials, Agriculture and Biological Sciences and Pharmacology, Toxicology and Pharmaceutical Sciences. Over 450 articles were downloaded for Research and Development over the year. These online databases are increasingly becoming a popular source of information among academics and researchers. During the year 114 books, over 1000 reprints and 400 journal articles were added to the custom built Automated Online Library (AOL) system which includes Catalogue and Member services and can be accessed through the web.

Dissemination of Information through Printed Media

The ITI continued to publish quarterly newsletter, "ITI Bulletin" which publishes research carried out at ITI, "SciTech in Brief" and "Management Thought" giving latest developments in

S and T and Management related information and were disseminated through the website and Intranet of the ITI – i-Net, during the year. Science and Technology related articles on local newspapers were posted on the iNet daily as "from The Press" while continuing the compilation of News Digest on a weekly basis with important media articles. Current awareness bulletins on new additions to the Centre continued to update research staff on information received in their fields of interest. Required information was disseminated through a Document Delivery Service using the Automated Online System (AOL) or in print media, complying with copyright requirements.

Knowledge Sharing Seminars and Workshops

ISC continued to conduct programmes for knowledge sharing among information professionals and entrepreneurs. During the year 3 seminars, "How to start a Business", "Essentials for Effective Information Services" and "Protect Intellect, what you should know" were conducted and over 100 participants benefited from the seminars. Student professionals from the Sri Lanka Library Association and Research Students from Institute of Chemistry were provided with familiarization and training on the Center's activities and services.

Capacity Building

Two officers continued their MSc programmes while another joined to follow a Postgraduate Diploma in Library and Information Science. Another officer participated in a three month training programme on "Information Technology for Information Management" conducted by SAARC in India. Several ISC staff members participated in local workshops and training programs to update their skills in new techniques in information processing and services.

Resource Management

The centre continued to maintain and update its resources. The book count at present is 21,331 with 70 books purchased and 114 books received as complements last year. Our Reprint collection counts to over 12300, with 450 reprints, and over 700 ITI publications. Journal subscriptions continued for 8 foreign and 07 local journals during the year. 44 Standards - ISO, SLSI and BS were also acquired mainly to service the analytical staff of the ITI. The expenditure on Books, journals and online data bases was Rs 5.25 Mn. The collection is up-to-date with a

large number of materials received on exchange from S&T and R&D institutions local and foreign, and through e - resources. The collection of bound journals increased to 13,803 with 933 added during the year

Specialised data bases on ITI Research and Traditional Medicinal Plants

ISC expanded the ITI collection of scientific publications with reports on research, Photographs, posters, workshop brochures etc. A database on Medicinal plants using the well known Lucid software developed by University of Queensland, Australia containing information on 200 plants available in Sri Lanka is being further developed. Identification keys are being developed by Herbal Technology researchers for Sri Lankan Medicinal plants and will be published on the website once completed. The Centre continued to participate in the Asia Pacific Traditional Medicine network - APTMNET. Information on over 500 plants and 100 other resources have been uploaded together with other features such as marketing and enterprise information, expertise, education, press news and research being continuously updated.

Quality System for ISC

The Centre was successful in the Surveillance Audit carried out by SLSI for 2011/2012, and maintained its ISO 9001:2008 certification, no non conformities.

Networking and Co-operation

The Centre continued to participate in the information networks, AGRINET, HELLIS and SLSTINET, relating to Agriculture, Health and Science and Technology respectively coordinated by CARP, University of Colombo, Medical Faculty and NSF. Training, exchange of publications and Information, corporate acquisitions were some activities under these networking programs which served to enhance services further. The Health Science Information network HELLIS - provides free access to the HINARI database while the Agricultural network AGRINET provides free journal articles on request through the AGORA database, both of which are subscribed databases managed by WHO and FAO.

Awards and Recognition

Sahasak Nimavum Awards

Sahasak Nimavum exhibition, organized by Sri Lanka Inventors Commission for the first time, was held at BMICH on 30th September to 2nd October 2012. In the open category, ITI won an award and merit certificate for the Low Cost Ear Screener and for the Automated Street Lamp System under the sub categories of Category M :Medicine – Surgery – Orthopedics – Material for the Handicapped and Category C: Computer Science – Software – Electronics – Electricity –Methods of Communication respectively.

- ITI scientists won two of the best five awards for posters at the International Conference on Chemical Sciences, Institute of Chemistry held from 20th - 22nd June 2012.
    - Manoratne, C.H., Nayanajith L.D.C. and Kottegoda, I.R.M. Synthesis and characterization of Graphite Composites for Application in Lithium ion Batteries and in Solar Cells.
    - Abeysekera W. P. K. M, Ranasinghe, P. and Premakumara, G. A. S Antioxidant properties of leaves of *Moringa oleifera* tea brew collected from three different districts in Sri Lanka
- At the Food and Nutrition Session held at PGIA Congress 2012, Research Scientist W. P. K. M. Abeysekera and Senior Research Scientist G. A. S. Premakumara of ITI and W. D. Ratnasooriya of University of Colombo won the Best Presentation Award for the presentation on "In vitro anti oxidant properties of leaf and bark extracts of Ceylon Cinnamon (*Cinnamomum zeylanicum* Blume)".

Representation by ITI Officers at International Committees

Dr. G A S Premakumara

- Editorial Board : International Journal of Herbal Practice and Technology

Mr. A S Pannila

- Member : World Association of Industrial and Technological Research Organizations (WAITRO)

Dr. Ilmi Hewajulige

- Member of the reviewing panel : International Journal of Food Science and Technology

Representation by ITI Officers at Presidential Committees, Boards of State Agencies, National Committees

Dr. A M Mubarak

- Sri Lanka Delegation, First Meeting of the India Sri Lanka Joint Science & Technology Committee Meeting, New Delhi
- National Focal Point : Programme of Cooperation in S&T between India and Sri Lanka, Ministry of Technology & Research
- Governing Council, Sri Lanka Accreditation Board (SLAB)
- Board of Directors : National Engineering Research Development Centre of Sri Lanka
- National Authority, Chemical Weapons Convention, Ministry of Industry & Commerce
- Board of Directors : Post Graduate Institute of Science (PGIS)
- Chairman, Working Group : Commercialization of Research through Technology Transfer, Ministry of Technology & Research
- National Science Foundation National Committee on Innovation and Techno-Entrepreneurship

Dr. G A S Premakumara

- Board of Directors : National Research Council
- Board of Directors : National Committee on Women
- Board of Directors : Mushroom Development & Training Centre, Sri Lanka Export Development Board
- Board of Management: The Spice Council

Mr. J M S Jayatileke

- Board of Directors : National Craft Council
- National Committee on Sustainable Use of Mineral Resources, National Science Foundation
- Advisory Committee on Ceramic and Porcelain, Sri Lanka Export Development Board
- Board member : National Packaging Centre

Dr. J.K.R.R. Samarasekera

- Member : Presidential Task Force on Dengue Eradication
- Member : Technical and Advisory Committee on Dengue Vector Control, Ministry of Health
- Member : Technical and Advisory Committee on Chemicals for Vector Control, Ministry of Health
- Chair-person of drafting committee of formulating cosmetic standards - Sri Lanka Standards Institution

Mr. J K A B Wijegunasekera

- Chairman : SLSI Working group meeting on Specification for Non Alcoholic Perfumes
- National Coordination Committee of Basel Convention - Ministry of Environment

Dr. Jaanaki Goonaratne

- National Committee on Nutrition - Presidential Secretariat
- National Codex Committee

Mrs. Damitha Rajapaksa

- National Committee on Popularization of Rice, Ministry of Industries
- National Committee on Popularization of Kithul based products, Ministry of Small and Traditional Industries

Dr. Ilmi Hewajulige

- Project Leader : National Committee on Irradiation as a Phytosanitary Treatment
- A/L curriculum Development Committee

Dr. I R M Kottegoda

- National Nanotechnology Committee, National Science Foundation

Mr. C H Manorathne

- National Mirror Committee on Nanotechnology , Sri Lanka Standards Institution

Academic Representation at Research Institutes and Universities

Dr. G A S Premakumara

- Visiting Lecturer : National Institute of Traditional Medicine

Dr. Ilmi Hewajulige

- Visiting Lecturer : Postharvest Technology, University of Wayamba
- Visiting Lecturer : Postharvest Technology, National Institute of Education, Maharagama.

Mrs. Damitha Rajapaksa

- Visiting Lecturer : Cereal Science and Technology & Bakery Technology, University of Sri Jayawardenapura
- Visiting Lecturer : Cereal Science and Technology, University of Moratuwa
- Visiting Lecturer : Bakery Technology, University of Wayamba

- Visiting Lecturer : Cereal Processing, The Open University of Sri Lanka
- Visiting Lecturer : Cereal Science and Technology, National Institute of Education, Maharagama

Dr. Jaanaki Gooneratne

- Visiting Lecturer : Sports Nutrition, Postgraduate Institute of Agriculture, University of Peradeniya
- Visiting Lecturer : Food Science, University of Ruhuna

Dr. C Wijayasiriwardena

- Visiting lecturer : Siddha Medicine, Eastern University

Social, Welfare and Religious Activities

The Welfare and Recreation Club

Continuing with traditional practice, the dawn of the New Year was celebrated with a Pirith ceremony, organized by the Buddhist Society and a Breakfast spread of Kiribath and Kavum. Activities during the year focused on promoting goodwill among staff and their family members and included:

- Avurudu Utsawaya
- Trip to Pahiyan Lena & Kukuleganga
- Sale of electrical and electronic items on easy payment terms from Paragon Electronics, Singer Plus
- Loan scheme at nominal interest terms
- Seminar on 'Carrom Rules' by Ms. Rohini Mathiasz, General Secretary of Sri Lanka Carrom Federation
- Mobitel Upahara Internet Package
- A cash donation to Mr. D K Liyanage, employee of ITI and Mr. P K N S S Shantha, S&T Officer, Meerigama Vidatha Centre for medical treatment.
- Function to felicitate 11 members who had served ITI for more than 15 years

- **The Seva Vanitha Unit**

The Seva Vanitha Unit of the Institute continued to provide services to the employees with projects and fund raising activities during the year.

