DATA COLLECTION SURVEY ON INDUSTRIAL HUMAN RESOURCE DEVELOPMENT IN THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

FINAL REPORT

JULY 2014

Japan International Cooperation Agency (JICA)

International Development Center of Japan Inc.

Registered Non-Profit Organization Asia SEED

S L
J R
14−003

DATA COLLECTION SURVEY ON INDUSTRIAL HUMAN RESOURCE DEVELOPMENT IN THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

FINAL REPORT

JULY 2014

Japan International Cooperation Agency (JICA)

International Development Center of Japan Inc.

Registered Non-Profit Organization Asia SEED

ACRONYMS AND ABBREVIATIONS

AAT:	Association of Accounting Technicians
ACCA:	Association of Chartered Certified Accountants
ACESL:	Association of Consulting Engineers Sri Lanka
ADB:	Asian Development Bank
A/L:	Advanced Level
AOTS:	Association for Overseas Technical Scholarship
APEC:	Asia-Pacific Economic Cooperation
ASEAN:	Association of South-East Asian Nations
BOI:	Board of Investment
BPO:	Business Process Outsourcing
CECB:	Central Engineering Consultancy Bureau
CIF:	Cost, Insurance and Freight
CIM:	Chartered Institute of Marketing
CIMA:	Chartered Institute of Management Accountants
COSTI:	Coordinating Secretariat for Science, Technology and Innovation
CPA:	Certified Public Accountants
EDB:	Export Development Board
EIA:	Environmental Impact Assessment
EPZ:	Export Processing Zone
FDI:	Foreign Direct Investment
FTA:	Free Trade Agreement
GAP:	Good Agricultural Practices
GCE:	General Certificate of Education
GDP:	Gross Domestic Product
GIZ:	Deutsche Gesellschaft fur Internationale Zusammenarbeit
GNI:	Gross National Income
GSP:	Generalized System of Preferences
HEIs:	Higher Education Institutions
HETC:	Higher Education for the Twenty-First Century
HIDA:	Overseas Human Resources and Industry Development Association
ICCA:	International Congress and Convention Association
ICT:	Information and Communication Technology
IFSTSL:	Institute of Food Science and Technology Sri Lanka
IRQUE:	Improving Relevance and Quality of Undergraduate Education

ISFTA:	India-Sri Lanka Free Trade Agreement
IT:	Information Technology
ITEE:	Information Technology Engineers Examination
JASTECA:	Japan Sri Lanka Technical and Cultural Association
JETRO:	Japan External Trade Organization
JICA:	Japan International Cooperation Agency
LKR:	Sri Lankan Rupee
MFA:	Multi-Fiber Agreement
MICE:	Meeting, Incentive, Convention, Exhibition
MOERE:	Ministry of Environment and Renewable Resources
MOHE:	Ministry of Higher Education
MOIAC:	Ministry of Industry and Commerce
MSRED:	Ministry of State Resources and Economic Development
NGO:	Non-Governmental Organization
NAITA:	National Apprentice and Industrial Training Authority
NIBM:	National Institute of Business Management
NITEL:	National Institute of Technical Education of Sri Lanka
NVQF:	National Vocational Qualification Framework
NVQL:	National Vocational Qualification Level
NVQSL:	National Vocational Qualifications Framework of Sri Lanka
ODA:	Official Development Assistance
ODL:	Open and Distance Learning
OSV :	Offshore Supply Vessel
PAL :	Port and Airport Development Levy
PBL :	Project Based Learning
PSA :	Port of Singapore Authority
QAAC :	Quality Assurance and Accreditation Council
QIGs :	Quality and Innovation Grants
R&D :	Research and Development
SAITM :	South Asian Institute of Technology and Medicine
SLASSCOM :	Sri Lanka Association for Software and Services Companies
SLFPA :	Sri Lanka Food Processors Association
SLIATE :	Sri Lanka Institute of Advanced Technological Education
SLINTEC :	Sri Lanka Institute of Nano Technology
SLIIT :	Sri Lanka Institute of Information Technology
SLQF:	Sri Lanka Qualifications Framework
SME :	Small and Medium-Sized Enterprise

SWOT :	Sstrength, Weakness, Opportunity, and Threat
TSC :	The Spice Council
TVEC :	Tertiary and Vocational Education Commission
TVET :	Technical and Vocational Education and Training
UDGs :	University Development Grants
UGC :	University Grants Commission
UNESCO:	United Nations Educational, Scientific and Cultural Organization
UNIDO :	United Nations Industrial Development Organization
UNIVOTEC :	University of Vocational Technology
USD :	United States Dollar
VAT :	Value Added Tax
WTO :	World Trade Organization

Currency Equivalents

(Exchange Rate Effective as of July 2014)

USD 1.00 = 103.41 Yen

LKR 1.00 = 0.780 Yen

DATA COLLECTION SURVEY
ON INDUSTRIAL HUMAN RESOURCE DEVELOPMENT
IN THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

FINAL REPORT

TABLE OF CONTENTS

APPENDIX

CHAPTER 1: OUTLINE OF THE SURVEY

1.1 Background

Since the end of the civil war in 2009, the Democratic Socialist Republic of Sri Lanka (Sri Lanka) has maintained rapid economic growth, and its Gross National Income (GNI) per capita reached USD 2,880 in 2012. The current Sri Lankan economy is, however, led by relatively low added value industries such as agriculture and apparel. To develop the Sri Lankan economy further, it is important to upgrade industries towards more value added ones as well as to consolidate its industrial structure, along with the promotion of export and investment. Industrial human resource development (IHRD) is one of the most important factors towards promoting this goal.

Based on this recognition, Japan International Cooperation Agency (JICA) decided to conduct a survey in order to collect basic information on the area of industrial human resource development so that JICA could consider the most effective way of future cooperation with Sri Lanka in this area.

It has taken more than 10 years since JICA last conducted a study on industrial development in Sri Lanka; JICA has focused on infrastructure development in the recovery from the country's recent war damage. Therefore, it is necessary to study first the current industrial situation as a basis of understanding problems and challenges in industrial human resource development. It is also critical to consider rapidly growing Asian economies and the progress of regional economic integrations. Then, based on the understanding of the current industrial reality and potential for the future, the JICA survey team analyses the necessities and possibilities of supporting industrial human resource development in Sri Lanka.

1.2 Purpose of the Survey

This survey aims to collect basic data in relation to both industrial and industrial human resource development. The collected data will be a basis of JICA's considerations on the most effective way of Japanese cooperation to Sri Lanka in the near future. The particular objectives are as follows:

(1) To analyse potentials and directions of industrial development together with its challenges;

(2) To collect basic data on and analyse challenges in industrial human resource development (IHRD) ; and

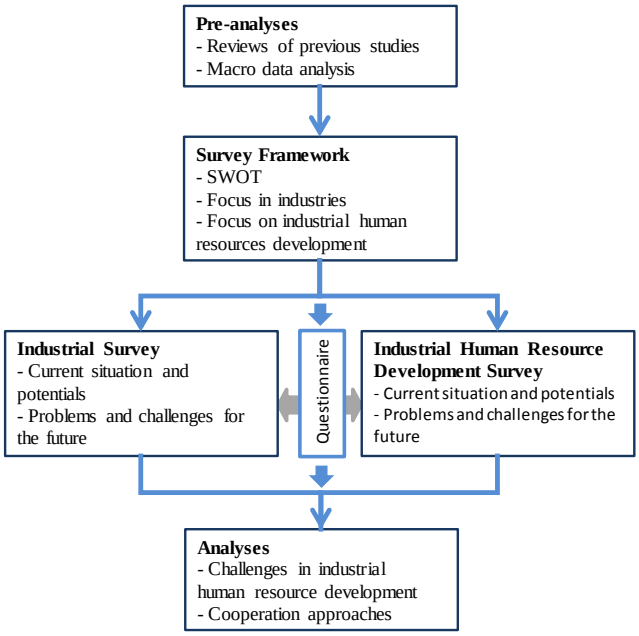
(3) To consider effective approaches which support industrial human resource development

1.3 Approach of the Survey

1.3.1 Survey Flowchart

Since this survey needs to gather and analyse a significantly wide range of data over a limited period, it is necessary to consider a survey approach that is efficient as well as competent for its purpose.

The chart below shows the process of the survey.



Source: JICA survey team

Figure 1-1: Survey flowchart

1.3.2 SWOT as a Hypothetical Framework

Firstly, the JICA survey team analysed results of previous studies conducted by JICA and other organizations together with an analysis of macro data.

Based on these pre-analyses, the JICA survey team prepared a SWOT analysis as a hypothetical framework for its field survey. Instead of taking a grounded theory approach, which collects data from the original sources at field surveys and inductively builds up conclusions, the JICA study team took a hypothesis-testing, deductive approach. The viewpoints that appeared in the SWOT were used for a checklist of interviews and data collection. The SWOT is shown in Figure 1-2.

Strengths	Weaknesses
・ High basic education level ・ Good English skill ・ Implementing tasks following instructions honestly ・ Dexterous ・ Good art sense ・ Political and social stability ・ Beautiful nature, several UNESCO World Heritage sites ・ Closeness to the East-West sea lane ・ Good and deep sea port ・ Good IT infrastructure	・ Small population: small market size, limitation in labour force ・ Weakness in manufacturing traditions, limited supporting industries ・ Island country: distance to the countries where supporting industries are developed ・ Weakness in domestic transportation infrastructure ・ High electricity cost ・ Limited natural resources (almost all raw materials are imported)
Opportunities	**Threats**
・ India Sri Lanka FTA: Economic growth and increase in market size in India ・ Complexity and differences in Indian laws and regulations in each state (better to export from Sri Lanka than to locate in one of the states in India) ・ Increase in middle-income class in Sri Lanka ・ Increase in foreign tourists	・ Increase in labour cost in line with economic growth of the country, which causes decrease in industrial competitiveness ・ Increase in competition in apparel industries with neighbouring countries such as Bangladesh and Pakistan ・ Increase in shortage of labour (especially in manufacturing) ・ Competition with sea ports in other countries

Source: JICA survey team

Figure 1-2: SWOT

1.3.3 Industry Survey

Considering the limited survey period, the JICA survey team narrowed down survey target industries.

In identifying the industries to be scrutinized by this survey, the following steps were taken:

(1) Based on the preliminary macro-economic analyses, the JICA survey team concluded that there were no considerable changes in industrial structure in Sri Lanka from the year 2000. Thus, we picked up the industries considered to have high potential by the JICA "Master Plan Study for Industrialization and Investment Promotion in the Democratic Socialist Republic of Sri Lanka (2001)" into the candidate list for the survey.

(2) The JICA survey team also listed the industries identified as "Key Economic Areas" in "*Mahinda Chintana* - Vision for the future (2010-2016)", the economic development policies of the current administration.

(3) Lastly, the JICA study team added some industries that have recently shown a considerable and outstanding growth, based on the preliminary macro-economic analyses, such as the tourism industry.

The listed industries are as shown in Table 1-1.

Table 1-1: Candidate industries for the survey

JICA MASTER PLAN STUDY FOR INDUSTRIALIZATION AND INVESTMENT PROMOTION (2001)	Mahinda Chintana – Vision for the future (2010–2016)		Rapid growing industries
	Key Economic Areas	Potential Area	
Textile	Apparel		
Leather		Shoes/ Leather	
Rubber	Rubber products		
Plastic		Chemical/Plastic	
Machinery			
Electric/Electronics	Electric/Electronics		
Information service	IT/BPO		
	Gem/ Jewelry		
	High value-added tea		
	Drug/Medicine		
	Heavy industry		
	Mineral products		
		Paper	
			Tourism
			Higher education

Source: JICA survey team

In addition to the above industries, by considering the geographical advantages of being located near the East-West sea lane with the natural deep port of Colombo, logistics and logistics related industries were added.

Then, through the survey process, food processing and construction consulting were added based on recommendations from interviewees.

Throughout the survey, the JICA study team tried to analyse potential and needs for industrial human resource development of each industry listed by the above process. However, some industries were not able to be covered due to difficulties in access.

In addition, the industries indicated below were less prioritised and were not explored; it should be noted that this selection does not mean these industries have less potential. The industries with reasons of less-prioritisation are as follows:

- Leather: Competitiveness largely depends on artisanship in tanning. In other words, experience-based learning, including apprenticeships, is necessary. Thus, it might be difficult to give support in this area.
- Chemical/ Plastic: Material production is more like the plant industry and requires huge investment. Plastic molding is very easy to do and faces strong cost competition. Both industries seem difficult to develop with the current situation of Sri Lanka being an island nation with little market for the products of these industries.
- Large Machinery: Existing machinery industry is very limited. Without supporting industries, the medium or large machinery industry is difficult to develop.
- Gem/Jewelry: Could have potential but economic impact would be limited.

- Tea: Highly organised and structured already (not necessary to be explored)
- Heavy industry: Without light industry and a large domestic market, it seems very difficult to develop. However, an existing heavy industry, Colombo Dockyard, was analysed as a part of port related services.
- Paper: An industry with potentially serious environmental impact (not positively recommendable)

The industries finally analysed in this survey are as follows:

- Apparel/textiles
- Rubber products
- Electric/ Electronics
- IT/BPO (Business Process Outsourcing)
- Pharmacy
- Mineral
- Food processing
- Tourism
- Logistics
- Shipyard
- Construction consulting

Given the limitation in survey periods, depth of analysis of each industry is different. Findings on industries are explained in Appendix 2.

1.3.4 Industrial Human Resource Development Survey

In the area of industrial human resource development, this survey focused mainly on higher education. Although the Sri Lankan free education system contributes to a high literacy rate in the country, several difficulties are identified in higher education. The number of students who can attend higher educational institutions, particularly those in the engineering field, is very limited. Many university graduates went abroad since there are reportedly no domestic employment opportunities sufficient to match their abilities. Thus, to understand the situation of higher education would seem to have importance. The World Bank has already been working on this area of improving the quality of the higher education system and services.

Especially to upgrade industries, engineering education as well as management education can be considered crucial. Thus, the survey particularly focused on five universities that provide engineering education, while general needs and challenges in industrial human resource development were widely analysed. Basic information on each university visited is attached in Appendix 5.

The survey did not go deep into the vocational training area. In this area, the Asian Development Bank is the leading organization and has worked on these topics over a long period of time. Considering effective demarcations and cooperation between development partners, the vocational training area was analysed but not explored deeply.

1.3.5 Analyses

In the Industry Survey, industrial needs for industrial human resources were analysed. Problems and challenges in industrial human resource development were analysed in the Industrial Human Resource Development Survey. In addition, a questionnaire to university students and companies on the needs in industrial human resource developments was conducted as a supplement to the surveys in two areas.

Then, gaps between industries and universities were analysed. Here, the gap means quantitative and qualitative differences in demand and supply for graduates from each academic specialty, recognition on the quality of education, recognition on the roles of universities, and so forth.

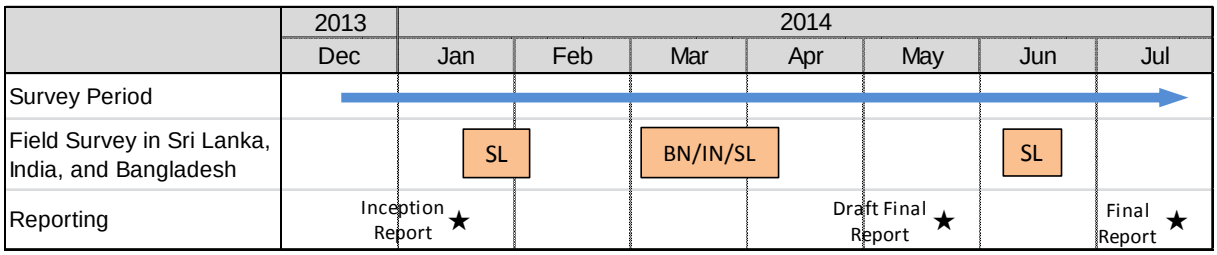
Based on these analyses, challenges in industrial human resource development were identified. Then finally, possible cooperation approaches for classifying the problems and challenges were considered.

It should be noted that since this survey intended to understand a general picture of the subject areas of industrial and industrial human resource development within a limited survey period, the survey, therefore, did not deeply examine each issue. The JICA survey team is clearly aware that our findings and discussions in this report might not be the best for (or even not suitable to) Sri Lanka. There may also possibly be some misunderstandings. Even so, we present these findings and discussions in good faith with the hope of providing some external views and a basis of discussion between both of our countries for the future of Sri Lanka.

1.4 Survey Schedule

1.4.1 Survey Period and Field Surveys

This survey was conducted from December 2013 to July 2014.



Source: JICA survey team

Figure 1-3: Survey schedule

Field surveys in Bangladesh and India were conducted in addition to Sri Lanka. Bangladesh has a similar industrial structure to Sri Lanka and seems to be one of its potential competitors where the apparel and the IT/BPO industries, which are very important industries in Sri Lanka, are surging. India is expected to be a potentially huge market for Sri Lankan products. Chennai, especially, is located very close to Sri Lanka and has historically close relationships.

1.4.2 Interviewees and Discussants

The list below shows the names of interviewees and/or discussants, and organizations visited.

