



கீழ்க்கண்ட அமைச்சு  
கைத்தொழில் அமைச்சு  
Ministry of Industries



# Industrial Technology Institute

## Performance Analysis Report

# Industrial Technology Institute (ITI)

## 1.0 Introduction

The Industrial Technology Institute (ITI) is a statutory board, which came into existence on 01<sup>st</sup> April 1998 under the Science and Technology Act No. 11 of 1994. ITI is the successor to the Ceylon Institute of Scientific and Industrial Research (CISIR), which was established in 1955 under the Parliament Act no 15 of 1955 (CISIR Act) to support Industrial Development in the country. The ITI is the government-owned country's leading and largest scientific R&D and service organization with a complement of multi-scientific staff.



**ITI, Bauddhaloka Mawatha, Colombo 07**



**ITI, Vidya Mawatha, Colombo 07**



**Modern Research and Development Complex, Malabe**

ITI is the Center of Excellence of the Commission on Science & Technology for Sustainable Development in the South (COMSATS) in Sri Lanka and the focal point of the World Association of Industrial and Technological Research Organization (WAITRO) and International Bamboo and Rattan Organization (INBAR) and conducts joint activities with international entities including United Nations Industrial Development Organization (UNIDO), United Nations Development

Programme (UNDP), Japan International Cooperation Agency (JICA), Food and Agriculture Organization (FAO), International Finance Corporation (IFC), UK Center of Environment, Fisheries and Aquaculture Science (Cefas), and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

The Institute's core business is the promotion of industrial development through Research & Development, consultancy, technology transfer, training and the provision of testing and calibration services. The accredited laboratories and other laboratories are equipped with state-of-the-art instruments. The Institute has a total permanent staff of 439 including Research Scientists, Research Engineers and Research Technologists with diverse expertise in multidisciplinary areas.

### **Vision and Mission**

**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.

### **Functions and Objects**

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 and in furtherance of this object. Its functions shall be;

- a. To support the industry by
  - I. Undertaking contract, testing, investigation and research, for improving product quality, technical processes and methods used in the industry, and for discovering new processes and methods to be used in the industry;
  - II. Providing technical services and consultancies; and
  - III. Engaging in activities connected with technology transfers, the adaptation of technologies and the development of new technologies;
- b. To conduct research with a view to accelerating industrial technology development;
- c. To collect, process and disseminate useful technical information, in particular on “Shelf Technology” with a view to accelerating industrial development;
- d. To undertake the training of persons in areas related to the experience of the Technology Institute;
- e. To undertake or collaborate in the survey and monitoring of environmental pollution and to recommend remedial measures to mitigate such pollution;
- f. To co-operate with government departments and institutions, universities, technical colleges and other bodies in demand-driven research to promote industrial technology development.

## **ITI Quality Policy**

The Management of the Industrial Technology Institute is unreservedly committed to maintaining the ISO 17025 Quality Management System for 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.

## **ITI Quality Infrastructure**

The Industrial Technology Institute is unreservedly committed to maintaining the ISO 17025:2017 Laboratory Quality Management System for Testing and Calibration services and ISO 9001:2015 Quality Management System Certification for Research & Development Division and Information Services Center in keeping with the National Quality Policy, thus providing customers with services of the highest professional standards. The testing and Calibration services laboratories are accredited for over 600 parameters by the Sri Lanka Accreditation Board (SLAB), KRISS, South Korea and PTB Germany. The ITI is the first laboratory for ISO 17043:2010 accreditation as a Proficiency Testing (PT) provider and work is in progress to obtain ISO 17034:2016 for Reference material (chemical) and ISO 17065, product certification for lubricant oil.

ITI grouped its Technical Divisions into Research & Development and Technical Services.

The Research and Development Division consists of;

- Herbal Technology Section (HTS)
- Food Technology Section (FTS)
- Biotechnology Section (BTS)
- Environment Technology Section (ETS)
- Materials Technology Section (MTS)
- Techno Entrepreneur Development, Manufacturing and Logistics Management Department (TMLD)

Research and Development Division carry out demand-driven, national-importance high-tech research in multidisciplinary fields through state-of-art R&D laboratories at Modern Research and Development Complex, Malabe and Colombo facility. Research & Development Division provides solution-focused innovations and engages in activities connected with technology transfer, the adaptation of technologies and the development of new technologies for industrial promotion and Entrepreneurship development targeting the Micro, Small, and Medium Entrepreneurs (MSME), Startups, Women Enterprises and Small Businesses. The Institute is a key technology provider in the country to enhance Export Industry and for import alternatives and domestic value addition.



The Technical Services Division consists of;

- Chemical and Microbiological Laboratory (CML)
- Residue Analysis Laboratory (RAL)
- Industrial Metrology Laboratory (IML)
- Electro Technology Laboratory (ETL)
- Materials Laboratory (ML)
- Pharmaceutical Laboratory (PL)
- Petroleum and Lubricant Testing Laboratory (PLTL)

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

ITI contributes to National issues through testing, consultancy and R&D in multidisciplinary fields and undertakes and collaborates in national development projects, especially in Power and Energy, roads, Highways and Rail Sectors and in the survey and monitoring of environmental pollution and recommendations for remedial measures to mitigate such pollution.

## 2.0 Financial progress from 2017 to 2022

Table 1 describes the gross profit and net performance of the institute from 2017 to 2022.