- Distribution of schoolbooks for children of deserving employees.
- Guest Lecture on 'Dress Etiquette' by Mr. Dilshad Perera, Chief Operating Officer of 4Ever Skin Naturals (Pvt.) Ltd.
- Lecture on 'International Girl Child's Day' by Dr. J M G Jayamaha of Diabetes Centre, Kurunegala.
- Sale of Oshani Linen, Diana Shoes & Indian Sarees at a discounted rate for employees.
- Promotional sales during Avurudu and Christmas.
- Dental Clinic, through Dental Institute, Colombo for staff on concessionary terms.
- Donations to the Ceylon School for the Deaf & Blind.

– Sale of homemade ‘Tasty Cup Cake’ & ‘Cake’ as a fund raiser.

The Annual General Meeting 2012 was held on 29th November at ITI Main Auditorium. Mrs. Sajeewika Perera SRS/CML was appointed as the Vice President. At the AGM a farewell was accorded to Dr. Shanthi Wilson, Mrs. Damitha Rajapaksa & Mrs. Karuna Jayamaha in appreciation of their services both to the ITI & the Seva Vanitha Unit as Presidents &Office bearers of the Committee. Dr. Shanthi Wilson and Mrs. Damitha Rajapaksa also reciprocated by hosting a Tea Party for the members. Dr. Piyanjali de Zoysa, National Hospital, Colombo was invited as a guest speaker and spoke on “Stress and Stress Management”.

- **The Buddhist Society**

– The Buddhist Society continued to provide question paper booklets to children of employees sitting the Grade 5 scholarship examination and O/Level examination. Awards to children of employees who were successful in the Grade 5 scholarship examination and those selected for University education were also made as is done every year.
– The society also organized an Osu pan dansela for the public and a Vesak Lantern competition amongst sections for the fifth consecutive year.
– Arrangements were made for employees to purchase Atlas exercise books at concessionary rates for the new school year.
– A Blood donation campaign was held through Blood Bank, National Cancer Institute, Maharagama.
– The Society used its benefit fund to assist 21 employees with loans during the year.

- **Christian Society**

The Christian Society continued with their traditional Annual Christmas party, with carol singing and Santa Clause distributing gifts from the Christmas tree to all children of ITI staff members. A Christmas service was conducted by Rev. Father Kalana Peiris of the Bishop Palace, Colombo.

Publications, Presentations & Patents

Publications in Refereed Journals

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- Street light controlling system using radio broadcasting network. (Patent No: 16596/13.02.2012), M.S.M. Aroos, D.T.H. Fernando and R M Weerasinghe.
- Processing technology of banana fibers as an absorbent material suitable for using in personal care products. (Patent No: 16653/30.03.2012), Milani M.D.Y, Samarawickrama D.S. and Hettiarachchi B.U.
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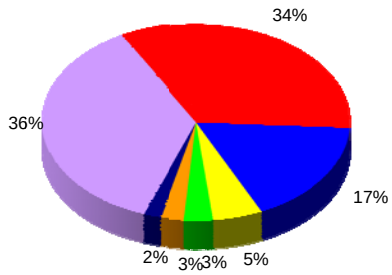
Human Resources

This years review
year ended 31st December 2012

The total permanent staff of the Institute was 327. This total comprised of 61% in the Technical divisions and 39% in Support divisions. The Chemical & Microbiological Laboratory is the largest division with almost 16% of the total staff.

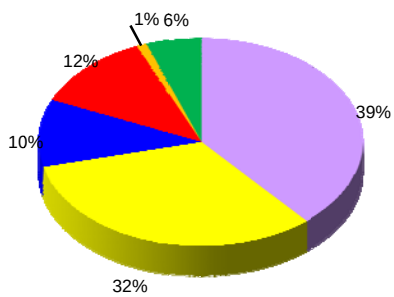
Division-wise distribution of staff



Technical Services AD(TS), CML, ML, IML, ETL,	- 119
Research & Development AD(R&D), FTS, HTS, MTS, ETS, ES	- 111
Administration & Operation, HRD, FD, SUP, STO, MBD, CU, TU	- 56
ISC	- 17
Chairman, Director, IA	- 10
QAD	- 8
Bio Technology Unit	- 6

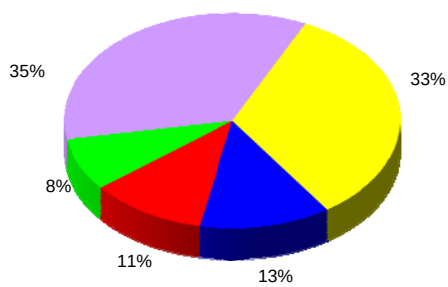
* *see page 6 for acronym descriptions*

Category-wise distribution of staff - *Technical divisions*



Technical	- 78
Research	- 65
Craftsmen (skilled, semi-skilled, unskilled)	- 21
Administrative & Clerical	- 24
Others (Aides, Helpers)	- 2
Management (5 with postgraduate & 6 without postgraduate)	- 11

Category-wise distribution of staff – *Support divisions*



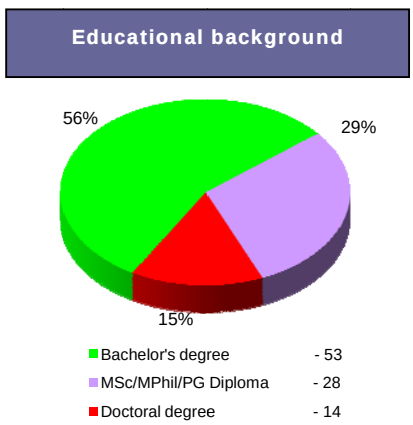
Administrative & Clerical	- 44
Others (Drivers, Helpers)	- 42
Technical	- 16
Research/Scientific	- 14
Management (2 with postgraduate & 8 without postgraduate)	- 10

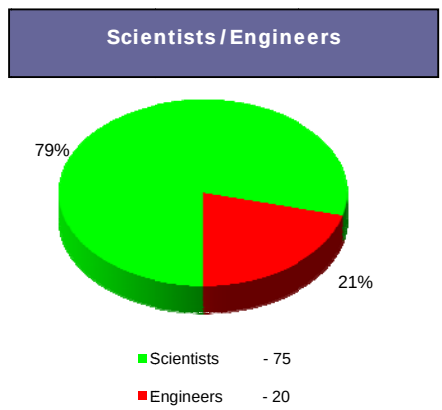
Human Resources

This years review
year ended 31st December 2012

Research staff

Of the total of 95 Research officers (in both Technical and Support divisions) 44% possessed Post-graduate qualifications. Scientists constituted 79% of the research staff and continued to be in the majority.





Expertise of research staff

In the area of Agro and Food Technology the Institute has considerable expertise in food processing, post harvest technology, industrial microbiology, plant tissue culture, medicinal and aromatic plants and essential oils and spices. In the Materials field, ceramics, rubber, plastics and wood technology are areas in which we have developed expertise. In the Environmental area our strength lies in industrial pollution control and environmental monitoring including noise and vibration monitoring.

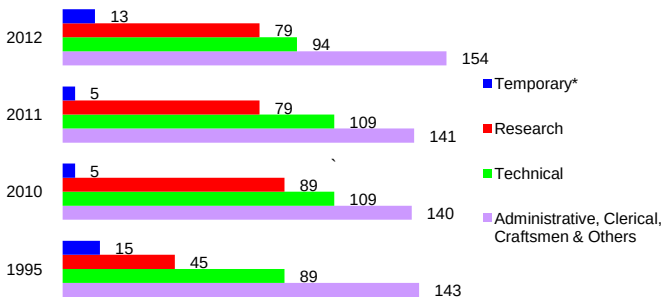
We are one of the leading testing and measurement laboratories in the country. We have analytical expertise in chemical, microbiological and physical testing of a variety of samples. We are also one of the very few laboratories in the country that provide calibration and measurement services. Over the years our laboratory staff has also developed expertise in laboratory quality management systems. The Research staff also has expertise in information management and corporate management.

Human Resources

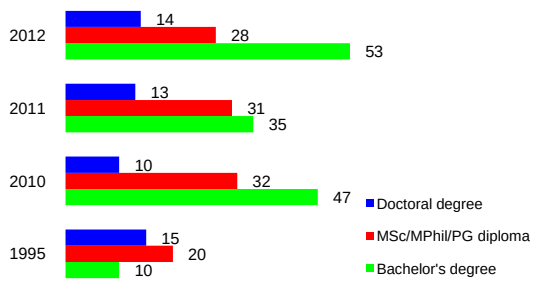
This years review
year ended 31st December 2012

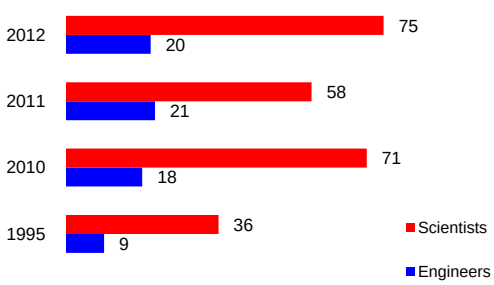
Trend analysis

The total staff (permanent & temporary) increased by 16% from 1995 to 2012. During this period the research staff increased by almost 12% and the technical grades by 2%. There was an increase of 8% of the administrative, clerical, craftsmen and other positions. PhDs and post-graduates increased by 20% during the period 1995 to 2012. The temporary staff number fluctuated during the period and increased to 13 in 2012.