Table 1-2: List of interviewees (Sorted by the date of interview)

First survey in Japan

Organization	Date
Japan External Trade Organization (JETRO)	8 Jan
Tokyo University of Agriculture and Technology	16 Jan

First field survey

Organization	Date
JETRO Colombo	20 Jan
JICA Sri Lanka Office	20 Jan
Board of Investment of Sri Lanka (BOI)	21 Jan
Central Engineering Consultancy Bureau (CECB)	21 Jan
Ministry of Higher Education	21 Jan
Virtusa	22 Jan
SLASSCOM（Sri Lanka Association of Software and Service Companies）	22 Jan
University of Moratuwa	22 Jan
EMP Holdings Limited	22 Jan
Ministry of Higher Education	23 Jan
JICA Sri Lanka Office	23 Jan
Sri Lanka Export Development Board (EDB)	23 Jan
ITOCHU Corporation Colombo Liaison Office	24 Jan
IFS	24 Jan
University Grant Committee (UGC)	24 Jan
University of Moratuwa	27 Jan
Colombo Dockyard Plc	27 Jan
Mitsubishi Corporation Colombo Branch	28 Jan
Taisei Corporation (Japanese Chamber of Commerce and Industry in Sri Lanka)	28 Jan
Sri Lanka-Japan Business Cooperation Committee, The Ceylon National Chamber of Commerce	28 Jan
University of Colombo	29 Jan
Sabaragamuwa University of Sri Lanka	29 Jan
The Open University of Sri Lanka	30 Jan
Ministry of Industry and Commerce	30 Jan

Second survey in Japan

Organization	Date
The Japan Chamber of Commerce and Industry/ The Tokyo Chamber of Commerce and Industry	24 Feb
Institute of Developing Economies – JETRO	25 Feb
ITOCHU Corporation	25 Feb
BIP Systems Corporation	6 Mar

Second field survey

Organization	Date
(Bangladesh)	
JICA Bangladesh Office	9 March
JETRO Dhaka Office	9 March
ITOCHU Corporation Dhaka Liaison Office	10 March
YKK BANGLADESH PTE LTD	10 March
Bangladesh Knitwear Manufacturers & Exporters Association (BKMEA)	11 March
Capacity Building on ITEE Management Project, JICA	12 March
Bangladesh Association of Software & Information Services (BASIS)	12 March
Bangladesh Garment Manufacturers & Exporters Association (BGMEA)	12 March
JICA Bangladesh Office	13 March
Micro Fibre Ltd.	13 March
Ministry of Industries	13 March
(India)	
Metis Family Office Services Pvt. Ltd	17 March
JETRO Chennai	17 March
MOL Bulk Shipping (India) Pvt. Ltd.	18 March
Indian Institute of Technology Madras (IITM)	19 March
ITOCHU India Pvt. Ltd.	20 March
Indian Institute of Information Technology, Design and Manufacturing (IIITD&M)	20 March
Takasago International India Pvt. Ltd.	21 March
Sri Lanka Deputy High Commission, Chennai	21 March
(Sri Lanka)	
YKK LANKA (PVT) LTD:	24 March
SAARC Chamber of Commerce & Industry	25 March
World Bank Sri Lanka:	26 March
AOD Colombo Private Limited	26 March
South Eastern University	26 March
University of Jaffna	27 March
UNIDO-WTO-SPICE COUNCIL Project	27 March

Rohto Pharmaceutical Co., Ltd.	28 March
World Bank Sri Lanka	28 March
ADB Sri Lanka Resident Mission	28 March
Freight Links International (Pte.) Ltd	31 March
Sri Lanka Export Development Board (EDB)	31 March
University of Ruhuna	1 April
Ministry of Finance and Planning	1 April
Kandygs Handlooms (Exports) Ltd.	1 April
OKAYA LANKA PVT LTD.	2 April
Kelani Cables PLC	2 April
Japan Sri Lanka Technical & Cultural Association (JASTECA)	2 April
Sri Lanka Food Processors Association (SLFPA)	3 April
The Sri Lanka Society of Rubber Industry	3 April
GIZ	3 April
Tertiary and Vocational Education Commission	4 April
JICA Sri Lanka Office	4 April
University of Peradenia, International Research Centre	7 April
Sri Lanka Institute of Nanotechnology (SLINTEC)	8 April
Sabragamuwa University	10 April
Dialog-University of Moratuwa Mobile Communications Research Laboratory	11 April

1.4.3 Survey Team

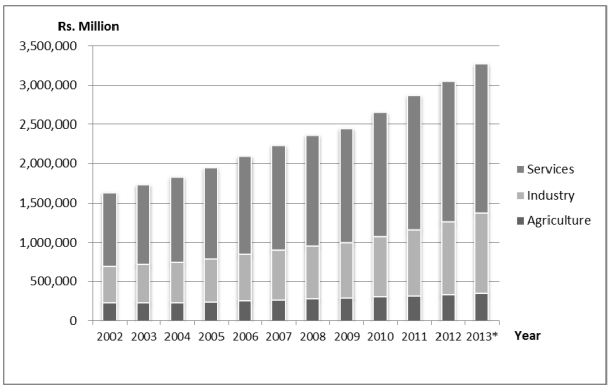
The JICA survey team members and their responsibilities are as below.

Hiro OKUDA:	Team leader/ Industrial development
Yusuke HASEGAWA:	Deputy team leader/ Industrial development
Yasushi ISHIDA:	Engineering higher education
Dr. Ashuboda MARASINGHE:	Engineering higher education
Yukie MACHIDORI:	Corporate management

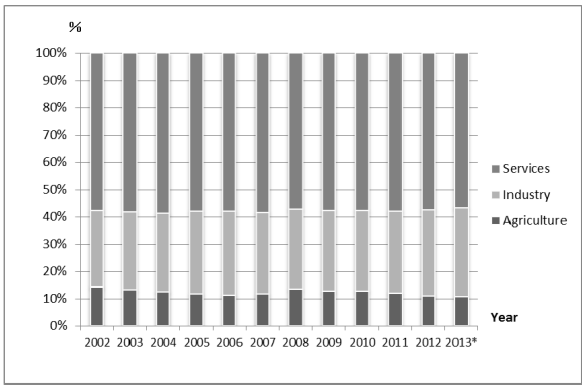
CHAPTER 2: MACRO-ECONOMIC OVERVIEW

2.1 GDP

Figure 2-1 and Figure 2-2 below show the trend of Sri Lanka GDP and GDP share by sectors: agricultural, industrial and service.



(Constant prices (2002))



(Current prices)

Note: *Figures of 2013 are provisional.
Source: JICA survey team based on Department of Census and Statistics, GDP Summary Indicator

Figure 2-1: Trend of Sri Lanka GDP **Figure 2-2: GDP share by sectors**

As shown in Figure 2-1, the economy of Sri Lanka has grown steadily in recent years. Average annual growth of the GDP (2002 constant price) by sectors from 2002 to 2013 was 3.8% for the agricultural sector, 7.5% for the industrial sector, and 6.5% for the service sector.

GDP (current price) share of each sector is presented in Figure 2-2. In 2002, the agricultural sector made up 14.3% of the total GDP, and the industrial and service sectors made up 28.0% and 57.7% respectively. Later in 2013, the GDP share of the agricultural sector was 10.8%, the industrial sector was 32.5%, and the service sector was 56.8%. Although a slight decline in the share of the agricultural sector and small increase in the share of the industrial sector were seen, there was no significant change in the industrial structure. The economy of Sri Lanka as a whole has grown steadily, yet there was not any significant change in its industrial structure.

Divisions that experienced more than 10% average annual growth of GDP from 2002 to 2013 were “Inland – fishing” (15.1%), “Mining and quarrying (excluding gem mining)” (18.9%), “Hotels and restaurants” (20.0%) and “Post and telecommunications” (18.1%). In contrast, GDP of “Agriculture, forestry and fishing”, as a whole, increased only 3.8%, and “Manufacturing” and “Cargo handling-ports and civil aviation” experienced a growth of 5.8% and 7.1% respectively.

Table 2-1 indicates country-by-country comparison of changes in GDP share by sectors from 2000 to 2012. In Sri Lanka, there was a slight increase in GDP share of manufacturing from 17% in 2000 to 18% in 2012. Contrary to Sri Lanka, GDP share of manufacturing in Bangladesh, whose major export industries are also apparel, saw significant growth from 10% in 1996 to 18% in 2012. Its share in its economy has increased to the same level of that in Sri Lanka in these years.

It should be noted that although the share of manufacturing has not dramatically increased, it remains constant at around 18% in Sri Lanka; this means manufacturing is still a very important part of the economy of the country.

Table 2-1 : Country comparison of changes in GDP shares by sectors (Current prices)

	Gross domestic $ billions		Agriculture % of GDP		Industry % of GDP		Manufacturing % of GDP		Services % of GDP	
	2000	2012	2000	2012	2000	2012	2000	2012	2000	2012
Sri Lanka	**16.3**	**59.4**	**20**	**11**	**27**	**31**	**17**	**18**	**53**	**57**
Bangladesh	47.1	116.4	26	18	25	28	15	18	49	54
India	476.6	1,841.70	23	17	26	26	15	14	51	57
Nepal	5.5	19	41	37	22	15	9	7	37	48
Pakistan	74	225.1	26	24	23	22	15	14	51	54
South Asia	623	2,286.10	24	18	26	26	15	14	51	56
Indonesia	165	878	16	14	46	47	28	24	38	39
Malaysia	93.8	305	9	10	48	41	31	24	43	49
Philippines	81	250.2	14	12	34	31	24	21	52	57
Singapore	95.9	274.7	0	0	35	27	27	21	65	73
Thailand	122.7	366	9	12	42	44	34	34	49	44
Vietnam	33.6	155.8	23	20	34	39	17	17	43	42

Source: World Bank, *World Development Indicators 2013* (September 2013)

2.2 Changes in employment by sectors

The share of employment in the agricultural sector decreased from 42% to 31% over the last 20 years, while the share of the industrial sector increased from 20% to 27% (excluding Northern and Eastern provinces). There has been no considerable change in the share of service sector employment since 2000.

Table 2-2 : Employment by sectors

Year		Total employed No.	Agriculture No.	Industries No.	Services No.	Agriculture % Share	Industries % Share	Services % Share
1992	1	4,924,130	2,078,560	991,492	1,854,078	42.2%	20.1%	37.7%
1993	1	5,201,904	2,159,187	1,024,524	2,018,193	41.5%	19.7%	38.8%
1994	1	5,281,279	2,084,733	1,046,282	2,150,265	39.5%	19.8%	40.7%
1995	1	5,357,120	1,966,793	1,188,271	2,202,056	36.7%	22.2%	41.1%
1996	1	5,536,216	2,071,764	1,217,977	2,246,475	37.4%	22.0%	40.6%
1997	1	5,607,868	2,031,902	1,354,952	2,221,014	36.2%	24.2%	39.6%
1998	1	6,049,388	2,378,572	1,325,735	2,345,081	39.3%	21.9%	38.8%
1999	1	6,082,449	2,208,066	1,330,134	2,544,249	36.3%	21.9%	41.8%
2000	1	6,310,247	2,274,153	1,490,795	2,545,299	36.0%	23.6%	40.3%
2001	1	6,235,588	2,033,343	1,491,408	2,710,837	32.6%	23.9%	43.5%
2002	1	6,519,415	2,247,602	1,459,194	2,812,619	34.5%	22.4%	43.1%
2003	1	6,609,466	2,223,691	1,539,035	2,846,740	33.6%	23.3%	43.1%
2004	1	6,704,006	2,215,282	1,663,383	2,825,341	33.0%	24.8%	42.1%
2005	1	6,788,119	2,059,293	1,787,274	2,941,552	30.3%	26.3%	43.3%
2006	1	7,105,322	2,287,268	1,889,953	2,928,101	32.2%	26.6%	41.2%
2007	1	7,041,874	2,202,098	1,873,857	2,965,919	31.3%	26.6%	42.1%
2008	1	7,174,706	2,344,415	1,888,004	2,942,288	32.7%	26.3%	41.0%
2009	1	7,139,537	2,318,621	1,822,685	2,998,231	32.5%	25.5%	42.0%
2010	1	7,235,641	2,353,599	1,777,130	3,104,913	32.5%	24.6%	42.9%
2011	1	7,429,794	2,445,251	1,841,444	3,143,100	32.9%	24.8%	42.3%
2012	1	7,334,631	2,253,722	1,953,274	3,127,635	30.7%	26.6%	42.6%
2008	2	7,648,305	2,489,731	2,004,880	3,153,693	32.6%	26.2%	41.2%
2009	2	7,602,414	2,475,921	1,910,318	3,216,175	32.6%	25.1%	42.3%
2010	2	7,706,593	2,519,905	1,866,733	3,319,955	32.7%	24.2%	43.1%
2011	2	7,894,439	2,601,824	1,915,022	3,377,593	33.0%	24.3%	42.8%

1Excluding Northern & Eastern provinces,
2Excluding Northern provinces

Source : Department of Census and Statistics, *Sri Lanka Labour Force Survey Annual Report 2012* (September 2013), p14 (Table 4.1)

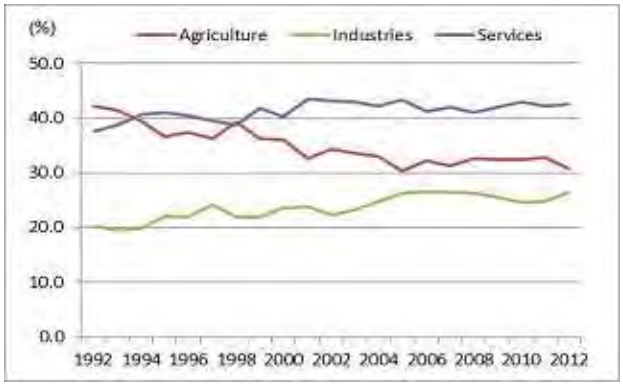


Figure 2-3: Share of employment by sectors

Source : Department of Census and Statistics, *Sri Lanka Labour Force Survey Annual Report 2012* (September 2013), p14 (Table 4.1)

According to the 2012 Census, Sri Lanka had a population of 20,263,700 with 8,465,000 in the labour force.[1] Table 2-3 summarises the main indicators of the Sri Lankan labour market.

Table 2-3: Main Indicators of the Sri Lankan labour market 2012

Labour Force	8,465,000
Employed	8,129,000
% of Employment By Employment Status, %	
Public Employees	15.1
Private Employees	41.3
Employers	2.8
Own Account Workers	31.9
Unpaid Family Workers	8.9
Unemployed	336,000
Unemployment rate, %	4.0
% of Unemployment By Level of Education	
Grade 5-9 (6-10 years)	3.2
G.C.E (O/L)	6.0
G.C.E (A/L) and above	7.5
Total Migration for Employment	279,482
Average employment days of migrants	766
Migrant Employment by skills (No)	
Professional	29,539
Middle level	66,275
Clerical & related	3,406
Skilled Labour	66,275
Unskilled Labour	62,027
Housemaids	118,235

Source: Central Bank of Sri Lanka

2.3 Changes in composition of exports

The total value of exports over the last 10 years from 2002 to 2012 doubled in USD and tripled in Sri Lankan Rupees (LKR) from USD 4,699 million and LKR 449,850 in 2002. Average annual growth rates over the period were 7.6% in USD and 10.7% in LKR.

No significant change was found in the composition of exports from the late 1990s to 2000s. Seventy-five percent of the total export was industrial in 2012, and "Textiles and Garments" accounted for more than 40% of total exports. Even though the share has declined slightly during the period, "Textile and Garments" remains the largest export item in Sri Lanka. Tea is the second major export item in Sri Lanka, making up about 15% of total exports.

According to the Central Bank of Sri Lanka[2], in 2013, 24% of the total export was to the U.S.A. and 10.4% was to the U.K. These two countries account for more than 30% of total exports, and they are the major export market of textiles and garments.

[1] Labour force: number of people who were employed or unemployed during the reference week. Central Bank of Sri Lanka (2013)

[2] Central Bank of Sri Lanka, *Annual Report 2013* (March 2014). p.136

Table 2-4: Changes in composition of exports

【Value】

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012(a)
Exports, US$ Mn.	**5,133**	**5,757**	**6,347**	**6,883**	**7,640**	**8,111**	**7,085**	**8,626**	**10,559**	**9,774**
(% change)	9.2%	12.2%	10.2%	8.4%	11.0%	6.2%	−12.7%	21.8%	22.4%	−7.4%
Exports, Rs. Mn.	**495,426**	**583,967**	**638,276**	**716,579**	**845,683**	**878,499**	**813,911**	**974,387**	**1,167,588**	**1,245,531**
(% change)	10.1%	17.9%	9.3%	12.3%	18.0%	3.9%	−7.4%	19.7%	19.8%	6.7%
Agricultural Exports	93,069	107,951	116,046	134,481	182,527	213,132	210,092	260,632	279,466	297,715
Tea	65,936	74,897	81,482	91,667	113,565	137,606	136,194	162,793	164,869	180,429
Rubber	3,717	5,155	4,724	9,674	12,066	13,535	11,327	19,580	22,811	15,726
Coconut Products	8,926	11,453	11,400	12,898	14,227	15,728	18,635	18,728	29,394	26,594
Other	14,490	16,446	18,439	20,242	42,670	46,264	43,937	59,531	62,392	74,966
Industrial Exports	383,833	457,175	497,695	562,450	657,052	662,220	600,621	688,759	883,771	938,762
Textiles and Garments	248,574	285,172	291,088	320,829	369,173	376,990	374,645	379,185	463,509	508,607
Petroleum Products	6,300	10,133	13,169	19,580	18,791	27,553	15,447	29,761	61,170	58,902
Other	128,959	178,870	193,438	222,041	269,088	257,677	210,529	279,813	359,092	371,253
Mineral	7,601	10,939	12,088	10,714	2,631	2,311	2,280	2,739	3,631	7,833
Other	10,923	7,902	12,448	8,934	3,474	835	918	22,258	720	1,221
Imports, Rs. Mn.	**643,749**	**811,138**	**891,359**	**1,066,689**	**1,250,386**	**1,525,705**	**1,172,618**	**1,519,737**	**2,241,488**	**2,440,899**
Consumer Goods	129,656	146,073	151,021	185,461	184,129	217,295	179,722	279,762	404,037	380,968
Intermediate Goods	380,931	489,688	549,004	640,810	773,126	976,190	707,655	910,010	1,357,505	1,473,554
Investment Goods	127,363	169,096	188,061	233,637	287,363	309,092	240,284	311,496	473,974	582,921
Unclassfied	5,799	6,280	3,272	6,781	5,768	23,128	44,957	18,470	5,972	3,455
Balance of Trade, Rs. Mn.	148,323	227,171	253,082	−350,110	−404,703	−647,207	358,707	−545,350	−1,073,900	1,195,368
Export / Import Ratio	0.77	0.72	0.72	0.67	0.68	0.58	0.69	0.64	0.52	0.51

【Composition】

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012(a)
Exports, Rs. Mn.	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Agricultural Exports	18.8%	18.5%	18.2%	18.8%	21.6%	24.3%	25.8%	26.7%	23.9%	23.9%
Tea	13.3%	12.8%	12.8%	12.8%	13.4%	15.7%	16.7%	16.7%	14.1%	14.5%
Rubber	0.8%	0.9%	0.7%	1.4%	1.4%	1.5%	1.4%	2.0%	2.0%	1.3%
Coconut Products	1.8%	2.0%	1.8%	1.8%	1.7%	1.8%	2.3%	1.9%	2.5%	2.1%
Other	2.9%	2.8%	2.9%	2.8%	5.0%	5.3%	5.4%	6.1%	5.3%	6.0%
Industrial Exports	77.5%	78.3%	78.0%	78.5%	77.7%	75.4%	73.8%	70.7%	75.7%	75.4%
Textiles and Garments	50.2%	48.8%	45.6%	44.8%	43.7%	42.9%	46.0%	38.9%	39.7%	40.8%
Petroleum Products	1.3%	1.7%	2.1%	2.7%	2.2%	3.1%	1.9%	3.1%	5.2%	4.7%
Other	26.0%	30.6%	30.3%	31.0%	31.8%	29.3%	25.9%	28.7%	30.8%	29.8%
Mineral	1.5%	1.9%	1.9%	1.5%	0.3%	0.3%	0.3%	0.3%	0.3%	0.6%
Other	2.2%	1.4%	2.0%	1.2%	0.4%	0.1%	0.1%	2.3%	0.1%	0.1%

(a) provisional

Source : Central Bank of Sri Lanka, *Economic and Social Statistics of Sri Lanka 2013* (April 2013), p76 (Table8.1)

2.4 Service exports and workers' remittances

As sources of foreign exchange earnings, in addition to remittances from those working overseas, it is important to consider IT/BPO services, which have been growing significantly over the last few years. Table 2-4 indicates exports of major areas in the service sector as well as workers' remittances.