**Table 1: Gross Profits and net performance from 2017 to 2022**

	2017 Rs Mn	2018 Rs Mn	2019 Rs Mn	2020 Rs Mn	2021 Rs Mn	2022 Rs Mn
Operating Income	304.22	323.90	334.67	284.21	347.42	368.61
Government Recurrent Grants	240.00	240.00	250.00	270.33	279.80	290.00
<b>Total Income</b>	<b>544.22</b>	<b>563.90</b>	<b>584.67</b>	<b>554.54</b>	<b>627.22</b>	<b>658.61</b>
<b>Direct Cost</b>						
Personnel Emolument	300.26	300.34	300.37	325.43	337.15	381.85
Travelling	13.57	10.35	11.05	1.85	7.01	9.91
Supplies and Consumable	33.50	30.90	36.09	33.66	36.75	49.34

	<b>2017 Rs Mn</b>	<b>2018 Rs Mn</b>	<b>2019 Rs Mn</b>	<b>2020 Rs Mn</b>	<b>2021 Rs Mn</b>	<b>2022 Rs Mn</b>
Maintenance	24.50	41.89	38.67	38.76	31.14	37.35
Contractual Expenses	56.31	59.52	59.12	58.10	49.14	49.39
Other Operating Expenses	52.55	42.36	59.20	39.85	53.44	20.34
<b>Total Direct Cost</b>	<b>480.68</b>	<b>485.35</b>	<b>504.51</b>	<b>497.64</b>	<b>514.63</b>	<b>548.16</b>
<b>Gross Profits</b>	<b>63.54</b>	<b>78.55</b>	<b>80.16</b>	<b>56.90</b>	<b>112.59</b>	<b>110.45</b>
Administration Cost	68.04	66.17	84.22	67.94	64.91	82.93
<b>Net Performance</b>	<b>(4.50)</b>	<b>12.38</b>	<b>(4.06)</b>	<b>(11.04)</b>	<b>47.68</b>	<b>27.51</b>

Table 2 describes the forecasted values of the institute for 2023 to 2025.

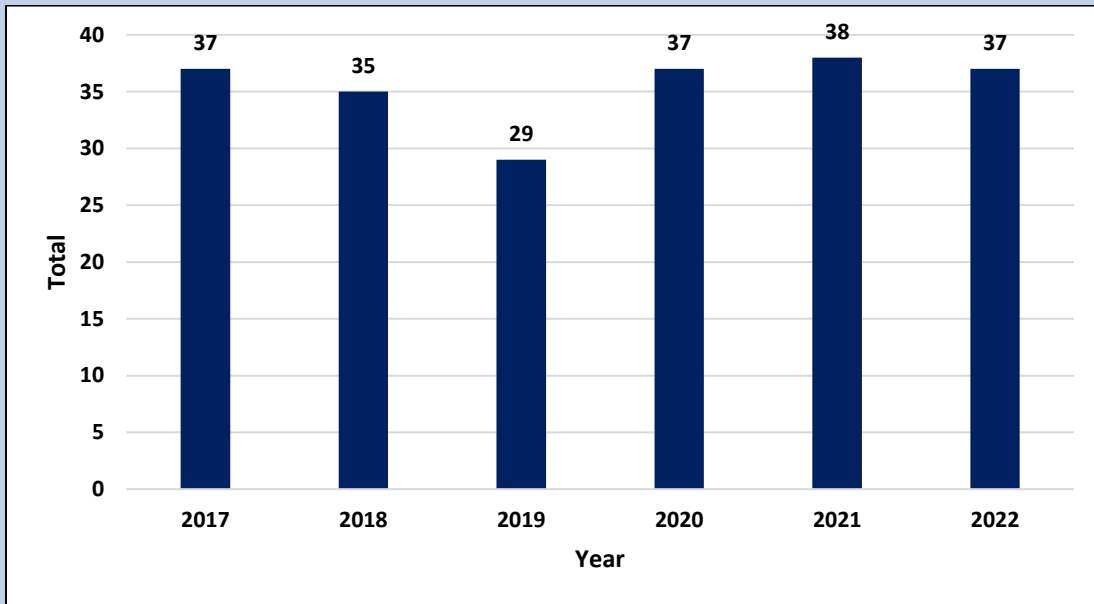
**Table 2: Forecasted Financial Status for 2023 to 2025**

	<b>2023 Rs Mn</b>	<b>2024 Rs Mn</b>	<b>2025 Rs Mn</b>
Operating Income	420	480	540
Recurrent Grant	500	510	520
<b>Total Income</b>	<b>920</b>	<b>990</b>	<b>1060</b>
Total Direct Cost	773	827	885
<b>Gross Profit</b>	<b>147</b>	<b>163</b>	<b>175</b>
Administration Expenses	90	95	100
<b>Net Performance</b>	<b>57</b>	<b>68</b>	<b>75</b>

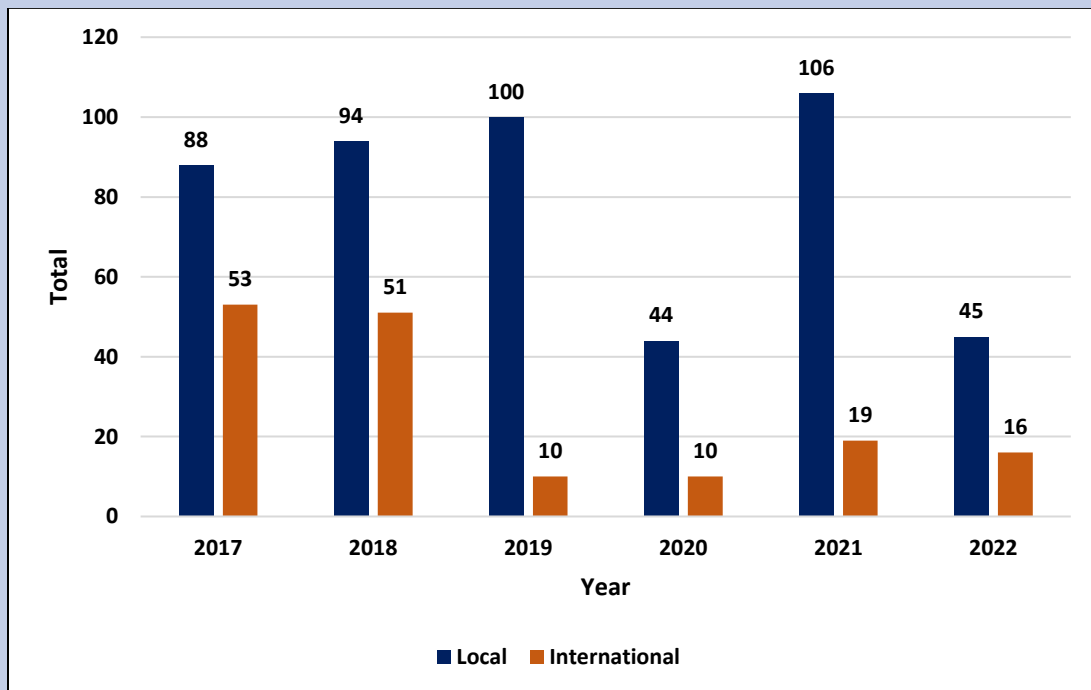
## Non-financial progress from 2017 to 2022