* Trainee, Project, Assignment





Executive Staff

as at 31st December 2012

Director/CEO
A M Mubarak
BSc(Hons)(Cey),PhD(Cantab),CChem,FIChemC

Additional Director, Research & Development
G A S Premakumara
BSc(Colombo), PhD(Colombo), MIBiol, MIChemC, CChem, CBiol, FIBiol

Additional Director, Technical Services

A S Pannila
BSc(Peradeniya), MPhil(Kelaniya), MIM(UK), MIP (SL), CPhys(SL)

Additional Director, Administration & Operation

D C A Sattrukalsinghe
BSc(Hons) (UK),MBA(Sri J'Pura), CEng(UK), FBCS, CITP,MACS,PCP,MCS(SL), MHRP, PGMN

RESEARCH & DEVELOPMENT

FOOD TECHNOLOGY SECTION

Senior Deputy Director, Food Technology Section

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

Senior Research Scientists

H M T Herath (Ms)
BSc(Hons)(Peradeniya), MPhil (Sri Jayewardenepura), MIChemC

Research Scientists

S S K Madage
BSc (Peradeniya)

A M C U Binduhewa (Ms)
BSc(Peradeniya), MSc(Sri Jayawardenapura)

P N R J Amunugoda
BSc(Spl)(Peradeniya)PhD(Open University)

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

D M W D Divisekara(Ms)
BSc (Bangalore),MSc (Bangalore)

E N Wijedeera (Ms)
BSc(Spl)(Peradeniya)

W K S M Abeysekara (Ms)
BSc(Spl)(Hons)(Peradeniya), MSc(PGIA)

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

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

S A Fernando
BSc(Spl)(Hon)(Colombo)

R Sutharasana (Ms)
BSc(Hons)(Jaffna)

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

Research Engineers

S G Walliwala (Ms)
BSc (Eng)(Moratuwa), MSc(Moratuwa)

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

Laboratory Technologists

G D S K Rajapakse (Ms)
LTCC (IChemC)

A Fernando (Ms)
LTCC(IChemC),Tech(IChemC)

Senior Technical Officers

D M K Aponso (Ms)
LTCC (IChemC)

R C Pitipanaarachchi (Ms)
Grad IChemC, BSc(Open University), MSc(Sri Jayewardenepura),CChem

M G D S Perera (Ms)
LTCC(IChemC), Dip.Agri(Aquinas)

Technical Officers

W U D Medis

HERBAL TECHNOLOGY SECTION

Senior Deputy Director, Herbal Technology Section

Vacant

Principal Research Scientist

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

Senior Research Scientists

R M Dharmadasa
BSc(Hons)(Ruhuna), MPhil(Sri Jayewardenepura), MIBiol, PhD (Sri Jayewardenepura)

P Ranasinghe
BSc(Hons)(Peradeniya), MPhil(Colombo), MIBiol

C Wijayasiriwardena
BSc(Bangalore), MSc(Gujarat), PhD(Gujarat Ayurved University)

S Chelvendran (Ms)
BSc(Spl)(Hons)(Jaffna), PhD(Peradeniya)

Research Scientists

D A S Siriwardhana
BSc(Spl)(Hons)(Sri Jayewardenepura), PhD(Peradeniya)

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

W P K M Abeysekera (Ms)
BSc(Spl)(Hons)(Colombo)

H D Weeratunga
BSc(Spl)(Colombo), MSc (Midway)

D W P Madubashitha
BSc(Spl)(Hons)(Colombo)

Laboratory Technologist

P I P K Fernando (Ms)
LTCC (IChemC)

Senior Technical Officer

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

Administrative Officer

W S K Fernando (Ms)

MATERIALS TECHNOLOGY SECTION

Head Materials Technology Section

I R M Kottegoda (Ms)
BSc(Colombo), MPhil(Sri Jayewardenepura), PhD(Colombo)

Research Scientists

S Weeraratne
Grad IChemC, MSc(Colombo),CChem, MIChemC

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

C H Manoratne
BSc(Rajarata), MPhil(Peradeniya)

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

G P C A Dharmasiri (Ms)
BSc(Spl)(Sri Jayewardenepura), MPhil(Cambridge, UK)

K S P Karunadasa
BSc(Spl)(Hons)(Peradeniya)

Research Engineers

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

J T S T Jayawardene (Ms)
BSc(Eng)(Moratuwa), MPhil(Moratuwa)

ENVIRONMENTAL TECHNOLOGY SECTION

Senior Deputy Director, Environmental Technology Section

H N Gunadasa
BSc(Eng)(Moratuwa), PGDip(Moratuwa), AMIE

Principal Research Engineer

W R K Fonseka
BSc(Eng)(Hons)(Moratuwa), MSc(Delft)

Senior Research Engineers

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

W J K D Ranpatige (Ms)
BSc(Eng)(Hons)(Moratuwa), PGDip(Moratuwa)

Research Engineers

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

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

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

W A D D Sampath
BSc(Eng)(Moratuwa)

Laboratory Technologist

K D Attanayake (Ms)
NDT(Moratuwa)

Technical Officer

J A P V Jayasinghe
NDT(Moratuwa)

Administrative Officer

S A G L Perera (Ms)

ENGINEERING SERVICES

Head, Engineering Services

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

Technical Officer

M S Mannapperuma

Administrative Officer (Admin)

K P R T Perera (Ms)

OFFICE OF THE ADDITIONAL DIRECTOR RESEARCH & DEVELOPMENT

Senior Administrative Officer (Admin)

M A C P Perera (Ms)

TECHNICAL SERVICES

CHEMICAL & MICROBIOLOGICAL LABORATORY

Head, Chemical & Microbiological Laboratory

J K A B Wijegunasekara
BSc(Spl)(Peradeniya), MPhil(Wales)

Senior Research Scientists

H P P S Somasiri
BSc(Spl)(Peradeniya) MSc(Peradeniya), CChem, MIChemC

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

M N A Mubarak
BSc(Spl)(Hons), MSc(Delft)

Research Scientists

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

D G S C Hatharasinghe (Ms)
BSc(Spl)(Hons)(Ruhuna)

G V V Liyanaarachchi (Ms)
BSc(Spl)(Hons)(Colombo)

M R P Dassanayake (Ms)
BSc(Spl)(Hons)(Sri Jayewardenepura)

S K Liyanage (Ms)
BSc(Kelaniya), MSc(Kelaniya)

G U Chandarasiri (Ms)
BSc(Spl)(Hons)(Sri Jayawardenepura)

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

B N Dorakumbura (Ms)
BSc(Spl)(Hon) (Sri Jayawardenepura)

D A T W K Dissanayake (Ms)
BSc(Spl)(Hons)(Peradeniya)

Laboratory Technologists

S P A Wijeratne Herath (Ms)
LTCC (IChemC),BSc(Open University)

R P D C J Cooray (Ms)
LTCC (Merit)(IChemC)

Y A Pitawela (Ms)
LTCC (Hons)(IChemC)

S K D Sarath Kumara
LTCC (IChemC)

Senior Technical Officers

K D R De Costa (Ms)

J M M Herath (Ms)
LTCC (IChemC)

R M S Ratnayaka (Ms)
LTCC (IChemC)

P K G De Alwis (Ms)
LTCC (IChemC),LTCC Diploma(IChemC)

C K Wickramasinghe (Ms)
LTCC (IChemC)

Technical Officers

Y M C Piyathilaka (Ms)
LTCC (IChemC)

P S F Perera (Ms)
LTCC (IChemC),BSc(Peradeniya),MSc(Colombo)

I Jayakody (Ms)
GIC, LTTC(IChemC)

S P Hettiarachchi
LICC, DLTC

H A A Perera
GIC Part I, LTTC, Dip. In Management Programme

H M K Pathirana
B Sc(Kelaniya)

H K Alahakoon (Ms)
B Sc(Open University)LTCC(IChemC

C Vidyaratne (Ms)
B Sc(Open University)

Mr M M C B Nawaratne
DTLC

Senior Administrative Officer (Admin)

B M S Delwala (Ms)

MATERIALS LABORATORY

Senior Deputy Director, Materials Laboratory

J M S Jayatileke
BASc(Hons)(Eng)(Moratuwa), MEng(Akita)

Senior Research Engineer

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

Research Engineers

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

L P C Ranasinghe
BSc(Hons)(Eng)(Moratuwa)

H S Sitinamaluwa (Ms)
BSc(Eng)(Moratuwa)

Research Scientists

L K S Roshanie (Ms)
BSc(Hons)(Colombo)

P W C Dilhani (Ms)
BSc(Spl)(Hon)(Sri Jayawardenepura)

G S Peiris (Ms)
BSc(Hons)(Jayawardenepura)

Laboratory Technologists

D S Kannangara
LTCC (IChemC)

D Nandasoma
LTCC (IChemC)

Senior Technical Officers

K D N Weerasinghe
LTCC (IChemC)

I Withana (Ms)
LTCC (IChemC)

K Weeratunga
NDT (Moratuwa),DipPRI(SL)

K Silva (Ms)
LTCC (IChemC),BSc(Open University)

INDUSTRIAL METROLOGY LABORATORY

Head, Industrial Metrology Laboratory

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

Senior Research Scientist

N P Liyanawaduge
BSc(Spl)(Hons)(Ruhuna), MPhil(Ruhuna), MACS

Research Scientists

G D T A Pathiragoda (Ms)
BSc(Spl)(Hons)(Colombo)

M M Thilakasiri
BSc(Spl)(Hons((Sri Jayawardenepura)

Technical Officer

T N P K Peiris
BSc (OUSL)

ELECTRO TECHNOLOGY LABORATORY

Head, Electro Technology Laboratory

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

Research Engineer

R P K Wijewardena
BSc(Eng)(Moratuwa)