Export of "Computer and Information Services" (services account registered gross inflows) expanded more than nine-fold from USD 65 million in 2003 to USD 604 million in 2013 at an average annual growth rate of 25%. When compared to the value of goods exports discussed previously, the value equates to nearly 6% of the total goods exported. It is still much smaller than the export volume of "Textile and Garments" and "Tea", though IT/BPO services are growing, constituting a significant portion of exports following those items.

Remittances from those working abroad has increased in the last ten years at a higher rate than goods exports, and now it accounts for more than half of goods exports in value.

Table 2-5: Service exports and workers' remittances

【Value】 (Unit: US$ Million)

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013(a)
Goods Exports, US$ Mn.	5,133	5,757	6,347	6,883	7,640	8,111	7,085	8,626	10,559	9,774	10,394
Services Credit	1,411	1,527	1,540	1,625	1,775	2,004	1,892	2,474	3,084	3,800	4,685
Transportation	562	624	673	751	838	1,000	865	1,162	1,392	1,634	1,784
Travel	441	513	429	410	385	342	350	576	830	1,039	1,715
Computer and Information Services	65	72	82	98	175	230	245	265	355	564	604
Workers' Remittances	1,414	1,564	1,968	2,161	2,502	2,918	3,330	4,116	5,145	5,985	6,407

【Growth Rate】

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013(a)	2003-13 Av.
Goods Exports, % change	9.2%	12.2%	10.2%	8.4%	11.0%	6.2%	-12.7%	21.8%	22.4%	-7.4%	6.3%	7.3%
Services Credit	11.3%	8.2%	0.9%	5.5%	9.2%	12.9%	-5.6%	30.8%	24.7%	23.2%	23.3%	12.8%
Transportation	9.3%	11.0%	7.9%	11.6%	11.6%	19.3%	-13.5%	34.3%	19.8%	17.4%	9.2%	12.2%
Travel	21.5%	16.3%	-16.4%	-4.4%	-6.1%	-11.2%	2.3%	64.6%	44.1%	25.2%	65.1%	14.5%
Computer and Information Services	30.0%	10.8%	13.9%	19.5%	78.6%	31.4%	6.5%	8.2%	34.0%	58.9%	7.1%	25.0%
Workers' Remittances	9.9%	10.6%	25.8%	9.8%	15.8%	16.6%	14.1%	23.6%	25.0%	16.3%	7.1%	16.3%

(a): provisional

Source: (1) Central Bank of Sri Lanka, *Annual Reports*; (2) Central Bank of Sri Lanka, *Economic and Social Statistics of Sri Lanka 2013* (April 2013), p.86 (Table8.13)

2.5 Added value in industry

Categories with a high level of added value in 2010 are not much different from those of 1996. Most of them are either primary commodities or labour-intensive industries such as "Food, beverages and tobacco", "Textiles, wearing apparel and leather", and "Chemical, petroleum, rubber and plastic". When the shares of added value in industries of the late 1990's are compared to the latest data, the shares of "Food, beverages and tobacco", "Chemical, petroleum, rubber and plastic" and "Fabricated metal products, machinery and equipment" are increasing, while the shares of "Textiles, wearing apparel and leather" and "Non-metallic mineral" are decreasing.

Table 2-6: Added value in industry (current prices)

Value (Rs. Mil)

	1996	1997	2000	2005	2010	2013*
Food, beverages and tobacco	32,891	35,515	49,031	202,785	458,151	697,903
Textiles, wearing apparel & leather	31,184	40,581	69,451	103,198	172,726	268,431
Wood, wood products & furniture	1,250	1,257	1,554	1,143	1,786	3,253
Paper, printing & publishing	2,580	2,633	2,808	2,963	7,653	10,235
Chemical, petroleum, rubber & plastic	8,957	10,745	17,771	72,089	170,000	263,842
Non-metallic mineral	10,537	11,600	14,240	15,805	27,865	38,920
Basic metal	450	598	959	1,061	1,826	3,017
Fabricated metal products, machinery & equipment	4,809	5,924	7,714	34,480	72,990	112,202
Other manufacturing industries	2,763	3,157	3,965	1,446	3,410	4,550
Total manufacturing	95,421	112,010	167,493	434,970	916,407	1,402,353

Share (%)

	1996	1997	2000	2005	2010	2013*
Food, beverages and tobacco	34.5%	31.7%	29.3%	46.6%	50.0%	49.8%
Textiles, wearing apparel & leather	32.7%	36.2%	41.5%	23.7%	18.8%	19.1%
Wood, wood products & furniture	1.3%	1.1%	0.9%	0.3%	0.2%	0.2%
Paper, printing & publishing	2.7%	2.4%	1.7%	0.7%	0.8%	0.7%
Chemical, petroleum, rubber & plastic	9.4%	9.6%	10.6%	16.6%	18.6%	18.8%
Non-metallic mineral	11.0%	10.4%	8.5%	3.6%	3.0%	2.8%
Basic metal	0.5%	0.5%	0.6%	0.2%	0.2%	0.2%
Fabricated metal products, machinery & equipment	5.0%	5.3%	4.6%	7.9%	8.0%	8.0%
Other manufacturing industries	2.9%	2.8%	2.4%	0.3%	0.4%	0.3%
Total manufacturing	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

* Provisional

Source: JICA, *Master Plan Study for Industrialization and Investment Promotion in the Democratic Socialist Republic of Sri Lanka (Phase 1)* (August 1999), p.2-11; Central Bank of Sri Lanka, *Annual Report 2008 and Annual Report 2013* (April 2014)

2.6 Employment and productivity by industry division

The apparel industry has the highest number of people engaged among industry divisions listed in Table 2-7, followed by the manufacturing of food products and beverages, textiles, rubber and plastic products, and other non-metallic mineral products.

However, it is found that labour productivity—added value per person—of apparel and textiles is comparatively small. Although labour productivity of manufacturing of tobacco products, coke refined petroleum products and nuclear fuel, and electrical machinery and apparatus are high, those engaged in such industries are comparatively small number.

Table 2-7: Key indicators by industry division – 2011
(Establishment with five or more employees)

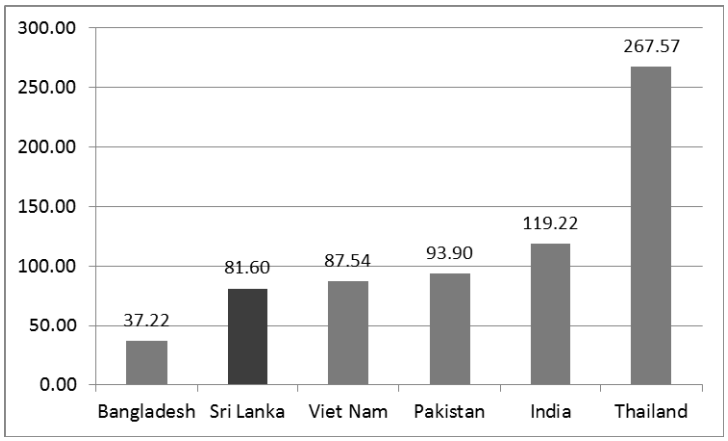
ISIC Rev.3 Code	No. of establishments (Covered)	Persons engaged (No.)	Value of output (Rs. million)	Value added (Rs. million)	Value added (% share)	Value added Ratio (%)	Value added per psrson (Rs. Million)
15 Manu.of food products and beverages	**4,265**	**127,131**	**620,560**	**268,933**	**34.6%**	43.3%	**2.12**
16 Manu.of tobacco products	122	5,189	68,933	**65,659**	**8.4%**	**95.3%**	**12.65**
17 Manu.of Textiles	**1,977**	**54,342**	90,141	40,188	5.2%	44.6%	0.74
18 Manu.of wearing Apparel, dressing & dyeing of fur	**1,553**	**282,254**	**366,398**	**165,799**	**21.3%**	45.3%	0.59
19 Tanning and dressing of leather; manu. of luggage, hand bags, Saddlery, Harness & Footwear	282	10,896	11,499	3,869	0.5%	33.6%	0.36
20 Manu.of wood & products of wood & cork except furniture	1,388	13,188	14,947	7,130	0.9%	**47.7%**	0.54
21 Manu.of paper and paper products	146	5,716	12,035	5,856	0.8%	48.7%	1.02
22 Publishing, printing and reproduction of recorded media	470	17,856	38,781	15,243	2.0%	39.3%	0.85
23 Manu.of coke refined petroleum products and nuclear fuel	4	2,821	**193,501**	5,339	0.7%	2.8%	**1.89**
24 Manu.of chemicals & chemical products	511	15,487	73,386	23,419	3.0%	31.9%	1.51
25 Manu.of rubber & plastic products	600	**50,152**	**135,544**	**58,583**	**7.5%**	43.2%	1.17
26 Manu. of other non metallic mineral products	**2,275**	**30,437**	**101,968**	**47,299**	**6.1%**	46.4%	**1.55**
27 Manu.of basic metals	153	4,792	31,462	6,819	0.9%	21.7%	1.42
28 Manu.of fabricated metal products except machinery equipment	688	10,007	12,978	5,834	0.8%	45.0%	0.58
29 Manu.of Machinery & equipments (n.e.c.)	109	3,120	7,326	3,391	0.4%	46.3%	1.09
30 Manu.of office, accounting and computing machinery	5	1,872	1,419	1,133	0.1%	**79.8%**	0.61
31 Manu.of Electrical machinery and apparatus n.e.c.	77	5,882	23,885	8,941	1.2%	37.4%	**1.52**
32 Manu.of Radio, TV & communication equipment and apparatus	25	2,941	10,302	3,532	0.5%	34.3%	1.20
33 Manu.of medical, precision & optical instruments, watches & clocks	4	146	159	125	0.0%	**78.9%**	0.86
34 Manu.of motor vehicles, trailers and semi-trailers	45	1,414	3,027	1,614	0.2%	53.3%	1.14
35 Manu.of other transport equipment	29	5,316	18,330	7,791	1.0%	42.5%	1.47
36 Manu.of furniture, Manufacturing of n.e.c.	**1,603**	29,888	58,848	30,683	3.9%	**52.1%**	1.03
Total	**16,331**	**680,847**	**1,895,428**	**777,180**	**100.0%**	**41.0%**	**1.14**

*Bold figures are top five in each category

Source : Department of Census and Statistics, *Annual Survey of Industries 2012 Final Report* (March 2014)

2.7 Wage level

Figure 2-4 compares the average nominal monthly wages in Sri Lanka, Bangladesh, Vietnam, Pakistan, India and Thailand in 2008, which was the latest comparable data from the ILO database. Among these six countries, the average nominal monthly wage of Sri Lanka (USD 81.60) is second lowest after Bangladesh (USD 37.22). However, the level of Sri Lanka is about double of Bangladesh and closer to those of Vietnam (USD 87.54) and Pakistan (USD 93.90). It is, however, still lower than in India (USD 119.22) and one third of that of Thailand (USD 267.57)



*Only the figure of Bangladesh is as of 2010 (There are two figures for Bangladesh from different sources; the figure from the other source is USD61.62 in 2008 and is still lower than that of Sri Lanka)
Source: ILO, *ILO Global Wage Database 2012*

Figure 2-4: Average nominal wages by countries（2008*: USD converted）

The JETRO study in 2013, as shown in Table 2-8, shows a comparison of wage levels with other Asian major cities. The wage level in Colombo (Sri Lanka) is higher than in Dhaka (Bangladesh), yet it is lower than in Hanoi and Ho Chi Minh (Vietnam) and is less than one third of that of Bangkok (Thailand). Since the JETRO study is based on surveys to Japanese companies having businesses and hiring staff in these countries and that those Japanese companies tend to hire better-qualified staff than the lowest paid unskilled worker, the results would be slightly higher than the averages of wages. Even considering this tendency, the result illustrates common features within the ILO data.

Table 2-8: Monthly base salary in the manufacturing industry in major Asian cities 2012

(USD)

	Wokers (Factory worker)	Managers (Department chief)
Colombo	**118**	**761**
Yangon	53	433
Dhaka	74	484
Phnom Penh	74	563
Vientiane	132	410
Hanoi	145	787
Ho Chi Minh	148	653
Karachi	173	1,386
Jakarta	239	1,057
New Delhi	276	1,395
Manila	301	1,070
Chennai	324	1,236
Kuala Lumpur	344	1,966
Bangkok	345	1,574
Guangzhou	395	1,274

Source: JICA survey team based on JETRO, The 23rd Survey of Investment Related Costs in Asia and Oceania (FY 2012 survey) (May 2013), pp.6-7

Viewing the data from an alternative viewpoint, GDP per capita of Sri Lanka was USD 3,280 in 2013 and is about to reach the level of Indonesia, yet a worker's wage, USD 118 is much lower than that of USD 239 in Jakarta. The JETRO study pointed out that the wage level in Sri Lanka might be too low, compared to its GDP level.

Based on "Labour Force Survey Annual Report 2012", the table below illustrates Sri Lanka's average monthly salary by sectors: agricultural, industrial, and service. The average salary of each sector differs considerably between monthly wage earners and daily wage earners. In terms of monthly wage earners, the mean salary in the industrial sector: LKR 17,142 is higher than LKR 12,541 of the agricultural sector, though is lower than LKR 21,886 of the service sector. This salary level could be one of the reasons why the manufacturing industry is struggling to attract employees. It is reported that currently, many people prefer working in the service industry, such as hotels, than in the manufacturing industry.

Table 2-9 : Monthly gross salary by sectors（Unit: Sri Lankan Rupee）

Source : Department of Census and Statistics, *Sri Lanka Labour Force Survey Annual Report 2012* (September 2013), p18 (Table 4.8)

2.8 Investments in Sri Lanka

Table 2-10 shows investments in Sri Lanka by countries and Table 2-11 shows investments by sectors.

Table 2-10: Investments by countries

(US$ million, %)

	2011	2012	
	amount	amount	%
Hong Kong	139	259	19.4
UAE	53	214	16
China	10	185	13.8
India	147	160	12
Singapore	53	88	6.6
Mauritius	253	66	5
Holand	51	56	4.2
Malaysia	90	47	3.5
UK	52	38	2.8
Luxcembourg	26	37	2.8
Virgin Island (UK)	54	33	2.5
USA	12	27	2
Japan	27	26	1.9
Others	99	102	7.6
Total	1,066	1,338	100

Table 2-11: Investments by sectors

(US$ million, %)

	2011	2012	
	amount	amount	%
Manufacturing	322	308	23
Food, beverage, Tabacco	42	76	5.7
Textile, lether	95	87	6.5
Wood, wooden products	2	2	0.2
Paper, printing matters	4	4	0.3
Chemical, petrorium	66	16	1.2
non-metal, mineral	17	18	1.3
metal processing, machinery	68	39	2.9
Others	28	23	1.7
Rubber products	n.a.	44	3.3
Agricultural products	18	7	0.5
Services	271	427	31.9
Hotel, restaurants	216	117	8.8
IT・BPO	14	26	1.9
Others	41	284	21.2
Infrastructure	455	597	44.6
Housing, retails premisses, office	92	56	4.2
Telecommunication	197	242	18.1
Electric generations	58	30	2.3
Fuel, gas, etc.	109	66	5
Port, container terminal	n.a.	202	15.1
Total	1,066	1,338	100

Source： BOI (BOI-approved investments)

Looking at the list of countries that made investments in Sri Lanka, Hong Kong (2011, 2012), United Arab Emirates (2012), India (2011, 2012) Mauritius (2011), and Malaysia (2011) are prominent. For Hong Kong, a massive investment by one hotel chain registered in Hong Kong was made. For Mauritius, it is known that a large investment by a U.K. mining company and part of an investment by a hotel chain from Hong Kong, were made through Mauritius. These investments are mainly into resource and real estate in the tourism sectors. India seems to be investing in mobile phone, real estate, and power generation businesses on a continuous basis. Malaysia is also making investments in the mobile business and power generation.

With regard to investments by sectors, large investments were made in “Hotels and restaurants”, “Energy, gas, petroleum, and others”, and “Telecommunication and network services”. Within manufacturing, it is marked that investment in “Textile, apparel, and leather products” is comparatively large. Thus, aside from the energy sector, investments in manufacturing are made mainly in “Textile, apparel, and leather products”, and as for other areas, in addition to tourism, large investments are made in mobile phone and real estate businesses that are targeted at the rapidly growing domestic market in Sri Lanka. Investments that may lead to upgrading the manufacturing sector that will drive a change in industrial structure are still limited.

2.9 International trade agreements

The table below lists Sri Lanka's and neighbouring countries' international trade agreements.

Table 2-12: Trade agreements of neighbouring countries

	Sri Lanka	India	Bangladesh	Pakistan	Nepal	Singapore
Multilateral trade agreements/ initiatives	- SAPTA* - SAFTA** - BIMSTEC*** - APTA****	- SAPTA* - SAFTA** - BIMSTEC*** - APTA**** - ASEAN FTA - India-MERCOSUR PTA	- SAPTA* - SAFTA** - BIMSTEC*** - APTA****	- SAPTA* - SAFTA** -Economic Cooperation Organisation Trade Agreement (ECOTA)	- SAPTA* - SAFTA** - BIMSTEC***	-Trans-Pacific Partnership (TPP) - EU-Singapore FTA - GCC-Singapore FTA (GSFTA) - ASEAN Trade in Goods Agreement (ATIGA)
Bilateral trade agreements	India, Pakistan	Sri Lanka, Singapore, Thailand, Chili, Nepal, Korea, Bhutan, Malaysia, Japan, Afganistan, Bangladesh	India, Afghanistan, Albania, Algeria, Bhutan, Bulgaria, China, former Czechoslovakia, North Korea, Egypt, Hungary, Indonesia, Iran, Iraq, Kuwait, Malaysia, Mali, Myanmar, Nepal, Pakistan, Philippines, Senegal, Sri Lanka, Thailand, Turkey, Uganda, UAE, Russia, Vietnam, Zimbabwe	China, Malaysia, Sri Lanka, Iran, Mauritius, U.S.A, Indonesia	India	China, Japan, Korea, Australia, New Zealand, India, U.S.A., Jordan, Panama, Peru, Costa Rica
Others	GSP***** beneficiary	GSP***** beneficiary	GSP***** beneficiary	GSP***** beneficiary	GSP***** beneficiary	

*SAPTA: SAARC Preferential Trading Arrangement
**SAFTA: South Asian Free Trade Area
***BIMSTEC: Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
****APTA: Asia Pacific Trade Agreement
*****GSP: Generalized System of Preferences

Note: none of the bilateral agreements of Bangladesh is FTA.
Source: JICA survey team based on the information in JETRO website

According to the table, Sri Lanka has not concluded as many bilateral agreements as neighbouring countries such as India and Pakistan. Under such conditions, the India and Sri Lanka Free Trade Agreement (ISFTA) is considered to be significant for Sri Lanka. It provides Sri Lanka with potentials that Sri Lanka could develop manufacturing targeted at Indian industries or the supply of goods to the Indian consumer market. Under the ISFTA, India had already removed import tariffs for 5,223 items since March 2005, and Sri Lanka removed the tariffs for 4,026 items in 2008. It is said that the countries are now negotiating to expand the agreement to other areas such as tourism and financial services.