The following figures (1 to 5) describe the non-financial progress of journal publications, abstracts, extended abstracts, patents, awards and accredited test parameters of the institute from 2017 to 2022.

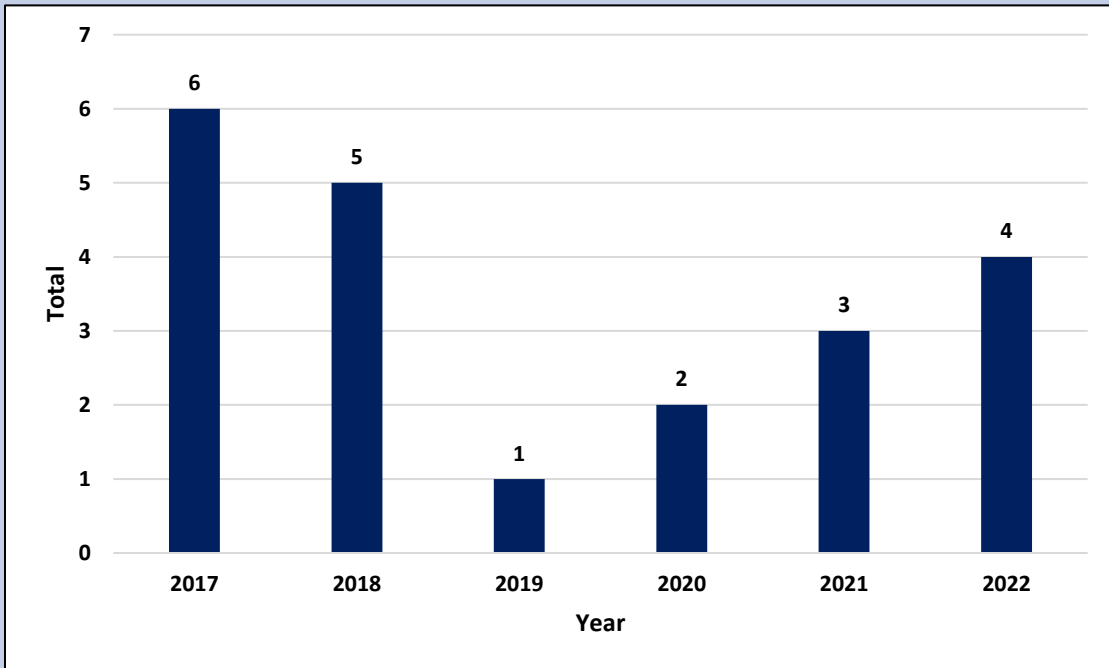
**Figure 1: Publications in SCI, SCI expanded and other referred journals from 2017 to 2022**



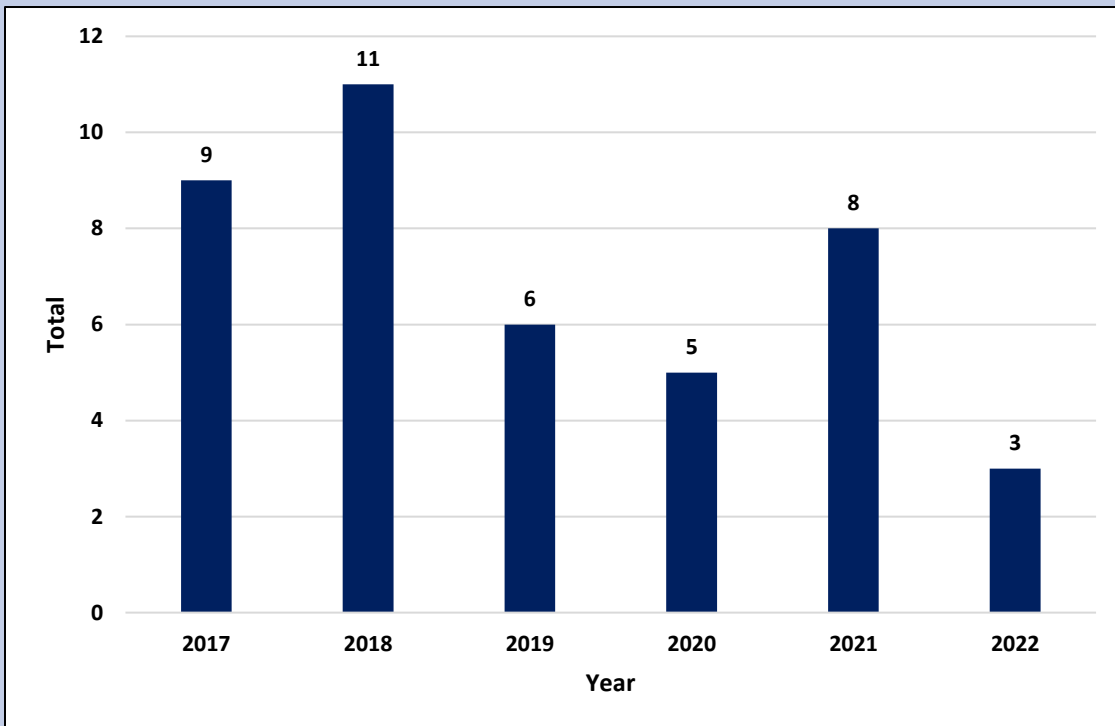
**Figure 2: Extended abstracts and abstracts in a symposium from 2017 to 2022**