Research Scientists

M S M Aroos
BSc(Spl)(Hons)(Kelaniya)

C M Kalansuriya
BSc(Hons)(Open University), LIP(SL)

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

G D Illeperuma
BSc(Spl)(Hons)(Colombo)BSc(IT)

Laboratory Technologist

R A S Dewapriya
NDT(Moratuwa)

Senior Technical Officers

S N W M Surasena
LTTC (IChemC),MIPRE,City&Guilds(London)

Technical Officers

L A M N Pushpakumara
BSc(Hon)(Peradeniya)
L D D C Jayaratne

Administrative Officer (Admin)

P G P Jayawardene (Ms)

OFFICE OF THE ADDITIONAL DIRECTOR TECHNICAL SERVICES

Senior Customer Liaison Officer

I D R Chamani (Ms)
BSc(Peradeniya)

Senior Administrative Officer(Admin)

Y Y W De Silva (Ms)

Administrative Officer (Admin)

C J Sirisena (Ms)

BIO TECHNOLOGY UNIT

Head, Bio Technology Unit

S G Senaratne (Ms)
BSc(Spl)(Hons)(Colombo), PhD (UK)

Research Scientists

K G W W Bandara (Ms)
BSc.(Spl)(Colombo)

K S L Dalpadadu
BSc((Hons)(Malaysia), PhD

D T M Jayathilaka
BSc(Spl)(Hons)(Colombo)

N R M K N D Rathnayake
BSc(Spl)(Colombo)

QUALITY ASSURANCE DEPARTMENT

Head, Quality Assurance Department

M K D R Dayarathna (Ms)
BSc(Spl)(Hons)(Colombo), MSc(USA)

Senior Research Scientists

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

Research Scientists

D C H Thirimanna (Ms)
BSc(Spl)(Hons)(Colombo)

D U Rajawardana (Ms)
BSc(Bangalore), MSc(Peradeniya)

K P Wijekuruppu (Ms)
BSc(Hon)(Peradeniya)

S A M K Jayathilake (Ms)
BSc(Spl)(Hons)(Sri Jayewardenepura)

N S Amarasuriya (Ms)
BSc(Spl)(Kelaniya)

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

INFORMATION SERVICES CENTRE

Senior Deputy Director, Information Services Centre

S Samarasekera (Ms)
BSc(Peradeniya), ASLLA

Senior Research Scientists

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

K H T Abeysekara (Ms)
BSc(Spl)(Hons)(Kelaniya), MPhil(Kelaniya)

Research Scientist

E M S Isanka (Ms)
BSc(Spl)(Hons)(Peradeniya)

Librarian

D J M Jayaweera (Ms)

Assistant Librarians

N S Sangasinghe (Ms)
ASLLA

W W P N Geekiyanage (Ms)
ASLLA

N L D G A Krishneratne (Ms)
BA(Kelaniya), Library & Inf. Science
Diploma in Library Science

Senior Administrative Officer (Admin)

G S M Senanayake (Ms)

Administrative Officer (Admin)

R Kapurubandara (Ms)

ADMINISTRATION & OPERATION

HUMAN RESOURCES DEPARTMENT

Senior Deputy Director
T Samarasekera
BSc (Peradeniya), MBA-HRM (PIM-USJ)

Senior Administrative Officers (HR)

I Kannangara (Ms)
PQHRM(IPM)

S M G A Samarakoon (Ms)
CCHRM(IPM)

Administrative Officer

L Ranaweera (Ms)

MARKETING & BUSINESS DEVELOPMENT DEPARTMENT

Senior Industrial Liaison Officer

J D Madanayake
Dip Food Tech (PISE, Italy),LTCC (IChemC)

Laboratory Technologist

P Jeyachandran
NDT (Moratuwa)

COMPUTER UNIT

Senior Technical Officer

N K Alagoda (Ms)
NDT (Moratuwa)

Computer Systems Administrator

S S Wickramasekara

DIRECTOR'S OFFICE

Institute Secretary

A M K R Jayatilaka (Ms)
Attorney-at-law & Notary Public

Confidential Secretary

S M Cramer (Ms)
BSc(Com)(Kelaniya)

Personal Assistant/ Secretary to Chairman

G Edirisuriyage (Ms)
Dip. In communicational skillss

FINANCE DEPARTMENT

Senior Deputy Director Finance

J Solomon
AMA, MCPM, Higher Dip in Acc & Finance

Accountant

Mr. D N Weerakoon
HNDA,ICASL-Infor, CMA-DIP

Accounts Officers

A L L Priyangika (Ms)
BSc(Spl)(Business Administration)

R Malavipathirana (Ms)
IAB(London)

L K Lalitha (Ms)
IAB(London)

H H Gurugamage (Ms)
ICASL(Strategic I)

M H N Tissera (Ms)
BBMgt (Spl)(Accountancy)(Kelaniya, ICASL - FI

Senior Administrative Officer (Admin)

W A Malani (Ms)

STORES

Senior Stores Officer

W K J A Bandara

SUPPLIES

Senior Supplies Officer

H K Dilrukshi (Ms)
Dip.(Mass communication)

Administrative Officers (Admin)

K M L W Fernando (Ms)

B P N Peiris (Ms)
Dip Sup Mat Mang

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

INTERNAL AUDIT

Chief Internal Auditor

K A S P Kaluarachchi
BSc(B.Ad)(Spl)(Sri Jayewardenepura),CBA(ICASL), MAAT

Senior Internal Audit Officer

D T M C Jayasinghe (Ms)

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

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)

STATEMENT OF FINANCIAL POSITION AS AT 31ST DECEMBER, 2012

	NOTE	2012	2012	2011	2011
		Rs.	Rs.	Rs.	Rs.
ASSETS					
Non-current Assets					
Property, Plant and Equipment	1	432,828,041		407,603,627	
Other Assets (Work-in progress)	2	148,550,774		108,148,340	
			581,378,815		515,751,967
Current Assets	3				
Inventories/Stocks	3A	12,417,303		10,217,790	
Trade and other receivables	3B	121,816,410		52,097,906	
Prepayments	3C	3,575,158		1,663,441	
Cash and Cash equivalents	3D	341,641,762		361,973,734	
			479,450,633		425,952,871
Total Assets			1,060,829,447		941,704,838
LIABILITIES					
Current Liabilities	4				
Payables	4A	26,964,474		12,110,061	
Accrued Expenses	4B	36,133,452		18,799,347	
			63,097,926		30,909,408
Non-current Liabilities	5				
Payable	5A	29,782,272		7,060,264	
Differed Income	5B	474,965,837		434,259,056	
Provision for Gratuity	5C	65,086,774		71,394,755	
			569,834,883		512,714,075
Total Liabilities			632,932,809		543,623,483
Total Net Assets			427,896,638		398,081,355
NET ASSETS / EQUITY	6				
Accumulated Fund	6A	234,502,413		215,018,120	
Reserves - Donations	6B	64,551,795		54,220,807	
Revaluation Surplus	6C	128,842,430		128,842,429	
Total Net Assets / Equity			427,896,638		398,081,355

.....
Johnson Solomon
(Senior Deputy Director - Finance)

V. Kumar
.....
Prof. Vijaya Kumar
(Chairman)

INDUSTRIAL TECHNOLOGY INSTITUTE

STATEMENT OF INCOME FOR THE PERIOD ENDED 31ST DECEMBER, 2012

ILLUSTRATING THE CLASSIFICATION OF EXPENSES BY NATURE

	NOTE	2012	2011
		Rs. Cts	Rs. Cts
Operating Revenue			
Recurrent Grant		**169,000,000**	162,000,000
Amortization of Government Grants - Depreciation	**5A1**	**39,314,909**	116,657,143
R & D Projects & HRD	**5B**	**11,091,790**	6,976,771
Rehabilitation & Improvements	**5B**	**10,320,476**	2,151,914
Income - Revenue	**7A**	**159,343,955**	135,854,651
- Other Income	**7B**	**29,113,334**	22,479,298
		418,184,465	**446,119,776**
Operating Expenses	**8**		
Personnel Emoluments	**8A**	**205,358,891**	169,573,700
Travelling	**8B**	**2,837,409**	1,876,603
Supplies and Consumable used	**8C**	**20,771,918**	18,348,976
Maintenance	**8D**	**17,316,958**	13,022,100
Contractual Services	**8E**	**38,641,574**	34,321,145
R & D Projects & HRD	**8F**	**11,091,790**	6,976,771
Depreciation	**8G**	**54,491,555**	116,657,143
Other Operating Expenses	**8H**	**29,384,995**	23,959,160
Rehabilitation & Improvements	**8I**	**10,320,476**	2,151,914
Disposal & write Offs		5,308,960	-
Damage & Losses		31,495	27,586
Total Operating Expenses		**395,556,022**	**386,915,098**
Surplus/(Deficit) from Operating Activities		22,628,443	59,204,678
Adjustment for Over Provide Bad Debts		-	114,308
Net Surplus / (Deficit) for the period		**22,628,443**	**59,318,986**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)

THE STATEMENT OF CHANGES IN EQUITY FOR THE YEAR ENDED 31st DECEMBER , 2012

	Accumulated Fund	Reserves Donations	Re-Valuation Surplus
	Rs.cts.	Rs.cts.	Rs. cts.
Balance as at 01.01.2012	215,018,120	54,220,808	128,842,429
Changes in Equity for 2011			
Surplus for the period	22,810,399	-	-
Amortizarion of Non - Current Assets Up to 2002	3,326,079	-	-
Donation received during the year	7,500,000	3,876,130	-
Amortization of Non - Current Donated	-	(16,321,787)	-
Balance as at 31.12.2012	**248,654,598**	**41,775,150**	**128,842,429**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)