CHAPTER 3: CURRENT SITUATION OF INDUSTRY

3.1 Current Industry Situation

Through this survey, there was an analysis of various factors that influence industrial development and industrial human resource development. General findings on the current industrial situations are summarised in this section. Findings on each industry are separately explained in Appendix 2.

Findings on the current industrial situation are explained in three areas: common issues, traditional industries, and prospective industries.

3.1.1 Common issues

(1) Prioritisation of industries

It would appear that there are few agreements on the priority of industrial development: there are multiple strategies and plans on industrial development where priority is different. The possible reasons behind this situation are observed below.

Many ministries and other governmental agencies might contribute to making preparations for one consistent policy difficult: there are many stakeholders for each issue, and policy-making functions are divided into many small units. As each ministry and/or agency prepares strategies based on their own information and considerations, coordination can become more difficult. It is worth noting that separate work on strategies/plans by different organizations could mean there are duplications in analysis and planning. If the job can be done together, human resources in the Sri Lankan government could be utilized more effectively and efficiently.

Second, it seems that information necessary to consider policy directions is either limited or missing. It is reported that since there is no solid and suitable definitions on the classification of enterprises, for example the definition of SME, it is difficult to gather sufficient data. It is also pointed out that corporate registrations are unreliable. The Sri Lanka Society of Rubber Industry, for example, needed to create an industrial database containing the basic information of companies and industry by themselves, before preparing their Rubber Industry Development Strategy. There are many statistics, but consistency and compatibility are questionable. In addition, there are indications that information on the world market and companies, which is critical for considering a market penetration and investment promotion strategy, is limited.

It might be of use to prepare and agree to a consistent industrial development strategy where the positioning of each industry and directions and priority of industrial developments are clarified:

some industries are important for maintaining employment, whereas others are important for gaining foreign exchange, for example.

It is impossible to develop all the industries together at the same speed and scale. While Sri Lanka had struggled with its civil war, for about 30 years, other Asian countries had further developed their economies. Sri Lanka needs to compete with these preceding countries with limited resources. If one has limited resources and needs to compete with others, well-organised efforts are necessary. Thus, the priority of industrial development needs clarification, based on sufficient information and coordination.

(2) Need to create a robust industrial structure

Regarding the industrial structure of the country, Sri Lanka's economy has been relying on almost same industries of apparel, agriculture, minerals, etc. over the past decades. High added value medium and large-scale manufacturing industries, which the country has sought to attract, are still limited.

One of the biggest reasons for the difficulties in attracting foreign direct investment in this category is a lack of supporting industries. The Board of Investment (BOI) is aware of the situation; it is considering ways to attract supporting industries and large manufacturers. However, it should be pointed out that Sri Lanka probably does not have advantages in attracting medium and large-scale manufacturing industries even if supporting industries did exist. Its small population, and thus limited market and labour supply, together with limited natural resources limits Sri Lanka's attractiveness. High electricity costs would make it even more difficult.

However, even though it is difficult, Sri Lanka possibly needs to consider fostering some manufacturing industries. Heavy reliance on service industries would make the country's economy vulnerable, especially when such a country needs to import essential commodities from other countries. Thus, it appears that Sri Lanka needs to develop some manufacturing industries in order for the country to have a more balanced industrial structure.

(3) FTA is a double-edged sword

Some people pointed out that FTA (free trade agreement) with other countries would be a great opportunity for the economic growth of Sri Lanka. The India-Sri Lanka FTA (ISFTA) is regarded as having a strong advantage in attracting investment from foreign companies targeting the Indian market. In addition, according to BOI, on-going discussions of a China-Sri Lanka FTA is expected to make Sri Lanka the only country in the world which has a FTA to the three countries of India, Pakistan and China, where large populations exist.

However, in the case of ISFTA, it seems significantly difficult to penetrate the Indian market. It has been reported by several interviewees that many Sri Lankan companies have tried and failed to establish their businesses in the Indian market. The Export Development Board (EDB) explains that the problems are the complexity of the Indian market and non-tariff barriers such as human factors; even licensing procedures change from officer to officer. In other words, only those companies with strong connections inside the Indian market could benefit from ISFTA. On the contrary, ISFTA is considered to increase competition in the domestic market, since Indian companies can export to Sri Lanka more easily.

Considering this experience, the ongoing discussion of a China-Sri Lanka FTA (CSFTA) could be a double-edged sword. Some people, such as those in the apparel industry, hope to gain access to the middle-high price range market of China, since their product quality seems higher than Chinese products sold in Sri Lanka. In reality, the quality of Chinese products has largely improved in the past decades. They have just not exported the middle-high price range products to Sri Lanka yet. Therefore, there seems to be a possibility of CSFTA damaging not only lower price products but also middle-high price range products in Sri Lanka, which the nation intends to develop more.

3.1.2 Traditional industries

(1) Labour-intensive industries started losing their cost competitiveness

Several industries could be considered as traditional industries in Sri Lanka such as apparel, rubber, tea, and spice. As typically seen in the apparel industry, they share one common feature: labour intensiveness. These labour-intensive industries started losing cost their competitiveness due to the increase in labour costs in line with the economic growth of the country. The figure below illustrates that the rise of wages in Sri Lanka from 2004 to 2008 was higher than that of Pakistan and India. This is serious, especially in the apparel industry where most of the raw materials are imported.

Table 3-1: Average nominal monthly wages of selected countries

	USD		Index	
	2004	2008	2004	2008
Sri Lanka	57.0	81.6	100	143.2
Bangladesh	25.0	37.2	100	149.1
Viet Nam	50.0	87.5	100	175.1
Pakistan	70.2	93.9	100	133.8
India	92.1	119.2	100	129.5
Thailand	171.9	267.6	100	155.6

Note: Figures of Bangladesh are wages of 2005 and 2010.
Source: ILO, *ILO Global Wage Database 2012*.

Today, labour costs in Sri Lanka are seen as being not particularly low compared to its

neighbouring countries. One trading company located in India says there is no big advantage to importing clothes from Sri Lanka to India now since prices have increased.

(2) Room for added value in labour-intensive industries

Although labour-intensive industries probably started losing their cost competitiveness, some industries still have room to create higher added value by labour: an increase in quality and productivity. This might be especially true with natural resource based industries like spices and rubber.

Agricultural resources of various fruits, rubber, herbs like cinnamon are already important industries and fishery resources of tuna and sea cucumbers are identified as a potential. In these industries, higher innovations such as producing oil from cinnamon surely creates added value in products. However, even without introducing state-of-the-art technologies, there is still a possibility in creating higher added value by labour.

With regard to the cinnamon industry, for example, one specialist explained that key factors for high quality cinnamon products are skilled farm workers and regular harvesting twice a year. Unfortunately, because of the civil war, lost farming skills and knowledge resulted in a decrease in quality and volume of production. WTO-UNIDO-TSC Cinnamon Project is working on fostering skilled labour. The rubber industry could be another example, since one of the key elements for high quality rubber is harvesting rubber. In addition, SLFPA (Sri Lanka Food Processors Association) said that the quality of agricultural products could be improved by introducing a food-safety administration, postharvest management, packaging, etc. at production sites. The organization is now implementing a project supported by Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ) to train local leaders on these aspects. It is reported that one Japanese hamburger chain imports all its pickles from Sri Lanka. Considering Japan is a country with one of the world's strictest food-safety standards, there could be the possibility of exporting agricultural products to world markets if products are treated properly. There seem to be many areas where we could improve quality and productivity at the farm labour level.

One of the constraints for this area is social perceptions or positioning of farm work in these industries. People prefer to work in rather clean places such as hotels. One Sri Lankan consultant for an international cooperation project told the JICA survey team that it is difficult to hire agricultural workers with a monthly salary of LKR 20,000-50,000 around Colombo, as they prefer to go abroad working on a salary of LKR 20,000 per month. This story might imply the existence of social perception problems. Together with material inducements like payment, improving the social status of farm workers could be a key for improving competitiveness and profitability.

As there is a growing trend of valuing natural products like organic crops, strengthening this area could be very important. It also could result in creating employment in rural areas.

(3) Upgrading industries at the operational level

Currently, there seems to be room for improving quality and productivity of products (including services) at the operational level. Although investments in higher technologies almost certainly increase added value of products, there also seems to be much room for improvement in added value at operational levels without needing any large investments.

Some machinery companies, for example, achieved good sales by improving operations by introducing better factory management. One of the biggest industrial goods companies achieved their status in the industry by introducing Japanese style quality and productivity improvements (or *Kaizen*), and without using any state-of-the-art technology. In another case, there is a Sri Lankan furniture company maintaining good sales in Chennai. It is reported that although the quality of their products is not the best, their after-sales services are much better than what is provided by their Indian counterparts.

It should be noted that operational improvements are important for all industries: whether traditional or emerging, manufacturing or service, labour-intensive or mechanised high-tech. However, traditional labour-intensive industries are those that might benefit largely by improving operational efficiency. Small improvements in the production process of each worker could create large differences. Moreover, automation of production processes tends to lead to a decrease in employment. Thus, considering only technology is sometimes very risky in terms of employment generation. On the other hand, if we could improve competitiveness by upgrading the work force, we could have secure employment.

3.1.3 Prospective industries

(1) Importance and limitations of high added value service industries

There are some emerging high added value service industries such as ICT, BPO like call centres, and specialised BPO services like accounting. These industries are growing rapidly and they would be very important industries since they could utilize one of the advantages of the country: excellent graduates from higher education institutions. University graduates are the people who worked extremely hard to achieve entry to university, and surely, these are people with high potential. In addition, Sri Lanka has large pools of Chartered Institute of Management Accountants (CIMA), next to the UK. These resources would provide a good basis for industry.

However, given the number of people that Sri Lankan higher education could serve (and

regarding the population of Sri Lanka) there would be a limitation in the scale of industries. Clearly, Sri Lanka cannot compete with countries that have much larger populations like India and Bangladesh in IT/BPO by taking the same strategy. Sri Lanka should compete with other countries in niche markets to where the country can provide a sufficient number of competent people. In other words, Sri Lanka could not compete with large software development industries targeted at large markets like India, but it could compete competently with small-middle scale markets.

The construction consulting industry is considered to be another prospective industry. The semi-governmental company of the Central Engineering Consultancy Bureau (CECB) has accumulated experiences of working abroad. Although the level of engineering service is possibly not equal to the highest world standards, it could compete with others and get the offer of projects from international organizations in Africa. It is said that their engineering level is sufficient for some projects in Africa and some parts of Asia, and their cost is much lower than those of their European competitors. It might imply that there is a possibility of developing this industry by focusing on niche markets and upgrading their engineering levels through experience. Since one of the possible difficulties for developing construction industries, not only consulting but also construction, is a shortage of project experience (or opportunities), if they could effectively target at niche markets and accumulate experiences, the industry could be strengthen.

(2) Importance of developing tourism industry

One prospective industry to be considered in Sri Lanka is tourism, given six cultural and two natural UNESCO World Heritage sites together with beautiful ocean surroundings. In fact, the number of tourists increased rapidly after the civil war and investment in tourism industries is also surging. Some world hotel chains such as Shangri-La, have already invested in Sri Lanka, and others are reportedly considering investments.

It seems, however, that the tourism industry is probably still at an early stage in several aspects. Based on our observations, there are several issues to consider.

- A lack of understanding on the true nature of the tourism industry: The core value of the tourism industry is not providing only good hotels or luxurious restaurant facilities but also providing opportunities to have enjoyment and good experiences. Considering the best hotels in the world, for example, they are not necessarily new or beautiful buildings. They established their high reputations by offering an environment where guests can spend special times; this comes from well-established services. Now in Sri Lanka, tourism facilities are improving because of foreign investment. However, it seems the true nature of the tourism industry has not yet been widely understood.

- Lack of middle range/ volume zone accommodations: There are several high-end hotels in Colombo and some small boutique hotels in some other cities. However, the middle range hotels that are very important to attract volume zone tourists are limited, even in Colombo. In addition, compared to other tourist destinations in Asian countries, hotels seem overpriced if you compare facilities and services.

- Necessity of human resource development: Those who work in tourism do not have sufficient trainings compared to counterparts in other ASEAN countries, for example. Even during a short stay in several hotels in Colombo for the survey, the JICA survey team experienced anecdotally experienced problems: receptionists never apologized for their miscalculations in payments; porters complained about the size of their tips; housekeepers always forgot something when making up the room, etc.

- Linkage to other industries: Since almost all facilities used in hotels were imported, the Academy of Design, a private educational design institute, started a project of designing and producing some toiletries for hotels. As this example implies, linkages between tourism and other industries still seems weak. Tourism could be an industry by which we could develop and benefit other industries like food and food processing, toiletry goods, transportation, etc. as well as industries which directly derive benefits from tourists such as souvenirs and restaurants.

(3) Advantages in geographical features

Nearness to the East-West sea-lane and good deep ports are said to be the advantages of Sri Lanka for investment promotion. In this regard, shipbuilding (including repair) and logistics could be a good revenue source.

As for the shipbuilding industry, the Colombo Dockyard continues to achieve better results compared to previous years. There are two important factors in their success: strong business connections with India, and technology from one Japanese company. Nowadays, companies in the shipbuilding industry are competing with their own specialties under worldwide cost competition. One company is strong in tankers, and another is strong in passenger ships, for example. In the case of the Colombo Dockyard, they have established markets and specialities. Although geographical location is one of the factors of the shipbuilding industry, it is not the only one factor for its success. Considering the fact that there are limited supporting industries for shipbuilding such as steel production, developing large-scale shipbuilding industries further could be difficult.

However, small-scale shipbuilding and repair industries could have fair chances. Especially the latter could be interesting, since sea logistics companies select the location of periodic

checking and repairs by taking into consideration their ships' routes, location, and specialty of the docks, and the date they need to be there. The location of Sri Lanka could be an advantageous attraction. This possibility needs further analysis.

The logistics industry is another area that could benefit from geographical features. Since there are limited export products from and import products to Sri Lanka, how to attract transshipment is the key. Ports need to compete with other ports not only on geographical locations but with total costs. If the ports of Sri Lanka can provide competitive prices to logistics companies mostly for their transshipments, there might be reasonable potential here. Total costs include prices of using wharfs, waiting offshore, loading and discharging, stock, etc. Time is another critical factor since logistics companies need to spend a considerable amount of money for each day of operation. Thus, if a ship needs to wait for long hours to enter /stay /leave, it will result in larger costs. There are some strong competitors like the Port of Singapore. According to one logistics company, Singapore always offers competitive prices. Singapore Port Authority (PSA) is even operating other ports in foreign countries based on contracts using their excellent operational knowhow. Thus, developing port facilities is not enough, improving operations is also necessary for Sri Lanka.

(4) Possibility of being a part of supply chain particularly of India

One of the ideas about investment promotion is to attract companies to Sri Lanka to function as a part of supply chain, particularly to become a supply base for India. However, the survey concluded that it might be difficult except for Indian companies.

Foreign companies that require a number of supporting companies, such as automobile and electronics, targeting the growing Indian market usually establish their offices/factories inside India where there is a market, labour and land. Supporting companies come to India together with them. However, these companies reportedly are struggling to survive in the Indian market, where there are many non-tariff barriers. One Japanese company pointed out that the manufacturers feel responsibilities to suppliers that they brought from Japan. Thus, manufacturers feel hesitant to ask suppliers to come together with them unless they are confident of their business development. Considering this situation, it might be difficult to attract companies to Sri Lanka to target the Indian market.

On the other hand, some Indian companies expressed a possibility of establishing their production facilities in Sri Lanka. In this case, they know the Indian market and have connections. Thus, a possibility is created. However, considering the situation that even Sri Lankan companies like Brandix, one of the largest apparel companies in Sri Lanka, established their factory in India since they can acquire larger land and labour force, the

possibility is limited to a certain size of companies and/or factories. In short, the companies that we could attract to Sri Lanka are those that have already established markets (or buyers) in India, if we are considering the Indian market.

Others pointed out a possibility of attracting companies from China and/or South East Asia to Sri Lanka. However, this possibility is not very encouraging. This is because companies invested in China are there for growth, and the already huge Chinese market and/or using natural resources there. In South East Asia, there already are well-established supply chains like the automobile industry. In some cases, companies moved to other countries because of the increase in labour cost. For instance, one company moved a part of their production from Thailand to Laos. In this case, they calculated the additional and decreased cost and delivery time of transferring their production and made the decision. The cheap electricity of Laos and the existence of road networks were most probably considered in the decision-making process. In terms of attraction, Sri Lanka may have some disadvantages in distance to other related factories and there is the issue of higher energy costs.

3.2 Possible directions for industrial development

It is important to consider strategies when we want to develop industries efficiently and effectively while at the same time using limited resources. Here resources mean not only natural resources but also human resources, financial resources, information, and time. Human resources would include accumulated skills and knowledge through experience. It is worth pointing out, that time will increasingly be an important factor in the modern world since any economy of a country faces competition with others. While Sri Lanka had struggled with internal conflicts, other countries have developed their economies. Sri Lanka now needs to compete with them. Thus, the preparation of efficient and effective industrial development strategies is critical for Sri Lanka.

The JICA survey team analysed the situation of the country and considered possible strategic directions for industrial development. As previously stated, we are clearly aware of the limitations of the survey; the findings may show unintentional misunderstandings and discussions we presented here might not be the best for Sri Lanka. However, we hope these strategic discussions will provide some external views and constitutes a basis of discussions for the future of Sri Lanka.

(1) Upgrading industries at the operational level

Rapid economic growth after the Sri Lankan civil war is welcomed situation. One of the important questions is that how do we want to sustain the economic growth. A country might

prioritise rapid economic growth over economic and social equality, while another might consider social equality more than rapid economic growth. It is a choice of people. One clear thing is that if Sri Lanka values social equality, we need to consider income redistribution. As a natural result, labour costs in Sri Lanka would increase. Then, cost competitiveness of labour-intensive industries would decrease.

One of the typical strategies for coping with a situation like this, an increase in labour cost, is presumably a decrease in the number of those working, and mechanises processes. This would have a positive effect on competitiveness but also considerable negative effect on employment especially in labour-intensive industries. A solution to this problem is to increase added value in products at the operational level.