**Figure 3: Patents from 2017 to 2022**

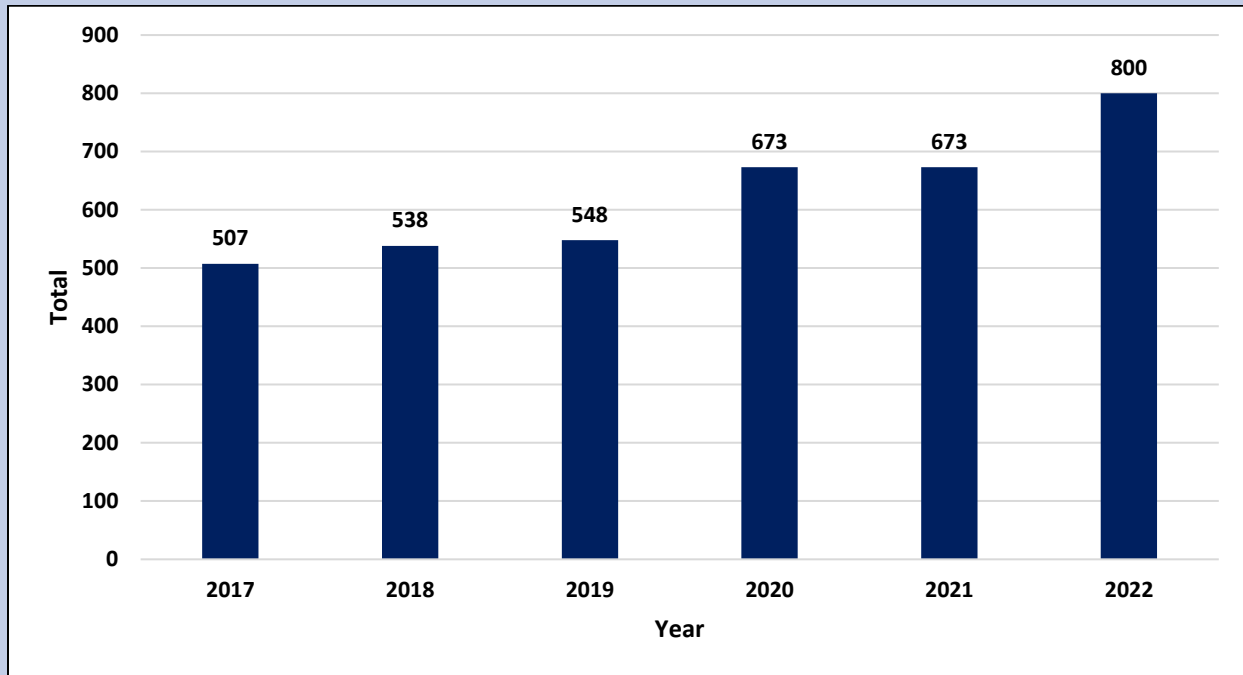


**Figure 4: Awards from 2017 to 2022**

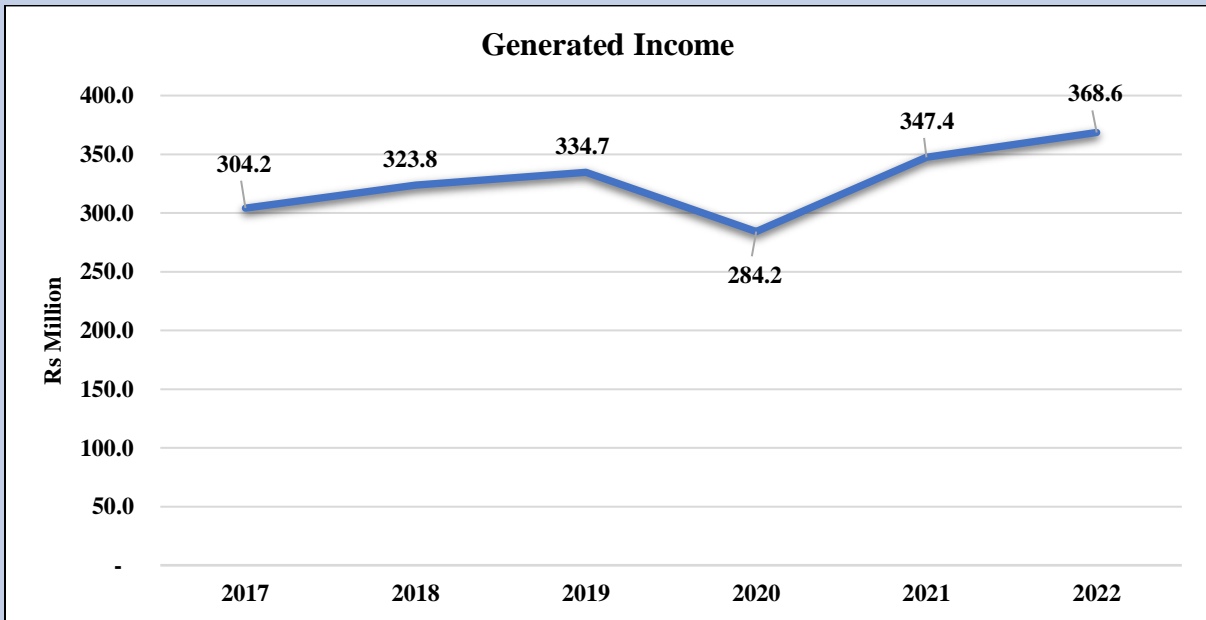




**Figure 5: Accredited Test Parameters (Accumulated)**



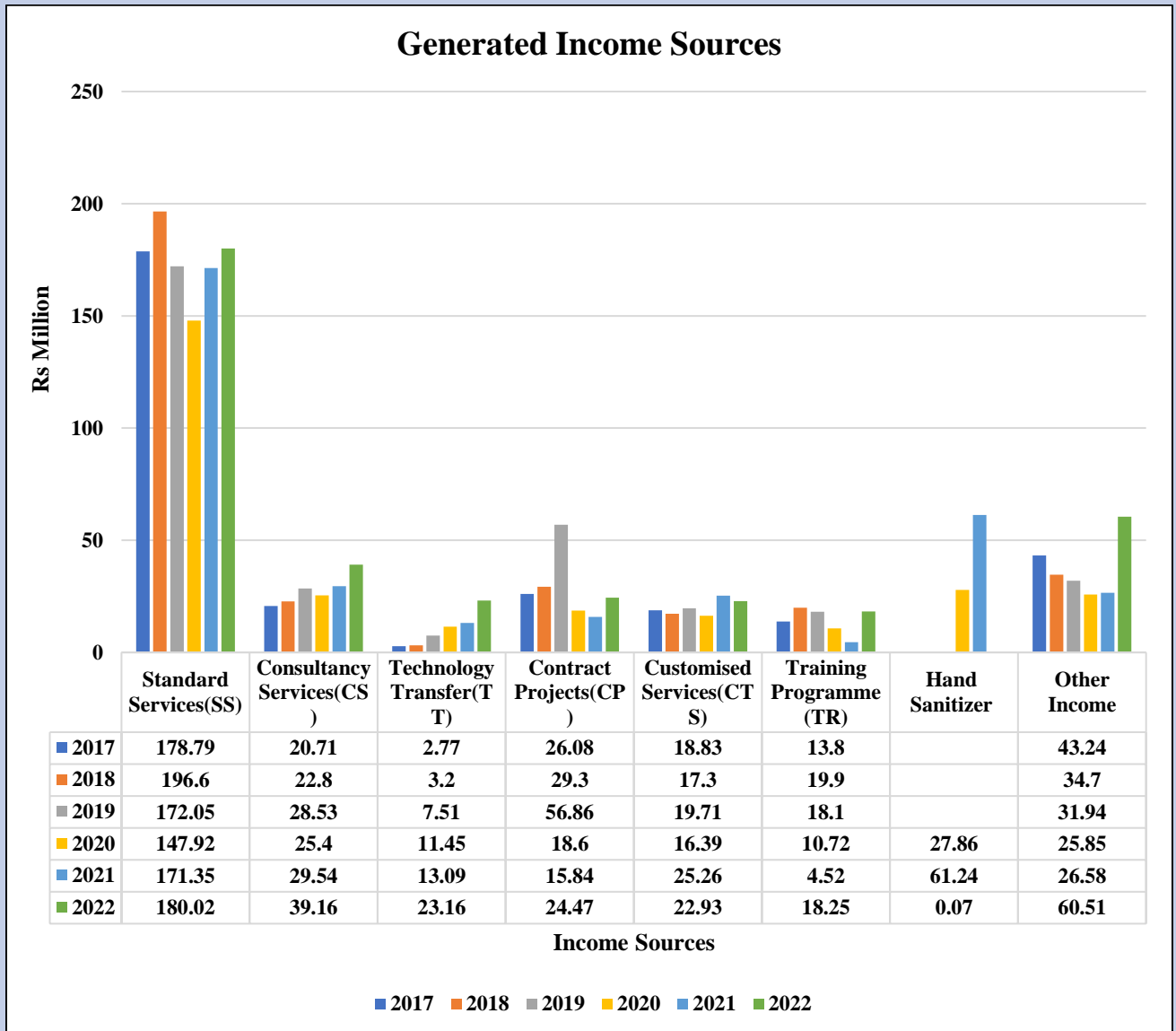
### 3.0 Financial progress from 2017 to 2022



**Figure 6: Analysis of generated income from 2017 to 2022**

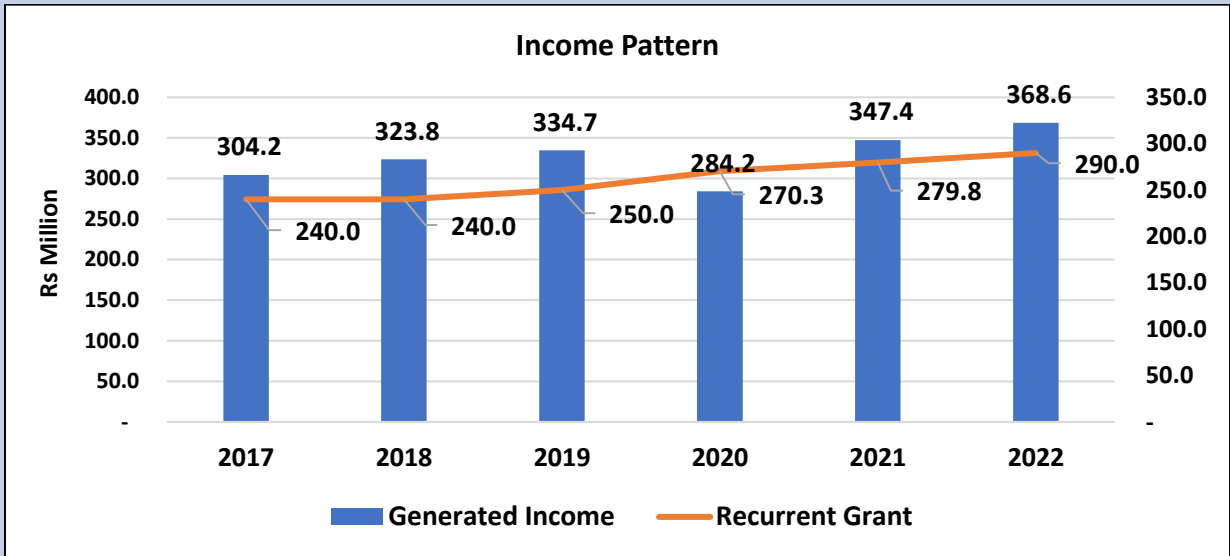
During the period from 2017 to 2022, the institute experienced growth in Generated Income, Gross Profit and Net Performance (Table 1 and Figure 6). The institute's Generated Income consistently increased except in 2020 (Rs 284.21 Mn) due to the COVID-19 pandemic situation in the country, indicating good revenue generation and effective cost management (Figure 6).