CASH FLOW STATEMENT FOR THE YEAR ENDED 31ST DECEMBER, 2012

	2012 (Rs.)	2011 (Rs.)
Cash Flow From Operating Activities		
Operating Surplus/(Deficit)	22,628,443	59,318,986
Adjustment for		
Depreciation	54,491,545	116,671,055
Profit/(Loss) on Property Disposal	60,360	(2,278,888)
Gratuity Provision	9,734,097	6,441,548
Interest Received	(17,111,788)	(6,434,272)
Capital Grants Amortized	(60,727,176)	(125,785,827)
Operating Surpluss/(Deficit)	**9,075,481**	**47,932,602**
Change in Working Capital		
(Increase)/Decrease in Investments	-	-
(Increase)/Decrease in Inventories	(2,199,513)	1,310,454
(Increase)/Decrease in Debtors	(69,718,504)	1,818,115
(Increase)/Decrease in Prepayments	(1,911,717)	1,218,999
(Decrease) /Increase in Payables-Non Current	8,119,983	(798,421)
(Decrease) /Increase in Payables-Current	22,722,008	(27,429,309)
(Decrease) /Increase Accrued Expenses	17,334,105	(6,397,130)
Cash Generated from operating Activities	**(16,578,157)**	**17,655,310**
Gratuity Paid	(9,307,649)	(7,053,900)
Net Cash Flow From Operating Activities	**(25,885,806)**	**10,601,410**
Cash Flow From Financing Activities		
Capital Grants Received	97,194,666	141,000,000
Net Cash Flow From Financing Activities	**97,194,666**	**141,000,000**
Cash Flow From Investing Activities		
Acquisition of Property Plant & Equipment - Purchases	(69,335,867)	(59,263,176)
Acquisition of Property Plant & Equipment - TG	(90,800)	(1,219,189)
Write Offes of PPE - Cost	29,003,089	16,630,703
Write Offes of PPE - Depreciation	(27,916,260)	(18,434,417)
Investment	(160,000,000)	(26,000)
Proceeds from sale of Assets	97,680	2,278,888
Science Award Fund Investment	(26,000)	
Other Assets (Work In Progress)	(40,402,434)	(29,052,415)
Interest Received on Fixed Deposit	17,003,760	5,710,605
Net Cash Flow From Investing Activities	**(251,666,832)**	**(83,375,001)**
Net Cash Flow	(180,357,972)	68,226,409
Cash as at beginning of the year	251,773,734	183,547,325
Cash at the end of the year	**71,415,762**	**251,773,734**

ACCOUNTING POLICIES AND SIGNIFICANT EVENTS – 2012

1. GENERAL

The Statement of Financial Position as at 31.12.2012 and the related Financial Statements have been prepared on the historical cost convention, in accordance with Generally Accepted Accounting Principles applied on a consistent basis in conformity with the Sri Lanka Accounting Standards (SLFRSs and LKAs)

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 prepared in accordance with Sri Lanka Accounting Standard ("SLFRSs" & "LKSs") for the year ended 31 December 2012, including the changes to accounting policies as a result of convergence to Sri Lanka Financial Reporting Standards ("SLFRSs").

This is the Institute's first SLFRS financial statements prepared in accordance with Sri Lanka Accounting Standard -SLFRS 1 First-time Adoption of Sri Lanka Accounting Standards. The effect of the transition to SLFRSs on previously reported financial position, financial performance and cash flows of the Institute is provided in Note 4 to the financial statements.

3. ACCOUNTING FOR GOVERNMENT GRANTS

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

2. ASSETS - BASIS OF THEIR VALUATION

3.1 Fixed Assets

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

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

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

Depreciation is charged from the date of purchase until the date of disposal as per the accepted procedure of the institute in compliance with the Sri Lanka Accounting standards (SLFRSs & LKAs).

3.1.1

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

3.2 Debtors

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

3.3 Stocks

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

3.4 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 03 months Personal Emolument Cost.

3. LIABILITIES AND PROVISIONS

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

4.1 Funds for ITI Chairman's Science Award Fund

This fund is externally invested.

5. INCOME AND EXPENDITURE ACCOUNT

Income and Expenditure are based on accrual accounting basis.

6. PROVISION FOR DOUBTFUL DEBTS

Provision for doubtful debts is made generally at 2.5% of the debts outstanding for over 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.

7. LONG TERM RESEARCH AND DEVELOPMENT

Research and Development Projects were curtailed during the year due to non-release of the allocated treasury funds for R & D on time. In addition local agencies such as National Science Foundation (NSF) and National Research Council (NRC) also sponsor some Research and Development Projects.

8. DISALLOWED VAT

Due to the fact that the General Treasury is funding the Institute, Department of Inland Revenue has given two options, either to pay VAT on the Treasury Grant or to apply Disallowed Input Tax Principal. Commencing in year 2005 ITI has implemented the Disallowed Input Tax Principal.

9. VIDHATHA PROGRAM

During the year under review number of employees of ITI participated in the Vidhatha Program conducted by the Ministry of Science & Technology, of which the cost was reimbursed by the Line Ministry.

Schedule on Buildings, Plant Machinery & Lab Equipment, Furniture Fittings, Vehicles, Computer Equipment Library Books & Journals , Software & Other Assets as at 31.12.2012

NON -CURRENT ASSETS

NOTE - 01

	Buildings 5%	Plant Mach. & Lab Equip. 10%	Furni. Fittings & Office Equi. 5%	Vehicles 20%	Computer Equipment 33.33%	Library Book & Journals 5%	Soft Ware & Accessories 33 1/3%	Other Assets 33 1/3%	TOTAL
Cost									
Balance as at 01.01.2012	**221,303,275.79**	**597,020,852.97**	**41,197,587.15**	**51,489,816.08**	**43,458,023.78**	**77,040,407.75**	**12,686,568.94**	**4,512,594.44**	**1,048,709,126.90**
Additions -									
Purchases	7,261,350.83	52,198,280.78	1,702,144.04	97,690.00	6,762,032.45	502,890.75	811,478.64	-	**69,335,867.49**
Donations	-	1,959,380.00	16,750.00	9,400,000.00	-	-	-	-	**11,376,130.00**
Donations - TG	-	90,800.00	-	-	-	-	-	-	**90,800.00**
Re-Valuation	-	-	-	-	-	-	-	-	**-**
Less:									**-**
Write - Off	-	(24,600,853.00)	(723,546.00)	(153,500.00)	(3,525,190.00)	-	-	-	- **29,003,089.00**
Balance as at 31.12.2012	**228,564,626.62**	**626,668,460.75**	**42,192,935.19**	**60,834,006.08**	**46,694,866.23**	**77,543,298.50**	**13,498,047.58**	**4,512,594.44**	**1,100,508,835.39**
Less :									**-**
Depreciation									**-**
Balance as at 01.01.2012	**72,746,967.61**	**403,904,523.98**	**15,661,965.50**	**42,004,534.27**	**41,436,946.35**	**49,108,275.99**	**11,729,691.55**	**4,512,594.44**	**641,105,499.69**
Charges for 2012	-	-	-	-	-	-	-	-	**-**
Add:									
Depreciation for 2012	10,685,611.68	32,576,677.40	1,638,646.73	4,447,034.69	1,969,470.20	2,637,287.87	536,826.27	-	**54,491,554.84**
Less:									
Disposal	-	(23,626,529.30)	(611,040.85)	(153,500.00)	(3,525,190.00)	-	-	-	**(27,916,260.15)**
Balance as at 31.12.2012	**83,432,579.29**	**412,854,672.08**	**16,689,571.38**	**46,298,068.96**	**39,881,226.55**	**51,745,563.86**	**12,266,517.82**	**4,512,594.44**	**667,680,794.38**
Balance as at 31.12.2012	**145,132,047.33**	**213,813,788.67**	**25,503,363.81**	**14,535,937.12**	**6,813,639.68**	**25,797,734.64**	**1,231,529.76**	**-**	**-** **432,828,041.01**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT OF FINANCIAL POSITION AS AT 31ST DECEMBER 2012

	2012	2011
	Rs. Cts.	Rs. Cts.
Other Assets (work in progress) - (Note - 2)		
Work in Progress - General	-	220,665.95
Working Progress - Modern R & D Complex, Malambe	139,635,416.50	104,208,869.31
TG 08/24 Alternative sterilization technology to treat cinnamon	-	93,482.16
ISO 17043 Accreditation status to ITI's PECMA PT scheme	140,662.43	124,302.75
TG 11/00/04 DF Synthesis of graphene and graphene composites from natural graphite u	392,739.65	33,617.43
TG 11/00/06 Synthesis lab	-	341,577.30
TG 11/34 High iron & protein containing rice products	666,367.40	439,625.96
TG 11/35 Rice brain snacks rich in antioxidants	589,905.33	125,177.00
TG 11/37 Identificaton of anti-inflammatory and lipid lowering traditional rice	4,686.38	4,686.38
TG 11/39 Bio-active kithul dring	36,939.14	17,207.00
TG 11/41 Enhancing the quality of Jaadi	611,052.48	262,636.39
TG 11/42 Establishment of a testing facility to assess imported feed	429,990.46	98,705.14
TG 11/46 Biological control of strawberry and vegetable pests	123,902.72	9,081.00
TG 11/47 Branding Ceylon Cinnamon - Chem. Fingerprinting & GI	309,421.54	52,861.99
TG 11/48 Investigation of health promoting properties	535,630.55	188,185.00
TG 11/49 Trehalose rich rice for breas making	616,445.72	167,792.18
TG 11/50 Bioremediation of soils contaminated with petroleum hydrocarbon	173,550.14	11,182.08
TG 11/51 Production of Industrial enzymes	278,156.40	107,376.73
TG 11/52 Iron fortification of rice seeds using soya bean ferritin	385,547.72	797.82
TG 11/55 Development of super absorbent materials from banana fibres for sanitary	530,791.53	97,318.63
TG 11/56 Development of Red-clay based water filter for the removal of Fluoride	351,441.03	160,676.76
TG 11/58 Development of an early warning system for landslides	377,821.92	216,689.34
TG 11/59 Development of automated street lamp control systems	372,429.95	164,100.80
TG 08/23A Continuation of wound Dressing Hydro gel	-	7,770.00
TG 47A Branding cey. cinnamon - DNA bar- Coding	174,481.11	38,747.42
TG 11/60 Bioactivity of Ceylon Cinnamon	701,435.68	330,824.55
TG 11/61 Automated Acid Rain Monitoring station	700,066.22	624,382.20
TG DF 12/00/04 - 77 Continue the fabrication of tape Calibration facility in IML	2,675.00	-
TG 11/00/07 Initial study for Elephant Communication Project	23,830.00	-
TG DF 12/00/01 Postharvest Research Activities from Previous Research Programmes	70,275.18	-
TG 11/53 Expression of lysine rich protein SBg LR genein rice seeds(BTU)	315,111.57	-
	148,550,773.75	**108,148,339.27**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO FINANCIAL POSITION AS AT 31.12.2012