It seems that the apparel industry, especially the sewing industry, is clearly facing this problem. Considering the fact that the industry is the main export industry and hires a significantly large labour force, sustaining this industry is significantly important for Sri Lanka, for both economic and social reasons. Thus, while the industry still keeps its competitiveness, it is necessary to prepare it for the next step.

An increase in labour cost would lose the cost-competitiveness of the industry. In addition, it would make it difficult for companies to secure a labour force. In industrial estates surrounding Colombo, there has been a difficulty in recruiting skilled labour. It is said that many people want to work for rather ‘clean’ places like hotels, rather than in factories. Losing a skilled work force means losing competitiveness.

Considering this situation, it is critical to upgrade the industry to create higher added value so that we will be able to differentiate products from cheaper mass-produced ones. Sri Lanka’s government and the large apparel companies like MAS and Brandix had already predicted this and are taking action. The measures they are implementing are as below.

- Train their employees to upgrade their skills
- Product mechanisation
- Develop their own brands for niche middle-upper markets
- Foster designers

Firstly, there must be numerous possibilities in increasing added value by improving the skills of those working, especially in quality and productivity, as some companies have already done. As explained previously, it seems there is large room for improving quality and productivity by introducing some management practices like Kaizen, lean production, etc. In addition,

mechanisation would be required to step up production to the next level.

In addition, incorporation of upper stream processes of production would be necessary. This incorporation means to internalize upper processes, like designing of products. Regarding the apparel industry for example, since they import raw materials and work based on contracts with European and American companies, their profit margins tend to be slim. They can only get processing fees. If they could design their own brands and sell them, they could get better profit margins. In this sense, establishing one's own brand is very important.

Although large apparel manufacturers have already started moving in these directions, establishing a "brand" is not an easy task, and can be influenced by the image of the country. In the case of the fashion industry, some countries like France and Italy have very strong brand images. In manufacturing, Germany, the USA, and Japan have strong images. Without the established image of a country, it takes a long time to establish brands even if the quality of the product is highly competitive. Then, until the brands firmly establish their reputations, they are exposed to price competitions with other brands of similar quality. A China-Sri Lanka FTA could be a threat to many industries especially to the apparel one, since China produces middle-higher range apparel products that have yet to be exported to Sri Lanka.

Thus, although all four measures that large apparel companies have taken are possibly in the right direction, they are not easy tasks. Also, other labour-intensive industries would face the same situation, including foreign companies that came to Sri Lanka for its comparatively cheap labour cost to quality of labour, and Japanese companies are no exceptions. The problem is these smaller-scale labour-intensive industries often have little capacity to invest in the future in contrast to big apparel companies. Thus, how to support these smaller-scale labour-intensive industries for the similar directions of 1) employee training, 2) product mechanisation, 3) branding, and 4) upgrade designing functions, are the critical questions that should be considered.

(2) Adding value in nature-based industries

It seems there is large room for increasing added value in nature-based industries such as the agri- and handicrafts industry.

As mentioned above, in the cinnamon industry, they could improve quality and increase quantity by fostering skilled labour. Similarly, in the handicraft manufacturing industry such as hand-woven products and wood-based products, there could be room for producing higher quality products sold at higher prices if we could provide sufficient training. According to the Sri Lanka Food Processors Association (SLFPA), there are many agri-based products, which have not been explored yet. SLFPA says that the variety of tropical vegetation is one area that can be explored. Nature-based traditional medication, Ayurveda, could be another potential area for

development, though it would require considerable investment to clear medical certifications of foreign countries for health safety, including allergy testing.

The importance of these industries is that they could contribute to economic and social development in rural areas. It seems that, although introduction of higher technologies could be important in increasing added value and competitiveness of some products like industrial rubber, there is still much room for developing new products, improving quality, and increasing production, by upgrading somewhat primitive levels of technology and improving labour skills in nature-based industries.

One of the effective triggers in developing these nature-based products is market pressure or higher requirements for products. People, especially working on site, often do not realise the existence of the markets where requirements for quality and quantity are higher, but also where profits are much larger. They tend to produce and sell their product as they have done for a long time. To change their awareness on potential markets, one sound strategy is to create effective linkages with the tourism industry where foreign people expect higher standards of products. If we could develop quality products for tourism industries, for example foods, souvenirs for tourists and toiletries for hotels, they would potentially contribute to rural economies.

Also, note that the empowerment of those who work in these nature-based industries should be seen as important. As mentioned above, workers increasingly prefer working in cleaner places, while keeping a skilled labour force can be one of the keys for developing these nature-based industries; economic and social empowerment of those who work in it is also key.

Amid increasing global attention on natural products, a skilled labour force is a particular prerequisite, since organic foods, for example, require more skilled workers than large-scale industrialized agriculture.

(3) Developing manufacturing targeting at world niche markets

Given the size of the land and population, Sri Lanka has little advantages for large-scale production or scale of economy. Especially considering surrounding countries such as India, Bangladesh, and Pakistan, it might be very hard to compete with them in the same industrial fields and segmentations. Developing manufacturing industries is presumably critical since heavy reliance on service industries could make a country vulnerable, except in the case that the country can provide extremely differentiated services like banking sectors in Switzerland, yet even Switzerland does not rely completely on just those services.

The question is what kinds of manufacturing industries could be developed and/or attracted in Sri Lanka. Firstly, it might be very difficult to develop/attract large-scale manufacturers that need

large supporting industries like consumer electrics and automobiles. If a country has rich resources, large population, and large territory, the country would be naturally very attractive for them. In such a country, a company could launch their products with lower quality for the domestic market, and the company could improve their quality and competitiveness in a few years towards the world market, if the domestic market was effectively protected from the larger foreign competitors in its infant period. Clearly, Sri Lanka cannot take this strategy.

Considering the characteristics of companies performing well in Sri Lanka, the companies that can succeed are as below.

- Export oriented companies targeting at preferably Europe, Middle East and Africa (India could be one of the destinations, but targeting only India seems insufficient)
- High value-added industry based on technologies: companies that are able to generate profits even importing raw materials and considering logistic cost for exports (better to use domestic raw materials but such industries are limited)
- Companies that can operate independently without large supply chains
- Not large-scale mass production**,** but small-middle made-to-order production companies
- Companies with established competitiveness in their products (since it is difficult to develop products from scratch in the domestic market, we need to attract companies with established competitiveness)
- Companies that can produce competitive products just by bringing machinery into Sri Lanka and by hiring some workers (companies that need other supporting companies for creating added value are not suitable)

The companies in these categories are limited, but exist in Sri Lanka such as some electronics companies. These categories should be studied and clarified further, so that the nation can formulate effectively targeted investment promotions for both domestic and foreign investors.

(4) Developing basic manufacturing industries

In addition to developing/attracting the manufacturing companies with specific characteristics mentioned above, it also seems important to consider developing basic manufacturers. Here basic manufacturing industries mean companies that could provide indispensable products and/or services to other manufacturers, for example, packaging, repair services, and machine parts.

Until now, many companies have struggled with procurements of basic industrial necessities such as carton boxes and common parts like nuts and bolts, as well as shortages of repair and

maintenance services. They need to deal with small machine issues using their own employees, for example.

Therefore, if we could develop these industries, it would be a good basis for attracting and developing other manufacturing industries. These industries are not very difficult to develop if we could provide sufficient support.

(5) Deepening service industries

Some services industries have already started establishing their international presences. IT/BPO and construction consulting (engineering service) are some examples. Tourism is one of the prospective industries in this area.

Regarding service industries mentioned above, current situations might be that they can compete since either 1) there are now few competitors, or 2) their prices are attractive compared to their service standards. In other words, if competition increased and/or labour costs increased, they could lose the game.

Taking the hotel industry as an example, although the service standard seems sub-par compared to international practices, their business is prospering, since demand currently exceeds hotel supply.

A semi-governmental construction consulting company could get projects from international organisations in Africa because their costs are lower than those of European competitors. However, when they need to work on more complicated infrastructure projects even inside the country, they need to ask for a support from more experienced companies from Singapore, for example.

Considering this situation, one of the most important things might be to deepen services, or to differentiate services to competitors. In achieving these goals, firstly, we need to improve service contents and standards, to compete with competitors especially in the world market.

One of the keys for developing this area is an accumulation of practical experience including exposure to foreign standards. Currently, practical experience is limited, since opportunities are limited in Sri Lanka. Regarding construction engineers, for example, Sri Lankan engineers, who have project experience in foreign countries, reportedly have competent practical knowledge and ability. Thus, how to create opportunities to experience higher-level knowledge and/or operations is the issue that should be considered. In the case of the hotel industry, knowledge of international best practice would upgrade the “natural” hospitality of Sri Lankan people, to trained “professional” hospitality industry employees.

Another key could be a specialization in particular niche markets. Some industrial organizations

like the Sri Lanka Association for Software and Services Companies (SLASSCOM) have already noticed this point and tried to target the market in which larger companies have shown no interest. In addition, they consider utilizing professional pools in Sri Lanka like Chartered Institute of Management Accountants (CIMA), which is the second largest pool in the world next to the UK.

CHAPTER 4: CURRENT SITUATION IN INDUSTRIAL HUMAN RESOURCE DEVELOPMENT

4.1 Characteristics of Industrial Human Resources

The previous chapter explains findings on industrial development. In this chapter, we will explain findings on industrial human resource development. Firstly, we will summarise characteristics of the Sri Lankan labour force as they appeared our survey. Then, we will explain findings in relation to higher education, where some problems have already been mentioned.

4.1.1 Observations on the Characteristics of Industrial Human Resources

It is often pointed out that one of the strengths of attracting direct foreign investment to Sri Lanka is its excellent human resources. Although it is very difficult to judge this perception, some characteristics of its human resources pointed out by several people are as below.

(1) Honesty

It is frequently pointed out that Sri Lankan workers are honest. Some managers said that they do not need to worry about their workers not following their orders or cheating them. When the managers ask workers to do something precisely, they will follow the direction as told.

In some countries, workers change their work procedure without getting approval from managers so that they can have an easier time. It is reported that this does not usually happen in Sri Lanka.

(2) Good eyesight and dexterous

Many foreign companies agreed that workers generally have good eyesight and that they are dexterous. In the sewing industry, it is reported that Sri Lankan sewers can sew sweeping lines while Indians usually cannot.

These characteristics seem to be a good basis for high added value made-to-order productions where skilled labours take an important role.

(3) Obedience

As mentioned above, Sri Lankan people follow directions of superiors and diligently work. They are reliable workforces.

In different views, it seems they prefer following orders to taking initiatives. In some cases, this tendency leads to a difficulty in initiating self-motivating activities, which is believed to be a desirable way to improve corporate operations.

One manufacturing company introduced Japanese style quality and productivity improvement (or *Kaizen*) and improved their competitiveness considerably. They made middle managers thoroughly train and guide workers. In other words, although the company succeeded in introducing Kaizen practices, it was not based on the workers' self-motivated practices, as is often assumed by Kaizen ideology.

This characteristic of obedience could work both for positive controllability of the workforces and for rather negative difficulty in self-motivation.

(4) Multitasking

One manager of foreign company said that it is very difficult to make Sri Lankan workers operate several different machines. As a result, they need to hire more people in Sri Lanka for the same production process compared to other countries such as China and Vietnam. The manager said, in a country like China, if a company offers better remuneration for multitasking workers, people are eager to learn, while it is not the case in Sri Lanka.

Another manager of a Sri Lankan company succeeded in fostering multitasking workers. The CEO of the company said that we could succeed if we can have middle/ on-site managers to train people, though it will take some time.

These cases might imply Sri Lankan workers are not money-hungry, which could be good for a company, since they do not need to worry about continuous pressures of raising wages. However, it also means money is weak as a tool for motivating people to learn how to multitask.

(5) Relationship with company

It is reported that not many workers work a long time for the same company, especially at the factory level.

Especially around the Colombo area, where many workers work relatively short terms in order to save money before returning to their villages in rural areas, the labour market is highly fluid. A manufacturing company located in Colombo area says that only about 20% of workers remained for 5 years of their operations.

Workers' mobility is high too. If wages are better, workers just move to another company. One company reported that some workers do not even remain for the six months' probation period. They just quit their job and move to other companies, and sometimes they come back if the working conditions have improved.

4.1.2 Evaluation on University Graduates

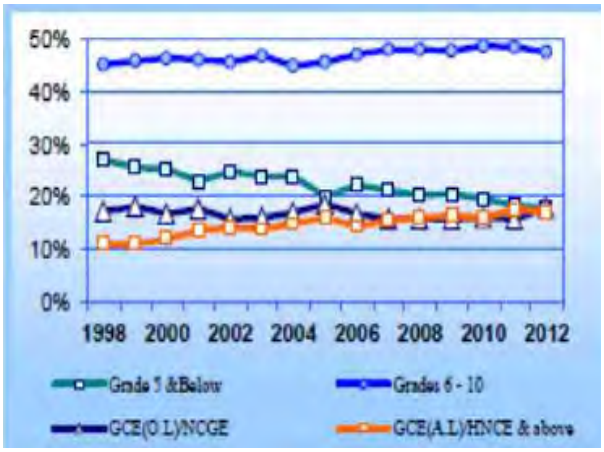
University graduates are a scarce resource in Sri Lanka because entering university is significantly

competitive. Naturally, expectation on the university graduates from industries seems high. However, several problems and challenges are found in this area.

(1) Employment of higher education graduates

The employment rate is a result of a gap between demand and supply of human resources and evaluation of graduates as a human resource.

Figure 4-1 shows the prolonged trend of employment population by levels of education. They clearly indicate an increase of the well-educated workforce.



Source: Department of Census and Statistics, *Sri Lanka Labour Force Survey Annual Report 2012* (September 2013), p17 (Figure 4.7)

Figure 4-1: Employed population by level of education 1998-2012

The unemployment rate of those in the age group of 20 to 29 declined from 19.4% in 2003 to 11.3% in 2012.[3] Positive changes were recorded in general employment indicators in the last 5 years: the unemployment rate in 2012 decreased by 1.3% from 2008 and reached 3.9%[4].

However, if we look at the unemployment rate of the group of G.C.E. (A/L) and above, it is 7.5% (Male 4.4%, Female 11.6%). As far as the unemployment rate of G.C.E. (A/L) and above is concerned, the difference in the choice of academic majors between male and female students affects the figures.

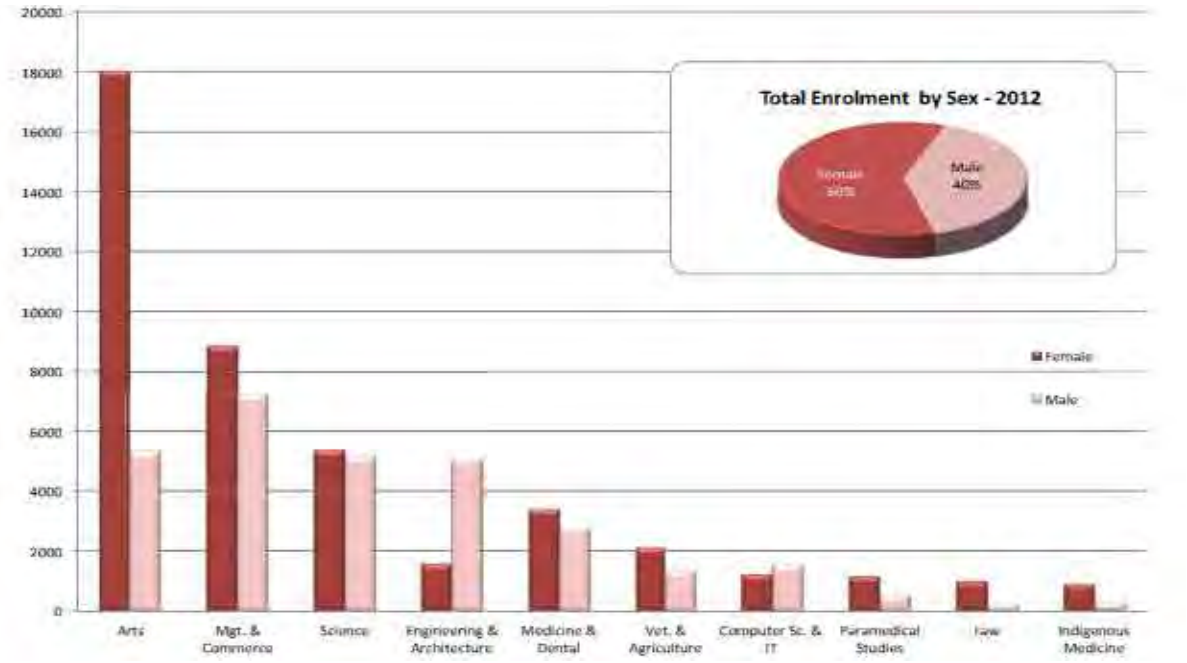
Figure 4-2 shows the total undergraduate enrolment of higher education institutes (HEIs) by stream and sex. The field in which women greatly outnumber men is the Arts (76%). The Arts stream has the largest portion of student intake. However, it does not mean that all students in

[3] Department of Census and Statistics, *Sri Lanka Labour Force Survey Annual Report 2012*

[4] Ditto.

Arts courses are willing to study Arts. In the Sri Lankan system, students sometimes enroll in other majors, as they could not surpass the scores of other candidates in their intended majors. A university lecturer told the JICA survey team that in some majors, many freshmen are not willing to study and skip classes since they wanted to study another major. This clearly implies there is a gap between the number of places in majors that students want to study and the number universities offer.

Moreover, current employment rate by discipline shows that employment rate of Arts stream students is in extremely low at 31.5% (see Table 4-1).



Source: UGC, *Sri Lanka University Statistics 2012* (July 2013), p39 (Chart06)

Figure 4-2: Total undergraduate enrollment in higher education by stream and sex

Table 4-1: Employment rate by discipline, Sri Lanka, 2013

Source: MOHE in Economist Intelligence Unit, *High university enrolment, low graduate employment* (January 2014), p10
(http://www.britishcouncil.in/sites/britishcouncil.in2/files/british_council_report_2014_jan.pdf)

According to one Sri Lankan education specialist, the employability of Arts graduates is low, because the skills required by prospective employers and that of the graduates are not compatible. In particular, Arts students may find it difficult to secure a job since they do not have a good English ability, especially in writing skills.[5] Arts courses do not require English entrance examinations, and this might be linked to the status of the students' English ability. In addition, some pointed out those Arts major students often lack IT literacy in contrast to Science major students.

On the other hand, the high employment rate of graduates who studied Engineering is shown in Table 4-1. When we look at this point more closely, Moratuwa University, a technical university has a high graduate employment rate of 94.3% followed by Wayamba University with 83.1% and Colombo University with 62.8%. Engineering graduates are highly in demand by industry and Sri Lanka's government has a plan to open more faculties for the study of Engineering in existing universities.[6] Since the data includes postgraduate employment, the figures are lower than that of table 2-24, though they are still high.