Figure 7: Analysis of income sources from 2017 to 2022



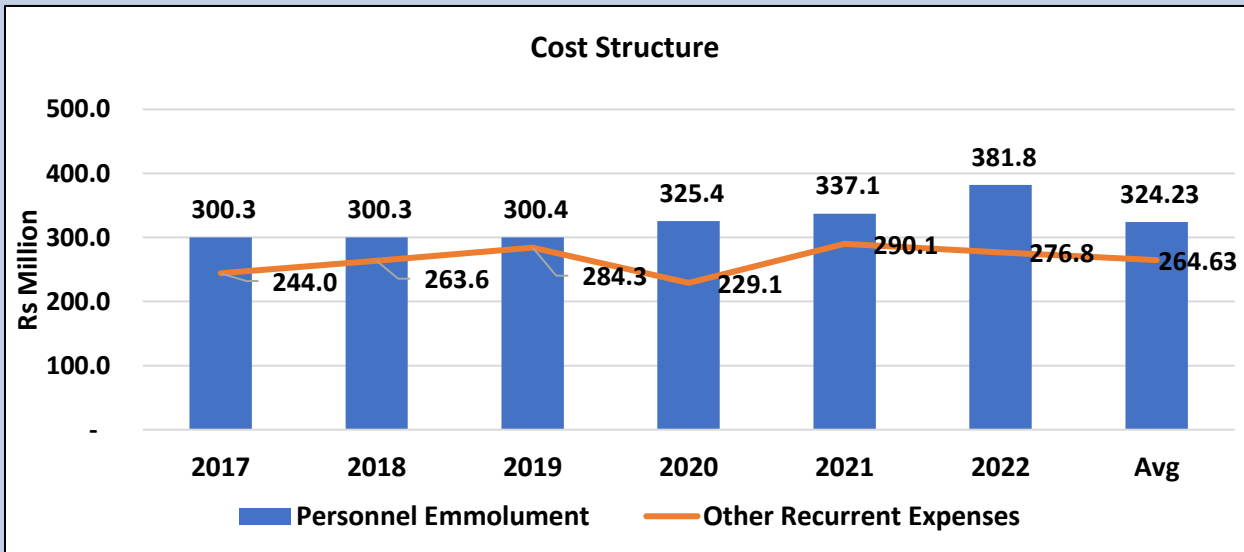
ITI sales parameters details are stated in Figure 7 where the major income source of Standard Services and Consultancy services gradually increased from 2017 to 2022 except in 2020 and in driving the institute's revenue generation. Despite the COVID-19 pandemic, a major business source, Standard Test Services has remained largely unaffected while the institute proactively explored alternative avenues to generate income. This included adapting to the changing demands of the market and as a result, the Hand Sanitizer manufacturing project generated increased revenue in 2020 (Rs 27.86 Mn) and 2021 (Rs 61.24 Mn).

**Figure 8: Analysis of income pattern from 2017 to 2022**



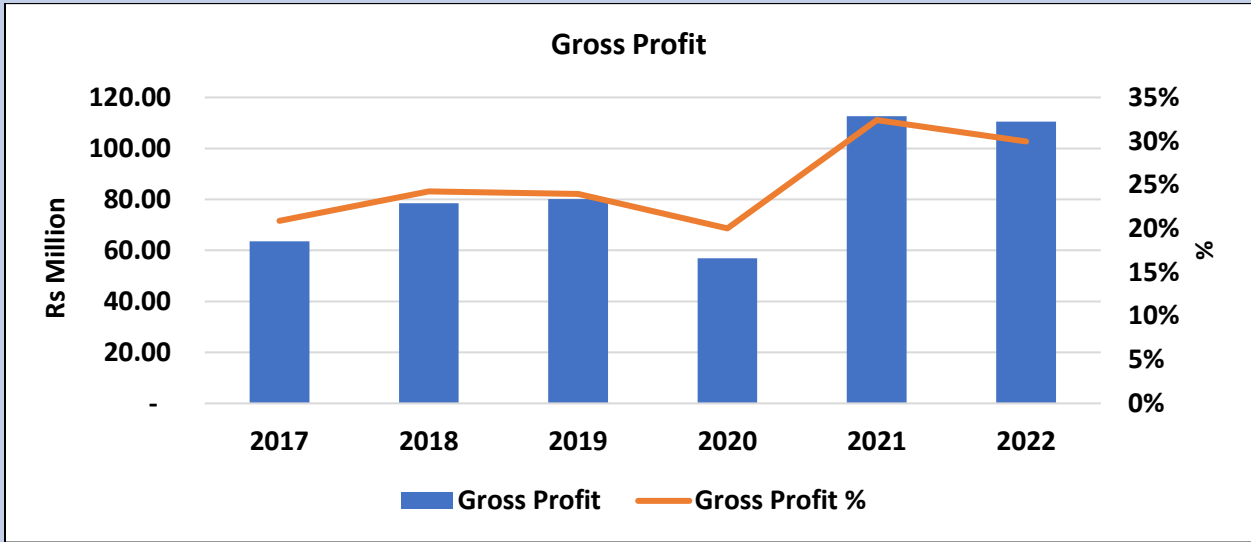
ITI received a recurrent grant for the substitute of personal emoluments from the Treasury. The fact that both the generated income and the government's recurrent allocation gradually increased from 2017 to 2022 is a positive trend for the institute. This indicates that the institute's financial support has been growing over time. The generated Income was primarily driven by the leading activity, which accounted for a substantial 56% of the total income (Figure 8).