Amortization of Government Capital Grants (5A1) **(A/C - 604440-70700)**		**Rs. Cts.**	**Rs. Cts.**
Depreciation	:- Non-Current Assets Upto 2002	3,144,149	
	Non-Current Assets 2003 Onwards	35,075,619	
	Non-Current Assets Donated	16,321,787	
	Amortization Adjustment	(15,226,646)	39,314,909
R & D Projects & HRD	:- Treasury Granted	1,035,443	
	Research & Development (Accreditation)	4,822,820	
	HRD - Training	556,505	
	Library Science Directory- Annual Sub	4,677,023	11,091,790
Rehabilitation & Improvement	:- Building & Structure	3,068,946	
	Plant Machinery and Equipment	6,354,010	
	Improvement of Vehicles	296,750	
	Improvement of Other Capital Assets	600,770	10,320,476
			60,727,176

Differed Income (Note - 5B) **Government Contribution - Capital - 2003 Onwards)** **(A/C - 300102-29755 & A/C - 300104)**	**Rs. Cts.**	**Rs. Cts.**
Balance as at 01.01.2012	434,259,056	
Additions during the year	97,194,666	531,453,722
Schedule Adjustment		
Amortization (Depreciation of Non-Current Assets)	(35,075,619)	
Amortization (Research & Development- Accreditation)	(4,822,820)	
Amortization (Treasury Granted Project Expenditure)	(1,035,443)	
Amortization (Rehabilitation Expenditure)	(10,320,476)	
Amortization (HRD)	(556,505)	
Amortization Library Science Directory- Annual Sub	(4,677,023)	
Amortization Adjustment		(56,487,885)
Balance as at 31.12.2012		**474,965,836**

Accumulated Fund (Note - 6A) **Government Contribution Capital - Upto 2002 and** **Income & Expenditure Account Balance)** **(A/C - 300101-30000 & A/C - 300300-30400)**	**Rs. Cts.**	**Rs. Cts.**
Government Contribution Capital Upto 2002 - 01.01.2012	356,412,974	
Income & Expenditure Account - 01.01.2012	(141,394,855)	215,018,119
Schedule Adjustment		
Amortization - Capital	(3,144,149)	
Surplus for the period of 2012	22,628,443	
Balance as at 31.12.2012		19,484,294
		234,502,413

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
DONATIONS AND GRANTS AS AT 31ST DECEMBER, 2012

NOTE - 6B

Donations	A/C No.	Balance 01.01.2012	Additions during the year 2012	Amortisations during the year 2012	Balance 31.12.2012 Rs. Cts.
Grants and Donations	300201	347,577.80		(347,577.80)	-
UNIDO - AID	300202	7,155,210.94		(1,468,769.84)	5,686,441.10
Other Donations	300204	-		-	-
Capital Reserves	300205	1,523,209.00		-	1,523,209.00
ADB Donation	300207	25,922,921.15		(5,984,187.85)	19,938,733.30
GMBH	300208	103,500.00		(25,875.00)	77,625.00
Donation-Ensilage Tank	300209	1,826,733.42		(456,683.48)	1,370,049.94
Gift from JICA	300210	458,665.50		(458,665.50)	-
Gift from Germany	300211	6,920.00		(6,920.00)	-
Gift from Italy	300212	7,862.50		(7,862.50)	-
Gift from JICA - FP 42	300213	211,512.23		(137,775.85)	73,736.38
Gift from MHIM - FP 36	300214	13,409.39		(7,492.40)	5,916.99
Gift from CARP FP 48	300215	4,950.00		(450.00)	4,500.00
Gift from CARP FP 49	300216	27,430.00		(24,330.00)	3,100.00
Gift from NSF FP 33	300217	4,482.00		(4,482.00)	-
Gift from NSF FP 44	300218	3,621.00		(3,621.00)	-
Gift from TVEC	300219	47,581.30		(18,439.30)	29,142.00
Gift from NRC FP 38	300220	1,777.50		(1,777.50)	-
GIFT FROM NRC FP 46	300221	22,453.50		(22,453.50)	-
Japanese 2KR Project	300222	5,800,397.72	1,916,750.00	(4,301,074.29)	14,828,904.85
Gift From NSF & JICA	300223	258,029.20		(129,014.40)	129,014.80
Gift from UNDP	300224	3,841,242.65		(650,221.81)	3,191,020.84
Gift from UNDO PROJECT	300225	408,757.75		(68,126.30)	340,631.45
Int.Atomic EA Donation	300226	4,540,303.05		(567,537.88)	3,972,765.17
NSF Tsunami Project	300227	6,922.99		(1,012.99)	5,910.00
NSF - Accessories to SEM	300228	999,000.00		(111,000.00)	888,000.00
ICBR Int.Centre for Bamboo ration	300229	2,171,292.00		(271,411.50)	1,899,880.50
Ministry of rural industries & self	300230	40,926.00		(5,115.75)	35,810.25
Common Fund commodities	300231	2,277,932.50		(493,187.50)	1,784,745.00
Treasury Grant Vehicle Cab	300232	-	7,500,000.00	(696,721.31)	6,803,278.69
Donation to BTU	300234		2,009,380.00	(50,000.00)	1,959,380.00
TOTAL		**58,034,621.09**	**11,426,130.00**	**(16,321,787.25)**	**64,551,795.26**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
REVALUATION BALANCE AT AT 31st DECEMBER 2012

Note -6C

	2012	2011
2008 Re-Valuation	**Rs. Cts.**	**Rs. Cts.**
Plant Mach. & Lab Equipment	26,950,099.00	26,950,099.00
Furni. Fittings & Office Equip.	6,404,627.35	6,404,627.35
Computer Equipment	(7,197,653.65)	(7,197,653.65)
	26,157,072.70	**26,157,072.70**
2009 Re-Valuation		
Buildings	102,685,356.82	102,685,356.82
	128,842,429.52	**128,842,429.52**

INDUSTRIAL TECHNOLOGY INSTITUTE (SUCCESSOR TO CISIR)
NOTES TO STATEMENT OF INCOME
FOR THE REPORTING PERIOD ENDED 31ST, DECEMBER 2012

	2012	
Revenue (Note - 7A)	**Rs. Cts.**	**Rs. Cts.**
Income -Standard Services	124,381,992.00	
Less: Refund of paid Customer Invoice	167,820.00	124,214,172.00
Income -Consultancy Service		10,089,589.20
Income-Technology Transfer		1,889,601.00
Income-Contract Projects	15,623,937.00	
Less: Expenditure - Sub Contract Projects	7,542,000.00	8,081,937.00
Income-Customised Services		10,090,244.89
Income-Training		4,016,222.00
Royalty Received ITI		962,189.00
		159,343,955.09

Other Income (Note - 7B)		
Other Operating Income		
Income-Library	370,565.00	
Income - Other / General	8,979,671.11	9,350,236.11

Other Non Operating Revenue		
Interest on Loan	777,504.71	
Interest on Investments (Projects Funds,Gratuvity, LC Dposit)	17,111,787.99	
ITI Project Contribution	163,450.00	
Income - % of Consultancy Fee	10,500.00	
Income from Sale of Assets	60,360.00	
Exchange Gain & losses	1,639,495.43	19,763,098.13
		29,113,334.24

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கணக்காய்வாளர் தலைமை அதிபதி திணைக்களம்
AUDITOR GENERAL'S DEPARTMENT

මගේ අංකය எனது இல. My No	LS/E/ITI/ FA/2012	ඔබේ අංකය உமது இல Your No.		දිනය திகதி Date	30 October 2013

The Chairman
Industrial Technology Institute

Report of the Auditor General on the Financial Statements of the Industrial Technology Institute for the year ended 31 December 2012 in terms of Section 14(2)(c) of the Finance Act. No. 38 of 1971.

The audit of financial statements of the Industrial Technology Institute for the year ended 31 December 2012 comprising the statement of financial position as at 31 December 2012 and the comprehensive statement of income, statement of changes in equity and cash flow statement for the year then ended and a summary of significant accounting policies and other explanatory information was carried out under my direction in pursuance of provisions in Article 154(1) of the Constitution of the Democratic Socialist Republic of Sri Lanka read in conjunction with Section 13(1) of the Finance Act No. 38 of 1971 and Section 40 of Part VII of the National Science and Technology Development Act No. 11 of 1974. My comments and observations which I consider should be published with the Annual Report of the Institute in terms of Section 14(2)(c) of the Finance Act appear in this report. A detailed Report in terms of Section 13(7)(a) of the Finance Act was furnished to the Chairman of the Institute on 07 June 2013.