(2) Soft Skills

In terms of employability, there are other factors in addition to specialty. A questionnaire to 48 organizations conducted by a team from the University of Peradeniya revealed the important attributes of fresh Civil Engineering graduates to succeed in their professional career[7].

The results show that the most important attributes are "Punctuality" (4.35 points in 5 points scale), followed by "Commitment" (4.19), "Integrity" (4.17), "Engineering fundamentals and applications" (4.10), "Written communication skills" (4.02), "Verbal communication skills" (4.02) and" Problem-solving skills" (4.00).

As far as employability are concerned "Personal attitude" (4.12) was identified as the most important skill influencing his/her employability, followed by "Working attitude" (3.90), "Engineering knowledge" (3.82), "Technical and administration skills" (3.81), "Management skills" (3.74) and "Knowledge on engineering design and construction standards" (3.57).

The results imply the importance of students' personal skills and working attitudes as well as acquiring knowledge of their specialty.

---

[5] Lanka University News,*"Sri Lanka University Arts Graduates lowest employability rate"* (July 22, 2013).

[6] Senior officers of both MOHE and UGC released the opening of new engineering faculty at Colombo, Jaffna, Kelaniya, and Sri Jayewardenepura universities to fulfill the shortage of engineers in Sri Lanka

[7] M.M.G.V. Shyamalee, W.M.V.S.K. Wickramasinghe, S. Dissanayake, (2013) *"Employability Skills Expected from Fresh Civil Engineering Graduates"* in Recent Technological Advances in Education

According to the questionnaire conducted by the JICA survey team[8], companies generally expect universities to have students learn four aspects of "Advanced technology and knowledge", "Acquiring practical knowledge", "Active collaboration with industry for education and research purpose", and "Developing close relationship with universities to broaden their global view". In addition, similar to the above research, the necessity of personal skills such as leadership is highlighted.

(3) Utilization of University Engineering Graduates

It is reported that many Engineering major university graduates left their first jobs and went abroad to get other jobs. One of the reasons of this situation, reportedly, is that they are over-qualified for Sri Lankan industries. However, it is also reported that engineers who went abroad are not always be able to work as engineers, and some of them even work as a driver or a manual labour since not all graduates reached the international levels of their specialties. Whatever the reality, it is regrettable that many of them left their own country instead of working for domestic industries. It is a waste of human resources and of efforts of education.

The high employment rate of university Engineering graduates implies a large need for them in Sri Lankan industries. However, considering the fact that many engineering graduates resigned from their jobs after a couple of years, it is not clear if there is ever increasing demand for them. It might be that companies needed to hire new engineers as replacements, because many engineering graduates resigned.

There might be causes due to both higher education and industry. Regarding the higher education side, it might be necessary to have a serious reevaluation in changing the nature of engineering education. Since there are limited working opportunities in Sri Lanka for engineers who studied the state-of-the-art technologies, we need to foster engineers who rather study appropriate engineering knowledge to the reality and are capable in flexible applications of knowledge by using available resources. Some might claim higher specialization in engineering is necessary apart from the current situation where most engineering students study wide areas. However, it could be argued that specialised engineers are needed for a society where specializations are established. In this sense, higher specializations could result in graduates finding it easier to get a job in some foreign countries but could be less suitable to the current Sri Lankan situation. Thus, we need to consider how we can foster more practical and adaptable engineers, whereas we definitely need specialised engineers in some subject areas like high added value rubber products.

[8] See appendix 6. It can be described as "K-SAM": Knowledge (up to date theoretical and practical knowledge), Skills (basic and specialised skills), Attitudes (positive and appropriate) and Mind-set (how one perceives the world)

On the industry side, one of the most important things we need to consider is the positioning of engineers in a company or society. It would appear that companies do not understand the importance of engineers, especially on-site engineers, and do not pay sufficient salaries and offer the correct positions: engineers want to get higher positions like managers instead of working as engineers forever. By working for long time as an engineer, they can learn real engineering and create real changes in the production processes. In order to create such an environment, changes in perceptions and positioning of engineers in a company are critical.

The Sri Lankan government and universities are making an effort to establish new engineering faculties to increase the number of engineering students. This enlargement itself is important because it increases possibilities of providing more graduates of Engineering for wider areas of industry, and probably to wider ranges of corporate scales and positions. However, it is most likely going to be difficult to satisfy requirements (or expectations) for those who studied Engineering by simply increasing the number of students. There is no guarantee that increased graduates would stay in Sri Lanka working for domestic industries and bring real improvements in industries instead of seeking jobs in other countries.

It seems that a bottleneck of industrial development is not simply a shortage of engineering education opportunities, but suitability and applicability of their study to domestic industries and whether the graduates themselves, could settle in these industries. Thus, we need to consider how we can foster different types of engineers suitable to the reality of Sri Lanka.

4.2 Overview of Higher Education and Tertiary & Vocational Education

In this survey, we recognise both higher education and tertiary and vocational education as main institutions for industrial human resource development in Sri Lanka.

The role of higher education as one of the major drivers of industrial human resource development is under establishment. In Sri Lanka, modern higher education has existed only since 1921 when University College was established. It was renamed the University of Ceylon, and became the key university in a UK-style education system. This meant a high level of academic programme specialization in order to fill highly skilled administrator and professional positions. Sri Lanka is one of a few countries in the world that offer free education from primary up to university level. With the increase of expanding opportunities for higher education, new universities[9] were established in provincial areas. While their infrastructure is under development, new universities are introducing new courses on the concept of employability.

Reforms in university education in 1997 aimed at the improvement of the expansion of university education, diversification of university courses and curricular reform, linkage with private sector, career guidance and counseling, university administration and management, staff training development and assessment, financing, student issues, and postgraduate research and training.[10]

As for higher education, we can divide it into three types according to the nature of institutes: 1) public Higher Education Institutes (HEIs) under University Grants Commission (UGC), 2) public HEIs not under UGC, but under other respective government authorities, and 3) private HEIs (see Table 4-2). Although graduate output from the second and third categories of public HEIs not under UGC and private HEIs have increased, they take up no more than 21% in public HEIs not under UGC and 13% in private HEIs of the total graduate output (see Table 4-7 on page 51). Considering the limitation in survey period and the current total graduate output in HEIs, we mainly examine the first category of public HEIs under UGC.

[9] In distinction from new universities (Rajarata University of Sri Lanka, Wayamba University of Sri Lanka, Sabaragamuwa University of Sri Lanka, South Eastern University of Sri Lanka, Eastern University, University of the Visual & Performing Arts, and Uva Wellassa University of Sri Lanka,), the following 7 universities which were established before 1970s are called “Established Universities”: University of Colombo, University of Peradenia, University of Sri Jayewardenepura, University of Kelaniya, University of Moratuwa, and University of Ruhuna.

[10] University Education Reforms 1997, The Presidential Task Force on University Education, Sri Lanka

Table 4-2: Types of higher education institutes in Sri Lanka

Classification	Educational institutions
Public-UGC (17): Fully funded by the state and managed under government regulations, with admission controlled by UGC	➢ 14 Public-UGC institutions are universities authorized to award degrees by respective acts of parliament (University of Colombo, University of Peradeniya, etc.) ➢ 3 institutes are affiliated with universities (e.g. Swamy Vipulananda Institute of Aesthetic Studies)
Public-Non-UGC (10): Fully or partly funded by the state and managed with varying levels of independence from the respective government, authorities, but admission criteria determined independently of the UGC	➢ 2 award degrees from their parent university (Institute of Agro-Technology and Rural Sciences, Institute of Human Resource Advancement at the University of Colombo) ➢ 5 authorized by acts of parliament to award their own degrees (e.g. National Institute of Education, General Sir John Kotelawala Defense University, Ocean University, and Open University) ➢ 3 authorized by UGC to award certain specific degree (Institute of Survey Mapping, National Institute of Business Management, The National Institute of Social Development)
Private Institutions (46)	➢ 46 privately owned institutions. It includes Sri Lanka Institute for Information technology (SLIIT[11]), South Asian Institute of Technology and Medicine, and Australian College of Business and Technology

Source: JICA survey team based on Sujata N Gamage and Tilan M Wijesooriya (LIRNEasia), Mapping the Higher Education Landscape in Sri Lanka (2012), p14-18 (http://lirneasia.net/wp-content/uploads/2012/06/HE-HEI_Survey2012June27_PPT.pdf)

Tertiary and vocational education is often known in other countries as Technical and Vocational Education and Training (TVET), is concerned with the acquisition of knowledge and skills for the world of work. In Sri Lanka, tertiary and vocational education is under the jurisdiction of the Ministry of Youth Affairs and Skills Development.

An exception is the Sri Lanka Institute of Advanced Technological Education (SLIATE), established in 1994, which is under the Ministry of Higher Education (MOHE). SLIATE aims at producing middle level professionals equipped with the required skills to cater to the demands of local and international job markets. MOHE regards SLIATE as a non-university education and offers diploma level education mainly on engineering and management subjects such as National Diploma (ND) in Information Technology, ND in Agricultural Technology, ND in Accountancy, ND in English, and ND in Business

[11] Initially, the Sri Lankan Government contributed funding of LKR 350 Million to the establishment of SLIIT as seed money. The land of Malabe campus has been leased by the government via Mahapura Trust Fund.

Studies for free, as public universities.

Regarding tertiary and vocational education, various forms of cooperation and assistance from international donors including JICA have been given. Later in this chapter, we will touch on a simple overview of this.

4.2.1 University Grants Commission

The University Grants Commission, (UGC) is the apex body of the university system in Sri Lanka, which was established on 22nd December 1978 under the Universities Act No. 16 of 1978. Control of public HEIs is centralized under UGC. UGC is authorized to make allocation of funds, planning and coordination, and regulation of the administration and student admissions. In the selection of the students for admission to undergraduate courses in public HEIs, UGC sets the number of slots available for admission. Table 4-3 shows admission to each course of study for the academic year 2012/2013.

Table 4-3: Admission to each course of study for academic year 2012/2013

Course of study	Appropriate admission numbers	Course of study	Appropriate admission numbers
Medicine	1220	Radiography	35
Dental Surgery	80	Physiotherapy	60
Veterinary Science	100	Environmental Conservation & Management	50
Agricultural Technology & Management	200	Facilities Management	50
Agriculture	530	Transport & Logistics Management	50
Agricultural Resource Management & Technology	150	Molecular Biology and Biochemistry	60
Food Science & Nutrition	110	Industrial Statistics & Mathematical Finance	90
Food Science & Technology	95	Statistics & Operations Research	50
Biological Science	1255	Computation & Management	50
Ayurveda	270	Fisheries & Marine Sciences	60
Unani	50	Islamic Studies	200
Siddha Medicine	70	Arabic Language	150
Applied Sciences (Biological Science)	185	Science & Technology	55
Health Promotion	50	Computer Science & Technology	55
Engineering	1470	Entrepreneurship & Management	55
Engineering (EM)	50	Animal Science	55
Engineering (TM)	50	Export Agriculture	55
Architecture	55	Music	375
Design (Architecture)	50	Dance	334
Fashion Design & Product Development	40	Art & Design	30
Computer Science	260	Drama & Theatre	86
Information Technology	200	Visual Arts	100
Management & Information Technology	50	Visual & Technological Arts	50
Information & Communication Technology	150	Tea Technology & Value Addition	55
Information Systems	80	Industrial Information Technology	55
Town & Country Planning	50	Mineral Resources & Technology	55
Physical Science	1805	Business Information Systems (Special)	50
Quantity Surveying	100	Management and Information Technology (SEUSL)	90
Surveying Science	60	Computing & Information Systems	80
Applied Sciences (Physical Science)	385	Physical Education	50
Management	3525	Sports Science & Management	80
Public Management (Special)	75	Speech and Hearing Sciences	50
Communication Studies	50	Animal Science & Fisheries	50
Estate Management & Valuation	60	Aquatic Resources Technology	55
Management Studies (TV)	150	Palm & Latex Technology and Value Addition	55
Commerce	530	Hospitality, Tourism and Technology Management	55
Arts (including Additional Intake)	5025	Food Production and Technology Management	60
Arts (SP)	150	Information technology & Management	100
Arts (SAB)	200	Tourism & Hospitality Management	100
Law	350	Agro Business management	50
Peace & Conflict Resolution	35	Green Technology	50
Nursing	205	Landscape Architecture	50
Pharmacy	105	**Total Proposed Intake for 2012 A/L Examination**	**23125**
Medical Laboratory Sciences	100		

Source: UGC, *Admission to Undergraduate Courses of the Universities in Sri Lanka, Academic Year 2013/2014,* p4-5

4.2.2 Financing of Higher Education

The Sri Lankan government does not charge any fees to undergraduates and diploma level students of public HEIs. However, the government has allowed public HEIS to charge some costs for postgraduate programmes, short term training programmes, contract research, consultancy and other services. In addition, the Open University of Sri Lanka, a public university, established in 1978 that is adopting distance-learning method, takes tuition fees from students. It has been noted that more than 85% of university budgets come from treasury funds.[12] Table 4-4 shows public spending on

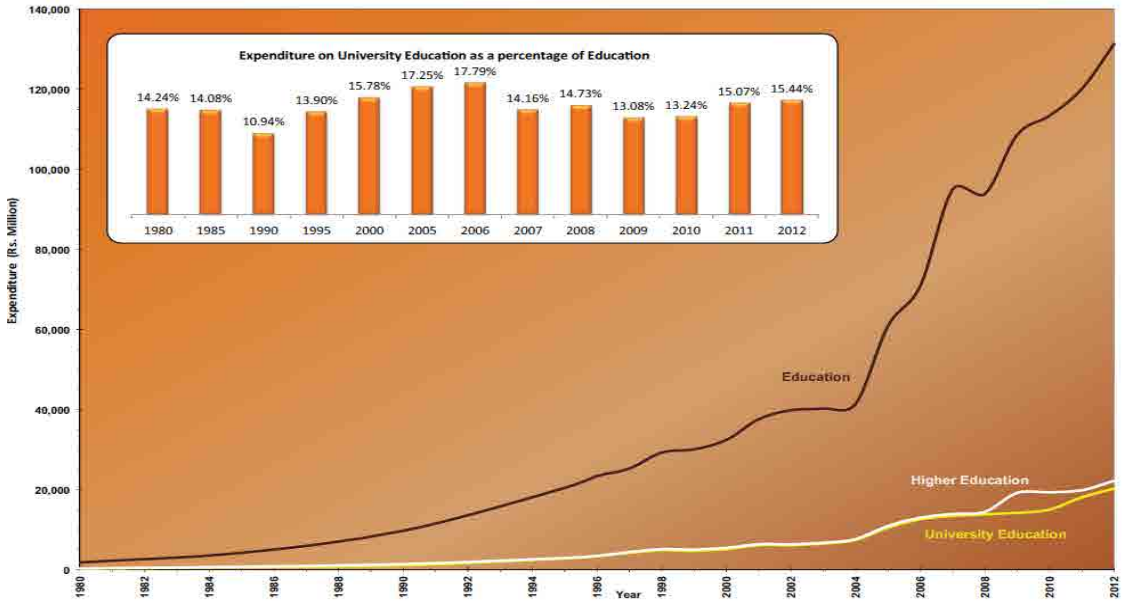
[12] UGC, *Sri Lanka University Statistics 2012.*

education, total (percentage of GDP) and Figure 4-3 shows expenditure on university education as a percentage of education.

Table 4-4: Public spending on education, total (percentage of GDP)

	2009	2010	2011	2012
Sri Lanka	2.1	2.0	2.0	1.7
India	3.2	3.3	3.2	
Bangladesh	2.2			
Pakistan	2.6	2.3	2.2	2.1
Singapore	3.1	3.2	3.1	3.2
Japan		3.8	3.8	

Source: World Bank website (http://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS)



Source: UGC, *Sri Lanka University Statistics 2012* (July 2013), p99 (Chart12)

Figure 4-3: Expenditure on university education: 1980-2012

Table 4-4 and Figure 4-3 show that while Sri Lankan public spending on education has fluctuated at around 2% of GDP, expenditure on universities has been in the range of 15% of total expenditure on education.

Although it is difficult to judge whether the figures are satisfactory or not, the JICA survey team observed a lack of laboratory's facilities and equipment at several HEIs visited throughout the survey. One university teacher informed the JICA survey team that many university academics have been protesting against a reduction of the educational budget and a lack of research facilities.[13]

[13] A trade union is demanding that the education spending be taken from 1.86 per cent to 6 per cent of GDP.

Students also mentioned old laboratory equipment at interviews. Considering the situation that many facilities seem to be outdated, the current budget may be insufficient.

In addition to the current universities, responding to the demand from industry, MOHE allows several public universities to establish engineering faculties.[14] Although it is premature to assess these new faculties, the establishment of new faculties requires an adequate amount of time and finances to prepare its teaching staff, facilities and equipment, and so on. Thus, it is important for Sri Lanka's government to secure financial resources for both maintaining existing faculties and developing new ones.

It should also be noted that one of the financial problems is difficulties in budget executions. Since the budget for public universities is solely managed by UGC, universities need to have approval for budget executions from UGC. The approval process is reportedly lengthy, and it resulted in only around 50% of execution rate of the budget. Improvements in the budget management system would be required.

4.2.3 GCE Advanced Level in Sri Lanka

UGC admits to public universities based on the results of the General Certificate of Education (Advanced Level) Examination conducted at national level by the Commissioner General of Examinations. Candidates should study for 2 years at the so-called "collegiate level" before taking the exam. The exams are held in three mediums (Sinhala, Tamil, and English), and diversified into 4 main streams[15] as below:

1) Arts
2) Commerce
3) Biological Science: biology (botany and zoology), physics, and chemistry
4) Physical Science: combined mathematics, physics, and chemistry

Taking examinations in English is a requirement for those applying to Medicine, Engineering, Agronomics, and other Science majors. For those applying to other majors, students can choose examination languages. It is reported that many students applying to Arts majors choose languages other than English for the examinations.

Candidates who are pronounced eligible by the GCE Advanced Level examinations should have

[14] South Eastern University opened engineering faculty last year. The University of Jaffna is preparing an engineering faculty to accept 38 students from the next academic year. MOHE announced the establishment of new engineering faculties for Universities of Colombo, Kelaniya and Sri Jayewardenepura. (April, 2014)

[15] Technology Stream (Science for technology, Engineering technology or Bio-system technology, and the third subject from 10 subjects including English, Information Technology, and Food Sciences, etc.) will be introduced in 2015 (Ministry of Education). For details of each subject stream, see Appendix.

obtained at least "S" Grades (mark of 40.00 to 54.99) in all three approved subjects and a minimum mark of 30% for the Common General Paper. The exams are conducted each year in August in selected schools across the country. Candidates are allowed to take the exam only three times in 5 years. It takes about 4 to 6 months for the final results to be released and candidates have to wait for around 10 to 18 months to enter a university.