**Figure 9: Analysis of Cost Structure from 2017 to 2022**

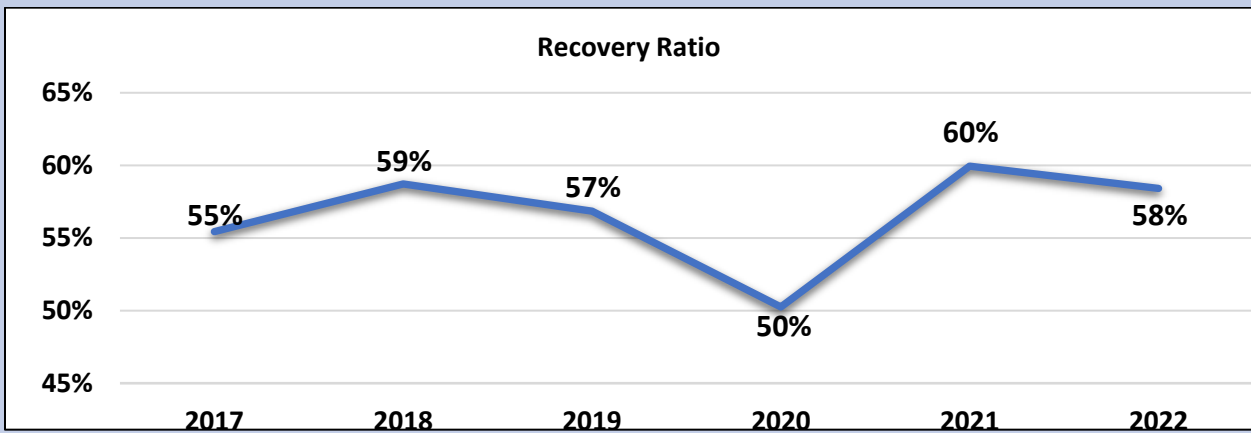


ITI's average total recurrent expenditure was Rs 588 Mn which represents the average personal emoluments of Rs 324 Mn (56% of the total recurrent Cost) and the balance was for the other operating and administrative costs (Figure 9).

**Figure 10: Analysis of Gross Profit from 2017 to 2022**



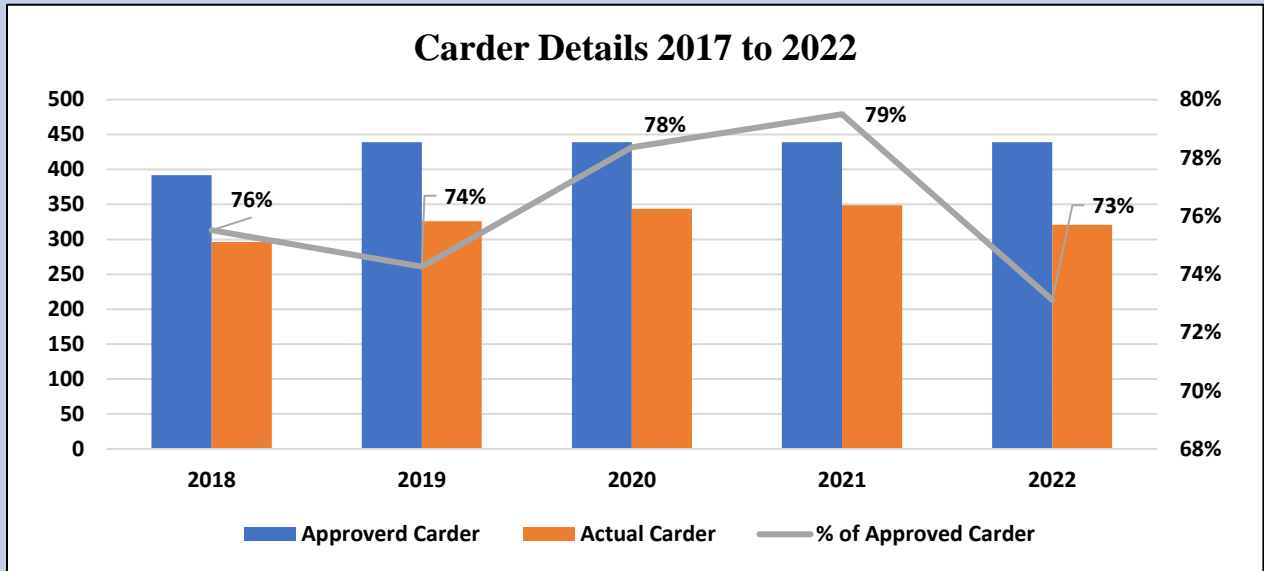
**Figure 11: Analysis of Recovery Ratio from 2017 to 2022**



By effectively managing direct costs, the institute achieved a remarkable increase in gross profits while maintaining quality and value for its customers during the period from 2017 to 2022 (Figure 10). In 2020 gross profit decreased due to the COVID-19 pandemic situation (Figure 10). The institute experienced a good increase in income from 2021 to 2022, resulting in the highest gross profit recorded. This achievement indicates the institute's successful revenue generation strategies and effective management of its operations.

Throughout the specified period, there was a notable increase in the expenditure over income ratio, reaching 60% in 2021 and subsequently decreasing slightly to 58% in 2022 (Figure 11). The decline in this ratio can be attributed to external factors such as the prevailing economic crisis and the country's social unrest, which were accompanied by fuel price hikes and unfavorable fluctuations in the exchange rate.

**Figure 12: Cadre details from 2017 to 2022**



Throughout the specified period, the Institute operated at only 2/3 of the approved carder level. Notably, the year 2022 witnessed the lowest actual cadre count during this period, primarily due to external factors such as brain drain resulting from the prevailing economic crisis and the country's social unrest. The impact of these external factors led to a significant reduction in the number of staff members within the Institute, resulting in a constrained workforce.