1.2 Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Generally Accepted Accounting Principles and for such internal control as the management determines is necessary to enable the preparation of financial statements that are free from material misstatements, whether due to fraud or error.

අංක 306/72 පොල්දූව පාර,
බත්තරමුල්ල , ශ්‍රී ලංකාව
இல. 306/72, பொல்துவ வீதி,
பத்தரமுல்லை இலங்கை
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1.3 Auditor's Responsibility

My responsibility is to express an opinion on these financial statements based on my audit. I conducted my audit in accordance with Sri Lanka Auditing Standards. Those Standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatements.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatements of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Institute's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of financial statements. Sub - sections (3) and (4) of Section 13 of the Finance Act, No. 38 of 1971 give discretionary powers to the Auditor General to determine the scope and extent of the audit.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my qualified audit opinion.

1.4 Basis for Qualified Audit Opinion

My opinion is qualified based on the matters described in paragraph 2.2 of this report.

2. Financial Statements

2.1 Qualified Opinion

In my opinion, except for the effects of the matters described in paragraph 2:2 of this report, the financial statements give a true and fair view of the financial position of Industrial Technology Institute as at 31 December 2012 and its financial performance and cash flows for the year then ended in accordance with Generally Accepted Accounting Principles.

2.2 Comments on Financial Statements

2.2.1 Accounting Deficiencies

Following observations are made.

(a) Contrary to the provisions of the Gratuity Payments Act, a sum of Rs.227,056 had been provided as Gratuity Payments for 35 officers who had not completed a service period of one year, thereon the surplus of the year under review and liabilities as at 31 December 2012 are under and over stated by a same amount respectively.

(b) Gratuity allowances payable to a retired officer in the year under review amounting to Rs.774,758 had not been accounted, thereon the surplus for the year under review and liabilities as at 31 December 2012 are under and over stated by a same amount respectively.

(c) Royalty Income had not been accounted on Accrued Basis. Accordingly, the income received in the year under review for preceding years amounting to Rs.264,577 had been accounted as the income of the year under review and income receivable of Rs.579,729 for the year under review had not been accounted , thereon the surplus of the year under review is under stated by Rs.315,152 while the assets as at 31 December 2012 is under stated by Rs.579,729.

(d) The depreciation of Rs.166,493 relevant to the year under review on Property, Plant and Equipment costing Rs.1,959,380 received from Bio Technology unit on 24 February 2012 had not been accounted, thereon the surplus of the year under review and the assets as at 31 December 2012 are over stated by same amount.

(e) The assets received as donations and grants had not been amortized correctly as per their useful life time, thereon the assets and grants as at 31 December 2012 are over stated by Rs.5,002,208.

(f) An amount of Rs.15,226,646 had been adjusted as amortization of assets received as government grants relevant to the year 2011, instead of Rs.19,527,723 which should have to be adjusted, thereon government grants and surplus of the preceding year are over and under stated by Rs.4,301,077 respectively.

2.2.2 Unexplained Differences

Following observations are made.

(a) Although the Gratuity allowances paid during the year under review was Rs.8,881,200, an amount of Rs.9,307,648 had been debited to the Provision for Gratuity Allowances Account. Acceptable reasons for the difference of Rs.426,448 had not been rendered.

(b) The value of the consumable goods stock had been accounted as Rs.12,417,303 as at 31 December 2012. However, according to the Physical Stock Verification Reports, its value was Rs.12,132,037. Acceptable reasons for the difference of Rs.285,276 had not been rendered.

2.2.3 Accounts Receivable and Payable

Following observations are made.

(a) Although 05 debtors balances totalling Rs.301,307 had been revealed under Accounts Receivable, it was proved that there were no such balances as per the direct balance confirmations received from the debtors. In addition, the confirmation letters which were forwarded to confirm 03 debtors balances totalling Rs.256,193 had been returned to the Institute.

(b) As per the Order No.16 of the Committee on Public Enterprises held on 30 May 2011, action had not been taken to recover a sum of Rs.4,069,011 due from 18 officers who had breached the conditions of the contracts on Foreign Scholarships. Moreover, a lady officer who had gone abroad in 2009, had not reported to the service even by 31 December 2012 breaching the conditions of the contract, thereon action had not been taken to recover a sum of Rs.3,789,640 due from her.

(c) Action had not been taken to recover the money from the debtors relating to a balance of Rs.71,000 and cheques dishonored and returned in a few preceding years amounting to Rs.546,796.

2.2.4 Lack of Evidence for Audit

Following items could not be vouched in audit due to lack of evidences stated in front.

Subject	Value	Evidences not rendered
	Rs.	
Money deposited with external parties to be supplied for various services	1,760,470	Receipts or other written evidences
Research and development allowances paid during the year under review	3,107,917	Reports including approved project proposals
Accrued expenditure and creditors more than 05 years	249,053	Written evidences for verification

2.2.5 Non-compliance with Laws, Rules, Regulations and Management Decisions

Contrary to the provisions in the Finance Act No.38 of 1971, approval had not been taken for the investment of total value of Rs.270,226,000. Further, the components of the investment had not been revealed clearly.

2.2.6 Transactions not Supported by Adequate Authority

Bad debts of Rs.2,433,165 had been written off and creditors balances amounting to Rs.6,188,759 had been taken to the income without a decision of Board of Directors.

3. Financial Review

3:1 Financial Results

According to the financial statements presented, the results of operating activities of the Institute for the year under review, before taking into account the Government grant for recurrent expenditure had resulted in a deficit of 146,371,557 as compared with the deficit of Rs.102,795,322 for the preceding year. Financial results of the year under review after taking into account the Government grant of Rs.169,000,000 for recurrent expenditure, had resulted in a surplus of 22,628,443 as compared with the surplus of Rs.59,318,986 in the financial results for the preceding year. As such, it was observed a decrease in the financial results for the year under review by Rs.36,690,543 as compared with the preceding year.

Total income earned from the operating activities of the Institute was Rs.418,184,465 for the year under review compared with the income of Rs.446,119,776 for the preceding year.

4. Operating Review

4.1 Performance

Progress of the Projects

(a) There were considerable delays in physical progress of 02 projects which had been established on Treasury allocations described below.

No of the Project	Date of Establishment	Due Date to be completed	Time Spent as at 31 December 2012	Physical Progress as at 31 December 2012
				Percentage
TG/24	May 2011	May 2014	18 Months	10
TG/36	August 2011	August 2013	16 Months	15

(b) The time period had been extended by 09 months of 03 Projects established prior to a year with an aim to finish in the month of June 2012. Although they should have been finished in March 2013, those projects had not been over even by 31 March 2013.

(c) Action had not been taken to even start works of 03 projects costing Rs.1,600,000 during the year under review.
The Chairman of the Institute had informed the reason for that was the delay in receiving imprests from the Treasury.

(d) The Project numbered FP/83 with an aim to finish within 03 years had been established in March 2009 and its physical progress as at 31 December 2012 was 60 per cent as per the Progress Reports prepared by the Institute. However, the works of the project had been deactivated since 01 January 2012 due to stoppage of funds by funds supplying institutions because of the problems raised in conducting the project.

4.2 Management Inefficiencies

Following observations are made.

(a) Action had not been taken to recover royalty to be computed on production levels as per the audited financial statements of 04 institutions, while the income received from those 04 institutions had only been accounted and action had not been taken to compute, account and to recover the outstanding income and penalties as per the contracts made with those institutions.

(b) Although the Institute is free from taxes, action had not been taken to release the Withholding Tax charged on Fixed Deposit Interest.

4.3 Idle and Under-utilized Assets

The Staff Activity Fund amounting to Rs.1,179,928 had not been utilized on any function.

5. Systems and Controls

Deficiencies observed during the course of audit were brought to the notice of the Chairman from time to time. Special attention is needed in respect of the following areas of control.

(a) Foreign Scholarships and Foreign Travelling
(b) Debtors and Creditors
(c) Purchases
(d) Petty Cash
(e) Salary Payments

W.P.C. Wickramarathne
Acting Auditor General.

Auditor General's Report on the Financial Statements of Industrial Technology Institute
for the year ended 31, December 2012 as per Section 14.2 (c) of the Finance Act No. 38 of 1971

Item Reference. of AG's Report	Description/Comments of the Auditor General's Report	ITI Observations, Comments and Proposed Action for rectification of Audit Comments
2.2.	**Comments on Financial Statements**	
2.2.1.	**Accounting Deficiencies** Following observations are made	
(a)	Contrary to the provisions of the Gratuity Payments Act, a sum of Rs. 227,056 had been provided as Gratuity Payments for 35 officers who had not completed a service period of one year, thereon the surplus of the year under review and liabilities as at 31 December 2012 are under and over stated by the same amount respectively.	Noted and necessary action will be taken to apply the correct provision for year 2013.
(b)	Gratuity allowances payable to a retired officer in the year under review amounting to Rs. 774,758 had not been accounted, thereon the surplus for the year under review and liabilities as at 31 December 2012 are under and over stated by a same amount respectively.	Necessary decision regarding extension of service of this officer was taken in year 2013. However, necessary action will be taken to avoid this type of mistakes.