In terms of admission, there is a dual-criterion: 40% of the enrolment is on merit, 55% on district quota based on their population and 5% has been allocated to underprivileged districts.[16] The number of places allocated on the district merit quota will be filled in order of "Z score" or cut off marks on the district basis.

4.2.4 Higher Education Curriculum and Programme

The curriculum is an "academic plan,[17]" which should include the following: the purpose of the curriculum (i.e., goals for student learning), content, sequence (the order of the learning experience), instructional methods, instructional resources, evaluation approaches, and how adjustments to the plan will be made**,** based on experience or assessment data. Like many countries in the world, each Sri Lankan HEI creates its own curriculum for education programmes based on their vision and mission; curriculum development committees work on this. Unfortunately, present curricula in many faculties do not fulfil the current needs of the job market. Feedback from past graduates, conducted by a researcher, shows that the curriculum should match the contemporary world; teachers need to upgrade their knowledge.[18] Designing the curriculum content of academic programmes to provide sufficient opportunities for practical experience of skills required for working in the relevant profession and occupation are also necessary. MOHE is in the process of introducing Outcome Based Education (OBE). These issues are addressed in the sections dealing with higher education quality assurance.

4.2.5 Enrolment in Higher Education

As mentioned earlier, state funded free education is offered at all levels, including that at university.[19] In addition to the state funded higher education institutions, there are degrees offered by private and semi-governmental institutes such as SLIIT, NIBM, Ocean University, SAITM, and Aquinas

[16] 16 districts are defined as educationally disadvantaged districts by the UGC.

[17] Lattuca, L. and Stark, J., *Shaping the college curriculum: Academic plans in context* (2009), San Francisco: Jossey-Bass.

[18] Tharmaseelan, "Tertiary Education in Sri Lanka: issues and challenges" in *Bulgarian Journal of Science and Education Policy* (2007), Vol. 1, No.1, pp.173-190

[19] Postgraduate education is subject to fees.

University College. Some of these degree programmes are recognised by the UGC.

The state university education system in Sri Lanka has changed dramatically over the past decade. Table 4-5 shows the number of student entries to universities during this period[20]. Notably, while those who satisfy minimum requirements for admission reached to 141,411 in 2011, enrolments have increased by more than 120%, from 13,036 in 2002 to 28,908 in 2011. This continued growth seems to reflect the effort of the Sri Lankan government in response to the demand of higher education: the Sri Lankan government has an objective to increase the access to state universities from 22,000 in 2011 to 25,500 by 2015.

Table 4-5: Student entry to universities since 2002

Year of A/L Examination	Academic Year	No. sat the G.C.E (A/L) Exam (1)	No. satisfying minimum requirements for admission (2)	No. applied for University Admission (3)	No. selected	No. selected As % of (1)	No. selected AS % of (2)	No. selected AS % of (3)
2002	2002/2003	210,141	92,252	25,704	13,036	6.2	14.1	50.7
2003	2003/2004	247,755	93,353	30,193	14,260	5.8	15.3	47.2
2004	2004/2005	199,937	108,357	34,002	14,850	7.4	13.8	43.6
2005	2005/2006	204,030	118,770	35,684	17,287	8.5	14.6	48.4
2006	2006/2007	201,686	119,955	36,465	17,248	8.6	14.4	47.3
2007	2007/2008	198,183	121,421	38,603	20,069	10.1	16.5	51.9
2008	2008/2009	207,436	130,236	46,010	20,270	9.7	15.5	44.0
2009	2009/2010	205,249	125,284	47,613	21,547	10.5	17.2	45.3
2010	2010/2011	233,609	142,516	54,124	22,016	9.4	15.5	40.7
2011	2011/2012	239,744	141,411	59,030	28,908	12.0	20.4	48.9

Source: UGC, *Admission to Undergraduate Courses of the Universities in Sri Lanka, Academic Year 2013/2014*, p11 (Table02)
(http://www.ugc.ac.lk/downloads/admissions/local_students/Admission%20to%20Undergraduate%20Courses%20of%20the%20Universities%20in%20Sri%20Lanka%202013_2014.pdf)

In line with responding to the demand for higher education, MOHE is trying to increase the access to Non University Higher Education (SLIATE) from 4,900 in 2011 to 6,000 by 2015.[21] SLIATE is governed and financed fully by MOHE. It is the only institute to offer programmes of study leading to a certificate, diploma, or Higher National Diploma on a full-time and part-time basis in the fields of Technological and Business Studies, such as Engineering, Information Technology, Accountancy, Management, English and Business Studies. Under SLIATE, there are 14 Advanced Technological Institutes nationwide. The admission requirement of SLIATE is to pass four subjects at GCE Advanced Level. As a result, many students who passed A-level but could not reach the score of university entry come to study at SLIATE.

[20] The data on the entry to each major has not been found yet. In terms of graduates, engineering graduates accounted for 8.1% of total graduates in 2011, a slight increase from 5.8% in 2000. Arts graduates was 39.0% in 2000 and 41.6% in 2011. Management & Commerce accounted for 26.1% in 2000 16.7% in 2011. Please see Table 4-7 for the figures.

[21] MOHE, *National Higher Education Strategic Management Plan of Sri Lanka, 2012-2015 Mid Term Plan*.

In addition, MOHE also tries to increase the access to higher education through National Online Distance Education Service (NODES) from 1,500 participants in 2011 to 5,000 by 2015.[22] NODES is an initiative of MOHE and a programme to learn online or a path to distance learning in Sri Lanka. It binds with several HEIs of Sri Lanka including the University of Colombo, the University of Peradenia, the University of Moratuwa, the Open University of Sri Lanka, the Institute of Certified Management Accountants, the National Institute of Health Sciences, and the Institute of Engineering Technology. Different types of qualifications are awarded through this method such as Diploma, Bachelors and Master Degrees.

While admission to universities is still within the policy of free education and is extremely competitive, up to 12,000 Sri Lankan students go abroad every year to study and estimated more than USD 400 million goes out of the country along with those students.[23] The number of students studying abroad is likely to increase in line with the economic growth of the country.

4.2.6 Private institutions offering degrees and diplomas

Since the introduction of an open economy in 1977, private institutions have been offering degrees and diplomas outside the scope of UGC in the field of higher education in Sri Lanka. One survey shows that 46 private institutions are operating as of the 2010/2011 academic year[24]. Among them, 27 private institutions have a track record of having awarded one or more degrees. In many cases, private institutions have partnerships with foreign providers. Table 4-6 shows a handful of examples.

Among those private institutes, the Sri Lanka Institute of Information Technology (SLIIT) is noteworthy. Established in 1999, it has been mainly focused on Information Technology education. It is said that SLIIT has produced more than 50% of Sri Lanka's IT and BPO professionals for the workforce to date.[25] The degrees of SLIIT are awarded under the authorization of UGC.[26] In 2007, Management and Electrical Engineering were added into its study fields. SLIIT is now the largest degree-awarding institute outside the state sector and offers UGC approved Engineering degrees. It also conducts engineering programmes with foreign academic partners Curtin University, Australia and Sheffield Hallam University, UK. Since most of the new programmes do not have graduates yet, the

[22] MOHE, *National Higher Education Strategic Management Plan of Sri Lanka, 2012-2015 Mid Term Plan*.

[23] ICEF Monitor, Market Snapshot: Sri Lanka 10 Oct 2013

[24] Sujata N Gamage and Tilan M Wijesooriya, "*Mapping the Higher Education Landscape in Sri Lanka*" (LIRNEasia)

[25] The Sunday Times Sri Lanka, March 18, 2012

[26] Only SLIIT and Aquinas College of Higher Studies have

survey team has not further studied SLIIT; however, it could be a growing educational institute for industrial human resource development.

Table 4-6: Example of institutions offering foreign qualifications

Institution	Year established	Field	Qualification	Foregn Partners
Acadeny of Design (AOD)	2000	Fashion Design Interior Design Graphic Design Motion Graphic Fashion Marketing	BA (Hons) BA (Hons) BA (Hons) BA (Hons) BA (Hons)	Northumbria University, UK
American College of Higher Educatio	1995	Management of Human Resources General Business Management Information Systems Marketing Information Technology Psychology Electrical Engineering Technology	BSc BSc BSc BSc BSc BSc BSc	Broward College, USA etc.
Australian College of Business and Technology	1998	Business Computer Science Business Administration	BA BA MA	Edith Cowan University, Australia
Sri Lanka Institute of Information Technology (SLIIT)	1999	Information Technology Business Engineering	BSc BBA BSc MA MSc	Curtin University, Australia Sheffield Hallman University, UK
South Asian Institute of Technology and Medicine	2008	Engineering in Civil & Infrastracture Engineering in Mechatronics Engineering in Electronics Engineering in Telecommunications Engineering in Bio Systems	BSc BSc BSc BSc BSc	Asian Institute of Technology, Thailand
		Accounting and Finance Computing with Interactive Media	BSc BSc	Buckinghamshire New University, UK

Source: JICA survey team

4.2.7 Graduate Output

In terms of graduate output according to fields of study, private institutes contribute significantly to producing graduates of Computer Science and Technology: more than 70% of the graduates are from private institutions (see Table 4-7).

Table 4-7: Graduate output by field of study (2011)

Field of Study	Public-UGC	Public-Non-UGC	Private	All
Commerce	2,679	143	867	3,689
Computer Science/IT	429	144	1,552	2,125
Engineering	1,195	221	71	1,487
Other	8,301	3,721	243	12,265
All	12,604	4,229	2,733	19,599

Source: JICA survey team based on Sujata N Gamage and Tilan M Wijesooriya (LIRNEasia), *Mapping the Higher Education Landscape in Sri Lanka* (2012), p27 (http://lirneasia.net/wp-content/uploads/2012/06/HE-HEI_Survey2012June27_PPT.pdf)

Table 4-8 shows the number of graduates by field of study in 2000/2011. In the latest data, the low employment rate of bachelor degree graduates may be due to the large number of those with a major in the Arts (6,940), Management and Commerce (2,791), or Sciences (2,651), whereas Engineering (1,346) and Medicine (1,061) have small output. Graduates of engineering majors produced only less than 10% of the total. The trend has remained the same for many years. Some academics point out that the current admission policy of UGC, formulated in 1994 is 20 years old. The Vice-Chairman of the UGC stated:

"[T]he share of Arts students in university admissions has increased from around 10 to 45 % while that of Science has decreased from 33.5 to 21.5% between 1992 and 2010, and that the situation is inimical to national development as it poses social, economic and political issues and needed to be arrested and reversed as soon as possible".[27]

In Sri Lanka, the percentage of students who go to higher education institutes is only 14%.[28] Although this is a 40 years old analysis, the development of Sri Lankan higher education is on the border of transferring from "elite education" to "mass education" if we borrow Martin Trow's Model of Higher Education development.[29] In this model, the "mass education" stage starts from the 15% point of the advancement rate and the "universal education" stage in which everyone can access to higher education comes at over 50%. Apart from the discussion of the continuation of free education at undergraduate level, it is inevitable for Sri Lanka to expand the access to higher education in tandem with economic development. There is a compelling need for provision of academic streams that meet the real needs of industry. According to MOHE, the employment rate of Arts graduates is only 31.5% while that of Engineering graduates is 95.1%.[30] While the issue of education quality remains, it is clear that engineering education in higher education has to be expanded. This is addressed in more detail in the part of the Sri Lankan labour market.

[27] The Island Reports May2, 2013

[28] The World Bank 2011.

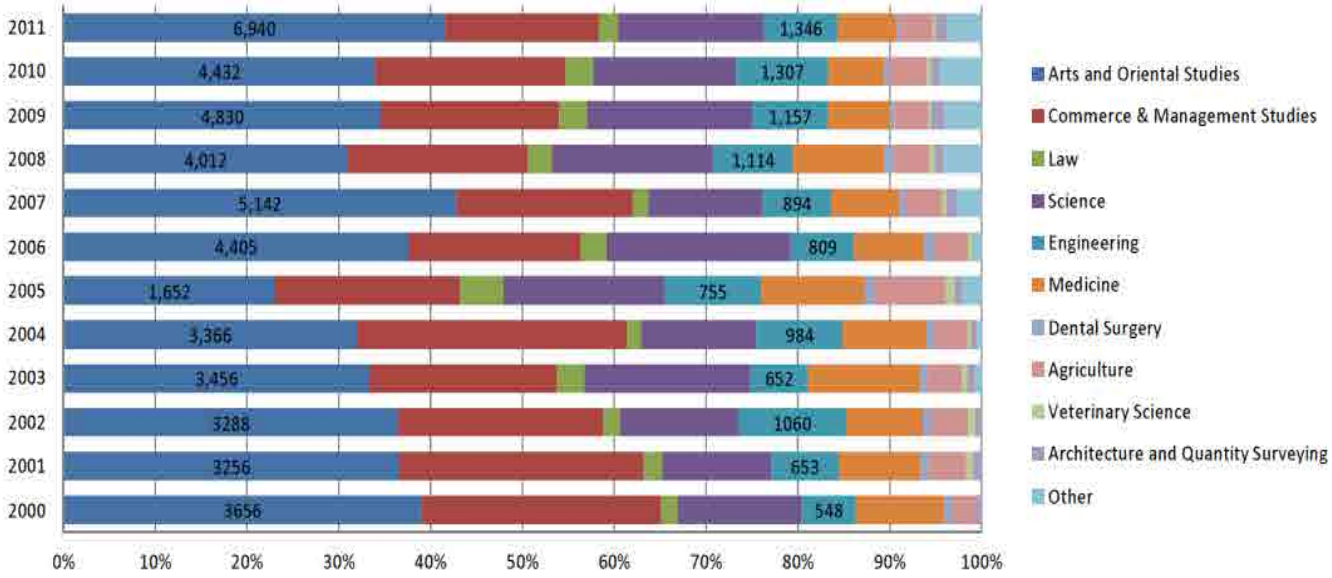
[29] Trow, M., "*Problems in the Transition from Elite to Mass Higher Education*" (1974), Policy for Higher Education, OECD

[30] The Economist Intelligence Unit Limited, "*High university enrolment, low graduate employment Analyzing the paradox in Afghanistan, Bangladesh, India, Nepal, Pakistan and Sri Lanka*" (2014).

Table 4-8: Graduate output of public-UGC by academic stream 2000-2011

Universities	13	13	13	13	13	15	15	15	15	15	15	15	15
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Students	48296	48212	48666	64,291	64,801	66,386	65,206	66,996	66,891	68,768	70,477	74,440	69,879
Lectures	3241	3268	3390	3,543	3,725	3,875	4,016	4,304	4,452	4,735	4,984	5,064	5,200
Total Graduating	9374	8896	9027	10,730	10,525	7,154	11,713	12,005	12,958	13,952	13,042	16,686	NA
Arts and Oriental Studies	3656	3256	3288	3,456	3,366	1,652	4,405	5,142	4,012	4,830	4,432	6,940	NA
Commerce & Management Studies	2448	2367	2018	2,121	3,091	1,436	2,198	2,301	2,547	2,705	2,704	2,791	NA
Law	173	182	170	307	166	345	327	208	345	425	392	348	NA
Science	1264	1052	1159	1,876	1,323	1,250	2,348	1,492	2,274	2,504	2,028	2,651	NA
Engineering	548	653	1060	652	984	755	809	894	1,114	1,157	1,307	1,346	NA
Medicine	904	801	754	1,273	964	805	896	901	1,294	943	797	1,061	NA
Dental Surgery	77	71	75	74	84	74	123	70	125	71	64	65	NA
Agriculture	249	365	377	394	388	554	430	484	510	513	540	595	NA
Veterinary Science	NA	70	68	61	42	74	64	57	80	39	60	58	NA
Architecture and Quantity Surveying	55	79	58	81	69	59	13	132	116	200	118	211	NA
Other	NA	NA	NA	76	48	150	100	324	541	565	600	620	NA

Source: JICA survey team based on Central Bank of Sri Lanka, *Annual Report 2012* (March 2013), Statistical Appendix Table 32, *Annual Report* 2009 (March 2010), Statistical Appendix Table 33



Source: JICA survey team based on Central Bank of Sri Lanka, *Annual Report 2012* (March 2013), Statistical Appendix Table 32, *Annual Report* 2009 (March 2010), Statistical Appendix Table 33

Figure 4-4: Graduate output of public-UGC by academic stream 2000-2011

4.2.8 University Education Faculty Qualification

One way to approach quality assessment of universities is to look at human resources. Table 4-9 shows the composition of teaching staff in universities. While a high proportion of the teaching staff in established universities is composed of professors and senior lecturers, those in new universities is composed of lecturers including probationary lecturers. Normally holding a PhD (or a master) is a requirement to be a proper lecturer at a university. However, universities hire probationary lecturers whose educational qualification is a BA of a relevant study field with First or Second Class (Upper Division) Honors.

Based on the information obtained from one lecturer of a university, some faculties of the universities located in cities and regional universities experience great difficulty in recruiting highly qualified staff. In a faculty, half of the teaching staff is either part time lecturers or probationary lecturers as shown in Table 4-9.

Table 4-9: Composition of teaching staff in universities 2012

University (Number of undergraduates)	Teaching Staff				
	Professor	Associate Professor	Senior Lecturer	Lecturer/ Prob. Lecturer	Total
Colombo (8,394)	94	15	224	216(48)	549(48)
Peradenia (9,926)	139	9	367	326(157)	841(157)
Sri J'pura (9,563)	72	14	278(1)	139(11)	503(12)
Kelaniya (8,101)	107	15	229	236(56)	587(56)
Moratuwa (4,728)	46	3	141	115(12)	305(12)
Jaffna (5,218)	26(7)	12(1)	179(7)	175(29)	392(44)
Ruhuna (6,185)	73	9	200	193(28)	466(28)
Eastern (3,208)	2	0	96(1)	101(20)	199(21)
South Eastern (1,977)	0	0	63	54(13)	117(13)
Rajarata (4,143)	5	0	56	104(1)	165(1)
Sabragamuwa (3,167)	8	0	85	83(6)	176(6)
Wayamba (2,113)	13	3	49	81(15)	143(15)
Uva Wellassa University (1,421)	0	0	11	94(21)	105(21)
Visual & Performing Arts (2,078)	11	6	46	58(6)	115(6)
Open University (15,418)	18	0	124	134	276

Note: ( ) shows part time teaching staff
Source: UGC, *Sri Lanka University Statistics 2012* (July 2013), p40-59(Table03-01), p90-93 (Table 04-01)

It is assumed that it is difficult to hire certified lecturers because of low salary and demanding working conditions at universities. The basic salary of an entry level (probationary) lecturer stands at LKR 27,775, while for a senior lecturer, it is at LKR 39,755[31]. This is significantly lower compared to the basic salary of LKR 70,015 in the banking sector, and LKR 60,737 in the manufacturing and engineering fields for similar ages.[32] The Sri Lankan Government attempts to increase the salary of lecturers by paying additional allowances, such as, research allowances, living allowances and transportation, which could even reach up to the gross salary amount of similar categories in the private sector. However, the majority of lecturers are not entitled to obtain all allowances.