#### **4.0 Observations of the organization on the existing situation based on the above data and information**

Based on the data and information, the following observations can be made regarding the existing situation of the organization:

1. **Growing Income:** The organization has experienced a positive trend in both generated income and the government's recurrent allocation from 2017 to 2022. This indicates a favorable financial trajectory and highlights the confidence placed in the organization by the Government.
2. **Significance of Generated Income:** Generated Income has emerged as a crucial driver of income generation, accounting for a substantial 56% of the total income. The major income source of Generated Income is the Standard Test Services and Consultancy Services which gradually increased from 2017 to 2022 except in 2020 in driving the institute's revenue generation. This emphasizes the importance of analyzing and optimizing the performance of Generated Income to ensure the Institute's continued financial success. It is evident that to ensure the financial sustainability of the Institute, it is crucial to enhance other income sources such as Customized Testing Services, Technology Transfer, Contract Projects and Training need to be enhanced for the financial sustainability of the Institute.

3. Expenditure over Income Ratio: The expenditure over income ratio has witnessed an increase, reaching 60% in 2021 and slightly decreasing to 58% in 2022.
4. Operating with Reduced Cadre: The organization has been operating with only 2/3 of the approved cadre level, and the lowest cadre count was observed in 2022. Operating with a lower cadre count can present various challenges, including increased workload for existing staff, potential gaps in expertise, and potential strains on operational efficiency.
5. Maintaining Expenditure over Income Ratio: Despite operating with a lower cadre count, the organization has managed to maintain a favourable expenditure over income ratio throughout the period. If the Institute operates with the total cadre, especially with the technical staff (Research Scientists/Engineers and Technologist), Generated Income should have been in a better position and higher expenditure over income ratio.

## **5.0 Challenges and Suggestions to Improve the Organization**

### **Challenges**

Some challenges that the Institute may face in its pursuit of improvement include:

1. Resource Constraints: Limited financial resources, reduced cadre count, and potential budgetary constraints such as a decrease in government allocation for Capital Expenditure can hinder the organization's ability to invest in necessary improvements.
2. Skills and Expertise Gap: The organization may face a skills and expertise gap, particularly if it has been affected by a brain drain, limited access to qualified personnel, attracting and retaining talented technical staff, and financial limitations for providing training and professional development opportunities internationally.
3. Funding Constraints for R&D and Innovations: R&D and Innovation activities typically require significant financial resources for equipment, consumables, personnel, and infrastructure. Securing adequate funding, especially for long-term and high-tech projects is challenging under the prevailing country's situation. Institutions often rely on government grants, industry partnerships, private investments and local competitive funding opportunities, which are now limited or highly competitive.
4. Rapid Technological Advancements in R&D: The pace of technological advancements is accelerating, making it difficult for R&D institutes to keep up. Staying at the forefront of cutting-edge research requires substantial investments in infrastructure, equipment, and highly skilled personnel.



5. Technological advancements in accredited Testing Services: ITI Testing Service laboratories need to constantly upgrade their equipment, methodologies, and expertise to keep pace with rapid technological advancements and stay up to date with evolving regulations and standards, ensuring that testing methods and processes comply with relevant guidelines and regulations locally and internationally. New testing methods and instruments may require substantial investments and ongoing training for laboratory staff.
6. Market Competition: The Institute may face competition from other institutes or accredited testing service providers in its field. Developing a clear value proposition, staying up-to-date with industry trends, and continuously improving the quality and relevance of services
7. Market relevance and commercialization: Bridging the gap between research outcomes and marketable products or services is a significant challenge, requiring expertise in technology transfer, entrepreneurship, and business development.
8. External Factors: External factors such as economic crisis, adverse exchange rate fluctuations and social unrest in the country and the COVID-19 pandemic.

### **Suggestions to Improve the Organization**

1. Business Diversification: Diversifying the Institute's income streams and new revenue opportunities to increase overall financial stability and mitigate potential risks associated with fluctuations in the main income sources and external factors affecting it. Diversify the Testing Services Division to expand testing and calibration services to Maldives
2. Capitalize on market opportunities: The institute will be able to drive higher income generation.
3. Invest in advanced equipment and technology: Invest in modern, high-quality instruments that provide accurate and efficient testing and research capabilities and comply with evolving regulations and standards.
4. Develop strategic partnerships with International funding organizations: The institute is to look for external funding through international funding organizations such as UNIDO, FAO, GIZ, USAID etc. to expand Testing, Calibration and R&D Services and expand its operations.
5. Develop strategic partnerships with Research organizations and Industry: Collaborate and establish partnerships with industry partners, research institutions, regulatory authorities, external laboratories or specialized service providers to expand testing and R&D services and enhance expertise.

6. Establish a dynamic technology transfer platform through S&T Business Center: This entity is to be supported with expertise in technology transfer, entrepreneurship, and business development for the commercialization of R&D outputs at ITI for Entrepreneurship development targeting young Entrepreneurs, rural development, women empowerment and enhancing export industries for global presence.
7. Establish Advance Research centres under the Next Generation of Scientific & Industrial Research Platforms to undertake long-term/high-tech advanced research, acquire international grants and collaborate with International research centres and funding organizations.
8. Establish a Higher Educational Platform: By offering high-quality postgraduate degrees, certifications and Diplomas, the Institute can attract local and international students and generate income.
9. Establish incubation, Scaling up and Contract Manufacturing Facility: To commercialize technologies the following are to be established.
  - Incubation: To provide mentorship, networking opportunities, and resources to support early-stage startups in their growth and development.
  - Scaling up facility: Upgrade the existing facility equipped with the necessary infrastructure and expertise to help SMEs expand their operations and production capacity.
  - Contract manufacturing: Offer contract manufacturing services to MSMEs looking to outsource their production, providing cost-effective and efficient manufacturing solutions tailored to their specific needs.
10. Strengthen customer communication and relationships: Improve communication channels with clients to understand their needs, address concerns, provide timely updates on sample progress and test results and foster strong customer relationships and attract new customers.
11. Enhance data management and reporting: Implement a laboratory information management system (LIMS) to efficiently manage sample tracking, data storage, analysis, and reporting.
12. Invest in training and professional development: Provide regular training and professional development opportunities for employees in both R&D and Testing Services locally and internationally. This investment in skill development will improve the quality of both R&D and Testing Services.