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Item Reference. of AG's Report	Description/Comments of the Auditor General's Report	ITI Observations, Comments and Proposed Action for rectification of Audit Comments
(c)	Royalty Income had not been accounted on Accrued Basis. Accordingly, the income received in the year under review for preceding years amounting to Rs. 264,577 had been accounted as the income of the year under review and income receivable of Rs. 579,729 for the year under review had not been accounted, thereon the surplus of the year under review is under stated by Rs. 315,152 while the assets as at 31 December 2012 is under stated by Rs. 579,729.	Action will be taken to account on accrued basis in future
(d)	The depreciation of Rs. 166,493 relevant to the year under review on Property, Plant and equipment costing Rs. 1,959,380 received from Bio Technology unit on 24 February 2012 had not been accounted, thereon the surplus of the year under review and the assets as at 31 December 2012 are over stated by same amount.	As these donations were taken into accounts on 31, December 2012, provision for depreciation was not done for the year under review. Action will be taken to avoid this type of lapses in future
(e)	The assets received as donations and grants had not been amortized correctly as per their useful life time, thereon the assets and grants as at 31, December 2012 are over stated by Rs. 5,002,208.	This has not occurred during the year 2012, but has been continued from many years. However, errors have been rectified by a considerable amount in year 2012 and the rest will be rectified in year 2013.
(f)	An amount of Rs. 15,226,646 had been adjusted as amortization of assets received as government grants relevant to the year 2011, instead of Rs. 19,527,723 which should have to be adjusted, thereon government grants and surplus of the preceding year are over and under stated by Rs. 4,301,077 respectively.	Action will be taken to make the adjustment for year 2013.

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Item Reference. of AG's Report	Description/Comments of the Auditor General's Report	ITI Observations, Comments and Proposed Action for rectification of Audit Comments
2.2.2.	**Unexplained Differences** Following observations are made.	
(a)	Although the Gratuity allowances paid during the year under review was Rs. 8,881,200, an amount of Rs. 9,307,648 had been debited to the Provision for Gratuity Allowances Account. Acceptable reasons for the difference of Rs. 426,448 had not been rendered.	Gratuity paid during the year is Rs. 8.881,200. Difference stated is the amount which had been carried forward from years back and effort would be made to rectify the error in future.
(b)	The value of the consumable goods had been accounted as Rs. 12,417,303 as at 31 December 2012. However, according to the Physical Stock Verification Reports, its value was Rs. 12,132,037. Acceptable reasons for the difference of Rs. 285,276 had not been rendered.	The differences of opening balances have been continued from many years and efforts will be taken to reconcile the balances.
2.2.3.	**Accounts Receivable and Payable** Following observations are made	
(a)	Although 05 debtors balances totaling Rs. 301,307 had been revealed under Accounts Receivable, it was proved that there were no such balances as per the direct balance confirmations received from the debtors. In addition, the confirmation letters which were forwarded to confirm 03 debtors balances totaling Rs. 256,193 had been returned to the Institute.	This situation has occurred due to duplication of balances at the time of changing the accounting system. Efforts will be taken to reconcile the accounts.

Auditor General's Report on the Financial Statements of Industrial Technology Institute
for the year ended 31, December 2012 as per Section 14.2 (c) of the Finance Act No. 38 of 1971

Item Reference. of AG's Report	Description/Comments of the Auditor General's Report	ITI Observations, Comments and Proposed Action for rectification of Audit Comments
(b)	As per the Order No. 16 of the Committee on Public Enterprises held on 30 May 2011, action had not been taken to recover a sum of Rs. 4,069,011 due from 18 officers who had breached the conditions of the contracts on Foreign Scholarships. Moreover, a lady officer who had gone abroad in 2009, had not reported to the service even by 31 December 2012 breaching the conditions of the contract, thereon action had not been taken to recover a sum of Rs. 3,789,640 due from her.	Actions were taken to recover these amounts and only a few have responded. This matter was discussed at the COPE in many occasions and directed to take necessary action to clear the accounts. A new Agreement with strict conditions have been introduced to have a better control over officers who go abroad at present.
(c)	Action had not been taken to recover the money from the debtors relating to a balance of Rs. 71,000 and cheques dishonoured and returned in a few preceding years amounting to Rs. 546,796.	Recovery of Rs. 71,000 paid as an advance to a software vendor was a failure as he is not alive. Dishonoured cheques had been continued from many years back for which documentary evidence cannot be traced at present.
2.2.4.	**Lack of Evidence for Audit** Following items could not be vouched in audit due to lack of evidences stated in front.	
	Subject / **Value Rs.** / **Evidence not rendered**	Some of deposit receipts are available and could be produced for audit but some are not available which are very old. However these deposits have been recorded in the ledger.
	Money deposited with external parties to be supplied for various services — 1,760,470 — Receipts or other written evidence	
	Research and Development allowances paid during the year under review — 3,107,917 — Reports including approved project proposals	As these projects have been approved by the Ministry, relevant payments have been made as Research allowances. Relevant documents are available for audit.
	Accrued expenditure and creditors more than 05 years — 249,053 — Witten evidences for verification	These balances are very old. Action will be taken to obtain confirmations from the stated creditors in year 2013.

Auditor General's Report on the Financial Statements of Industrial Technology Institute
for the year ended 31, December 2012 as per Section 14.2 (c) of the Finance Act No. 38 of 1971

Item Reference. of AG's Report	Description/Comments of the Auditor General's Report	ITI Observations, Comments and Proposed Action for rectification of Audit Comments
2.2.5.	**Non-compliance with Laws, Rules, Regulations and Management Decisions** Contrary to the provisions in the Finance Act No. 38 of 1971, approval had not been taken for the investment of total value of Rs. 270,226,000. Further, the components of the investment had not been revealed clearly.	Rs.100 million has been deposited as provision for Gratuity with the concurrence of the General Treasury. Balance deposit is for the working capital of the Institute (as per Public Enterprises Circular 56) and for the construction work of the Modern Research Complex at Malambe
2.2.6.	**Transactions not supported by adequate authority** Bad debts of Rs. 2,433,165 had been written off and creditors balances amounting to Rs. 6,188,759 had been taken to the income without a decision of Board of Directors.	These balances are very old and duplicate entries. This matter was discussed at the Audit Committee and was written-off from the books.
3.	**Financial Review**	
3.1	**Financial Results** According to the financial statements presented, the results of operating activities of the Institute for the year under review, before taking into account the Government grant for recurrent expenditure had resulted in a deficit of Rs. 146,371,557 as compared with the deficit of rs. 102,795,322 for the preceding year. Financial results of the year under review after taking into account the Government grant of Rs. 169,000,000 for recurrent expenditure, had resulted in a surplus of Rs. 22,628,443 as compared with the surplus of Rs. 59,318,986 in the financial results for the preceding year. As such, it was observed a decrease in the financial results for the year under review by Rs. 36,690,543 as compared with the preceding year. Total income earned from the operating activities of the Institute was Rs. 418,184,465 for the year under review compared with the income of Rs. 446,119,776 for the preceding year.	No further comments to be stated

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Item Reference. of AG's Report	Description/Comments of the Auditor General's Report	ITI Observations, Comments and Proposed Action for rectification of Audit Comments
4.	**Operating Review**	
4.1.	**Performance**	
	Progress of the Projects	
(a)	There were considerable delays in physical progress of 02 projects which had been established on Treasury allocations described below.	
	No. of Projects / Date of Establishment / Due date to be completed / Time spent as at 31, Dec. 2012 / Physical progress as at 31, Dec. 2012 Percentage	**TG 11/24** This is a 03 year project of which 08 months have been completed. Activities of this project will be commenced as soon as a Research Scientist is recruited.
	TG/24 — May 2011 — May 2014 — 18 months — 10	
	TG/36 — August 2011 — August 2013 — 16 months — 15	**TG 08/36**. Due to practical and scientific/analytical constraints activities of the project were stopped temporarily and had commenced again from May 2013.
(b)	The time period had been extended by 09 months of 03 Projects established prior to a year with an aim to finish in the month of June 2012. Although they should have been finished in March 2013, those projects had not been over even by 31, March 2013.	As the project needed chemicals and equipment of high technology, due to delays in obtaining funds from the General Treasury the activities of the project were delayed. However these projects are in progress in 2013.

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Item Reference. of AG's Report	Description/Comments of the Auditor General's Report	ITI Observations, Comments and Proposed Action for rectification of Audit Comments
(c)	Action had not been taken to even start works of 03 Projects costing Rs. 1,600,000 during the year under review. The Chairman of the Institute had informed the reason for that was the delay in receiving imprests from the Treasury.	These Projects had to be stopped due to delays in receiving funds from the General Treasury
(d)	The Project numbered FP/83 with an aim to finish within 03 years had been established in March 2009 and its physical progress as at 31, December 2012 was 60 per cent as per the Progress Reports prepared by the Institute. However, the works of the projects had been deactivated since 01, January 2012 due to stoppage of funds by funds supplying institutions because of the problems raised in conducting the project.	The project had to be stopped as the funding agency did not release funds for activities of the project.
4,2.	**Management Inefficiencies** Following observations are made.	
(a)	Action had not been taken to recover royalty to be computed on production levels as per the audited financial statements of 04 institutions, while the income received from those 04 institutions, had only been accounted and action had not been taken to compute, account and to recover the outstanding income and penalties as per the contracts made with those institutions.	Action will be taken to recover the royalty payment at the due period of time and efforts will be made to obtain income reports relevant to same.
(b)	Although the Institute is free from taxes, action had not been taken to release the Withholding Tax charged on Fixed Deposit Interest.	Action will be taken to look into opportunities in getting an exemption from tax binding on Withholding Tax.

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Item Reference. of AG's Report	Description/Comments of the Auditor General's Report	ITI Observations, Comments and Proposed Action for rectification of Audit Comments
4.3.	**Idle and Under-utilized Assets**	
	The Staff Activity Fund amounting to Rs. 1,179,928 had not been utilized on any functions.	Activities have been done from this fund in year 2013
5.	**Systems and Controls**	
	Deficiencies observed during the course of audit were brought to the notice of the Chairman from time to time. Special attention is needed in respect of the following areas of control. (a) Foreign Scholarships and Foreign Travelling (b) Debtors and Creditors (c) Purchases (d) Petty Cash (e) Salary Payments	Action will be taken to eliminate the shortcomings of relevant areas in future
	Sgd. W.P.C. Wickramarathne **Acting Auditor General**	**Sgd. Prof. W. Abeywikrama** **Chairman**