More data from MOHE shows that vacant cadre positions in academic staff had reached to 36% in 2011. This means that there has been a chronic shortage of human resources in universities.[33] The

[31] Qualifications for vacancy at state universities

[32] Chartered Institute of Management Accountants (CIMA) Salary Survey 2013 Sri Lanka

[33] According to MOHE, vacant cadre positions in non-academic and administrative staff was 21% in 2011.

normal procedure to secure their positions for young university academics is to obtain certain qualifications (postgraduate degrees such as MA, M.Phil. and PhD) within 8 years after joining the university as a probationary lecturer. However, limited availability of postgraduate courses in Sri Lanka makes it difficult for them to acquire the degrees while working as a probationary lecturer. This prolonged instability of employment system could be one of the reasons why potential candidates avoid the positions of university lecturers.

As a result of the above, as we see in Table 4-8, the increase in the number of teaching staff remains small compared to the rapid increase of students: while about a 5 to 6% student increase was seen from the previous year in 2011, the increase of teaching staff remained approximately 2%. Considering the situation that university lecturers have large number of students (and classes) already, an increase of students would make lecturers jobs harder.

The lack of competent teaching staff has affected quality of university education in Sri Lanka. One director of an institute states that there is a dearth of lecturers qualified and that the (probationary) lecturers lack competent subject knowledge. There are only few PhD holders in some subjects. Since qualified teaching staff is a prerequisite for providing good education and conducting good research, the shortage of competent human resources is a serious problem. The shortage in competent lecturers largely affects postgraduate education, and it leads to the vicious circle of a shortage of PhD holders.

4.2.9 Accreditation and Quality Assurance

Another way to assess quality and assure that universities continue to maintain their capacity over time is through Quality Assurance and Accreditation Council (QAAC) of UGC, which was established in 2005 and is funded by the World Bank under the project titled “Improving Relevance and Quality of Undergraduate Education” (IRQUE). QAAC is responsible for the review of post-secondary education institutions or post-secondary quality assurance agencies at institutional or programme level. It has a legal status, which ensures that MOHE and the UGC abide by the decision taken, and recommendations made by QAAC based on the findings from reviews and observations.

QAAC conducts institutional reviews, subject reviews, and library reviews that precede accreditation. It is important to create a climate conducive to external evaluation in order to ensure the success of the process.

With the assistance of the World Bank project, "Higher Education for the Twenty-First Century (HETC)", Sri Lanka Qualifications Framework (SLQF) has been developed. It is important in many ways especially for learners to identify different levels of qualification and to interpret qualifications and judge the relative value of a qualification. It integrates the National Vocational Qualification Framework (NVQF) developed by the Tertiary and Vocational Education Commission (TVEC) and identifies flexible pathways that assist in lateral mobility between higher education and vocational education sectors by providing a basis for recognizing prior learning and credit transfer. SLQF also helps to promote national and international recognition offered in Sri Lanka and can be useful to evaluate the qualifications obtained from foreign institutions.

Table 4-10: Minimum requirement for each level of the SLQF

SLQL	NVQL	Qualification Awarded	Minimum Requirements for the Award
SLQL 10	N/A	Doctor of Philosophy/MD with Board/ Certification/Doctor of Letters/ Doctor of Science	Minimum 3 years of full-time or equibalent time of original research after SLQL 6 or above
SLQL 9	N/A	Master of Philosophy/DM	Minimum 2 years of full-time or equibalent time of original research after SLQL 5 or above
SLQL 8	N/A	Master degrees with course work and a research component	60 credits after SLQL 5 or SLQL 6 which include a research component of minimum 15 credits
SLQL 7	N/A	Masters Degrees with course work	30 credits after SLQL 5 or SLQL 6
		Postgraduate Diploma	25 credits after SLQL 5 or SLQL 6
		Postgraduate Certificate	20 credits after SLQL 5 or SLQL 6
SLQL 6	N/A	Bachelors Honours/Bachelors in	120 credits after SLQL 2 or
		Professional discipline	30 credits after SLQL 5
SLQL 5	NVQL 7	Bachelors degree, Bachelors of Technology,	90 credits after SLQL 2 or
		Bachelors Double Major, Pudit, Royal Pudit,	60 credits after SLQL 3 or
		Nipun	30 credits after SLQL 4
SLQL 4	NVQL 6	National Higher Diploma, Higher Diploma	60 credits after SLQL 2 or
			30 credits after SLQL 3
SLQL 3	NVQL 5	National Diploma, Diploma	30 credits after SLQL 2
SLQL 2	NVQL 4	Advanced Certificate	
SLQL 1	NVQL 3	Certificate	
	NVQL 2		

Note: NVQL= National Vocational Qualification Level

Source: MOHE, *Sri Lanka Qualifications Framework* (June 2012), p7 (Table2)

4.2.10 Career Guidance and Industrial Training

Most Sri Lankan HEIs have a career guidance unit that is responsible for arranging, monitoring and evaluating industrial training (or internships) in liaison with the National Apprentice and Industrial Training Authority (NAITA). This unit is also responsible for planning and organizing activities in guiding students for employment prospects.

Industrial training (or internship) is a compulsory course for most engineering, and medicine, agricultural studies at university. Table 4-11 shows training courses offered at NAITA. Students who participate in industrial training are expected to acquire hands-on experience not only major field aspects of the work, but also of related matters such as administration, accounting, management, safety, quality assurance.

The bottom line seems to be that academic streams such as Arts, Management, and Science are not systematically introducing industrial training. This seems to be a reflection of low employability of Arts students.

Table 4-11: The list of training schemes offered at NAITA

Training Scheme	Duration	Institution
Engineering Undergraduate	06 months	University of Peradeniya
Engineering Undergraduate	06 months	University of Moratuwa
Information Technology	06 months	University of Moratuwa
Quantity Surveying	08 (04 months two phases)	University of Moratuwa
Facilities Management	08 (04 months two phases)	University of Moratuwa
NDT (Engineering)	12 (06 months two phases)	University of Moratuwa
NDT (Agriculture)	12 (04 months three phases)	Advance Technical Institute Hardy & Naiwala
Micro Biology	03 months	University of Kelaniya
Biological Science	03 months	University of Kelaniya
Zoological Science	03 months	University of Kelaniya
Applied Science	06 months	University of Wayamba
Higher National Diploma in Information Technology	06 months	Advanced TechnologicalInstitute, Labuduwa
Higher National Diploma in Management	06 months	Advanced Technological Institute Dehiwala, Kandy, Galle, Badulla; Jaffna
National Certificate for Industrial Technician	06 months	Technical College-Kandy and Ratmalana.
National Diploma in Agriculture	06 (03 months two phases)	Technical College-Kuliyapitiya/ Dambulla
Higher National Diploma in Technology	06 (03 months two phases)	Advance Technological Institute Mattakkuliya

Source: NAITA website (http://www.naita.gov.lk/index.php?option=com_content&view=article&id=49%3Aspecial-industrial-training&catid=37%3Aother-training&Itemid=82&lang=en)

Although further study is needed, it seems that the university career guidance unit has to work in a more efficient way in order to improve employability of university graduates. In public HEIs, directors and staff of career guidance units are academic and/or administrative staff of the university who are not familiar with industrial realities. In contrast, private HEIs have more practical career guidance units which work closely with industry and employment agencies to ensure that students have the skills and knowledge for career success. Job search workshops and career fairs are organised to help students reportedly contact potential employers.

4.3 Trends in Development of Sri Lankan Higher Education Sector

4.3.1 Mid-term Plans

The vision of the Ministry of Higher Education "Sri Lanka to be an international hub of excellence for higher education by 2020" is stated in the 2012-2015 midterm plan, "National Higher Education Strategic Management Plan of Sri Lanka". This vision comes from the concept of transforming Sri Lanka into a "dynamic global hub" stated in the government's manifesto, "*Sri Lanka – the Emerging Wonder of Asia: Mahinda Chintana – Vision for the Future* (MEF2010)". There are five key areas of

transformation: naval hub, aviation hub, commercial hub, energy hub, and knowledge hub. An "international hub of excellence for higher education" fulfills the foremost function in the knowledge hub. The mission stated in the government mid-term plan is as follows:

> To delight students, the industry, staff and other stakeholders of the higher education system of Sri Lanka by formulating and implementing results-oriented policies and strategies and to deliver results in an effective and efficient manner through a participatory process to produce the best intellectuals, professionals, researchers and entrepreneurs to produce innovative solutions to make Sri Lanka "The Wonder of Asia".
>
> *2012-2015 Mid Term Plan, Ministry of Higher Education*

The following statements are the 12 goals of the mid-term plan. The JICA survey team analysed the goals by comparing them to the experiences in other advanced countries and stated comments.

Table 4-12: Goals and possible challenges for National Higher Education Strategic Management Plan of Sri Lanka

Goal 1	Increased opportunities and access to higher education
Comment	In addition to the increase in access to higher education, it seems important to consider allocation of places of each subject to meet industries' needs.
Goal 2	Conversion to new world class universities
Comment	To develop world-class universities, we need to improve many aspects of educational quality, facilities, and administration. One of the effective ways for accelerating this course is to invite good (foreign) universities into Sri Lanka. Competition between universities would vitalize existing universities.
Goal 3	Improved employability and quality of graduates
Comment	One of the keys for improving employability and quality of graduates is university teaching and non-teaching staff. To strengthen university staff, both an institutional approach and personal level incentives would be required.
Goal 4	Improved satisfaction of stakeholders
Comment	It is very difficult to satisfy all stakeholders. A clear action plan would be necessary.
Goal 5	Improved global compatibility, global links and exchanges
Comment	Appropriate implementation of Quality Assurance System to assure quality of education will lead to international credibility.
Goal 6	Excellence in research, publications and commercialization
Comment	Although increasing the number of research projects is important, some universities may face difficulties of the shortages in human resources and/or facilities. One possible way towards the goal is to start some universities in better situations.
Goal 7	Conversion of higher education for attracting investments and foreign exchange
Comment	To attract investments in higher education, it is important to consider improving infrastructure in society so that living conditions improve.
Goal 8	Empowered universities and institutes with freedom to be competitive and unique
Comment	This might be the biggest challenge among 12 goals. To change institutional

	arrangements is significantly difficult, since there are many stakeholders involved. The roles of each actor should be considered precisely, based on the realistic recognitions of the organizational capacities.
Goal 9	Increased entrepreneurship of graduates
Comment	To foster entrepreneurs is not as easy a task as imagined. An experience of the world is that a coordinator between academics and industrial people is the key.
Goal 10	Improved effectiveness and efficiency of higher education institutes
Comment	An effective utilization of budget seems to be important for improving situations such as a shortage in university human resources.
Goal 11	Enhanced contribution to national development, reconciliation and peace
Comment	To make a composite of academic streams to meet social (and industrial) needs, realistic discussions are necessary. Roles of private educational institutes and pros and cons of free education in higher education are important issues.
Goal 12	Improved infrastructure facilities of the national higher education system
Comment	As stated above, an efficient budgetary implementation might be the key for success.

Source: MOHE, *National Higher Education Strategic Management Plan of Sri Lanka 2012-2015 Mid Term Plan,* p11-21 and JICA survey team (comments)

As seen from the 2012-2015 mid-term plan of Sri Lanka, every goal and objective hits the nail on the head from what we have reviewed on this report. However, as it is well-recognised by the Sri Lankan government that none of them are easy tasks.

UGC also created the Corporate Plan 2011-2015 in order to design the standard principles of strategic planning as follows. JICA survey team also added some comments to the items.

Table 4-13: Goals and challenges for Corporate Plan by the University Grant Commission - Sri Lanka

Goal 1	Improve Governance and Management of UGC, Universities and HEIs
Comment	Balance between control and freedom would be a key in a future relationship between the UGC and universities.
Goal 2	Enhance the Efficiency of Financial Disbursement and Accountability
Comment	The UGC could be a role model for Universities/HEIs, if the UGC could improve their organizational capacity by overcoming various constraints.
Goal 3	Improve Quality and Relevance of Academic Programmes and Research and Innovation Outputs
Comment	To keep sufficient quality and number of university staff is a key for the improvements in this area. Concrete instruction would be necessary.
Goal 4	Increase Access to Higher Education
Comment	Concrete action plan would be required. More qualified teaching staff is necessary for improving postgraduate programmes.
Goal 5	Improve the efficiency and accountability of UGC as the regulatory body
Comment	The UGC needs to find a way of creating a good environment for higher education.

Source: UGC, *Corporate Plan 2011-2015*, p31-94 (http://www.ugc.ac.lk/downloads/corporate_plan/corporate%20plan%202011%20-%202015.pdf) and JICA survey team (comments)

The Corporate Plan, prepared by UGC gives a clear message that improvement in the governance of UGC is required. To realise its goal, a clear action plan including human resource and budgetary cost would be necessary.

Considering various challenges ahead, to utilize budgets effectively and efficiently is critical. It is a pity that the current utilization rate of budgetary allocation is only 53%. There are surely various reasons behind this situation. However, it seems clear that both UGC and universities need to improve efficiency in their respective administration processes.

4.3.2 Donor Activities in Higher Education Area

With an increasing demand to improve relevance and quality of higher education in Sri Lanka, there is a renewal of donor activity led by the World Bank. A new loan for 40 million US dollars was approved in May 2010 for a higher education assistance project, Higher Education for the Twenty-first Century (HETC). This comprehensive project is scheduled to be completed in 2016.

The main objective of the World Bank loan is to enhance the capacity of the higher education system and to deliver quality higher education services in line with the equitable, social and economic development needs of the country. The HETC was organised with four components: (i) Developing a Sri Lanka Qualification Framework and Quality Assurance and Accreditation System; (ii) Promoting relevance and quality of teaching and learning in universities; (iii) Strengthening higher education by developing the Advanced Technological Institutes of the SLIATE; and (iv)Strengthening human resources of the higher education system. Specifically, the World Bank loan will result in:

Component 1: Institutionalizing Norms for the Higher Education Sector (US$ 0.9 million)

1-1) Development of a Sri Lanka Qualification Framework

1-2) Establishment of a Quality Assurance System for the Higher Education Sector

Component 2: Promoting Relevance and Quality of Teaching and Learning (US$ 23 million)

2-1) University Development Grants

2-2) Quality and Innovation Grants

Component 3: Strengthening Alternative Higher Education (US$ 5.3 million)

3-1) Modernisation of Sri Lanka Institute for Advanced Technological Education (SLIATE)

3-2) Promoting Regional Equity of Access to Alternative Higher Education

Component 4: Human Resource Development, Monitoring and Evaluation, Studies, Coordination, and Communication (US$ 10.8 million)

4-1) Human Resource Development

4-2) Monitoring and Evaluation, Studies, Coordination and Communication

The project impact will be an increase in the number of competent and skilled graduates and professionals who are essential for the efficient and effective delivery of basic human services. As far as implementation status is concerned, the Sri Lanka Qualification Framework (SLQF), developed under the leadership of MOHE has been adopted by UGC and SLIATE, and is being implemented by universities. The University Development Grants (UDGs) will improve IT, English and soft skills of students at 17 universities. The Quality and Innovation Grants (QIGs) have been awarded to 58 study programmes. Over 12,000 students enrolled in the Advanced Technological Institutions, and 204 university and SLIATE academics have commenced MAs or PhD degree programmes. Short-term professional development activities have benefited about 1,800 university administrators and managers, academic, technical and support staff in various aspects such as research methods, teaching and learning in higher education, ICT in higher education, student counselling, soft skills, assessment and evaluation, and strategic planning.[34]

4.4 Challenges in Higher Education for Industrial Human Resource Development

In this section, we would like to describe challenges in higher education for industrial human resource development based on the findings of this study.

Over the three decades following the introduction of an open door economy in 1977, Sri Lankan higher education has expanded with some bumps and detours in terms of enrolment but investments necessary to make it satisfactory for local access as well as for international competitiveness have not been forthcoming.

Significant problems remain with respect to human resources of both teaching and non-teaching university staff, quality and relevance of academic programmes, facilities including laboratories and libraries, finance, and governance. A part of the targeted investments is being gradually injected through a World Bank loan until 2016. As we see in the UGC's corporate plan, governance is a continuing concern. Balance between control and freedom of universities is an important issue which needs to be tackled. The concentration of university budget management to UGC is likely to influence a low budget utilization rate, thus this area might need urgent consideration.

A description of summary of findings with regard to challenges in higher education for industrial human resource development are summarised in six items and is presented in Table 4-14.

[34] The World Bank Implementation Status & Results Sri Lanka, Sri Lanka-Higher Education for the Twenty First Century Project (P113402)

(1) Professional development of university lecturers

University teachers need professional development through in-service training and upgraded qualifications. As we have seen at Table 4-8, most teaching staff is lecturers or probationary (young) lecturers who often do not have postgraduate degrees. Lack of up-to-date training on teaching methodologies such as student-centred teaching as well as the shortage of sufficient research training has to be ameliorated.

One of the causes for a shortage in lecturers is possibly a lack of sufficient funding for staff salaries and research activities. As previously explained, salaries are not particularly attractive compared to what is offered in the private sector. Working conditions are considered as another reason for the difficulty in hiring competent academic staff. A small number of lecturers resulted in the increases in number of classes/subjects and administration work for each staff member. While more students are expected to access to higher education, the increase in number of teaching staff remains minimal. This leads to a vicious cycle of human resources in universities: the shortage of qualified university staff leads to a shortage of candidates for the prospective lecturers.

The World Bank project provides training for academic staff. This is a process for improving qualifications of current staff. However, since the training is provided to active lecturers, other lecturers need to cover his/her classes while they are away from university. In addition, a fundamental problem of the shortage in number of academic staff is not directly addressed by the project.

Ensuring adequate teaching staff in HEIs should be the first priority in order to deliver quality education.

(2) Curriculum development

Curriculum development is essential for successful achievement of educational goals in any academic area. Sri Lanka uses many outdated curriculums, even though universities recognise their educational standard is behind international levels, and not well connected to demands from industries. Lack of relevant curricula and a shortage in teaching staff that can develop up-to-date curriculum are the problems.

Curriculum should match the contemporary world and university teachers need to upgrade their knowledge on curriculum as well as modern teaching methods such as student-centred teaching**,** where students have opportunities to develop their own abilities in applying theoretical knowledge to reality, for example.

However, it might be very difficult for lecturers, who do not have enough work experience in

industry, to design curriculum required by industries. Thus, creating a mechanism of approximating the relationship between universities and industry might be necessary for curriculum development. A university could invite those in industry as members of the curriculum development committee, for example.

(3) Improving facilities and equipment

Inadequate facilities and equipment, including laboratories, libraries, and buildings are seen at many HEIs. This is due to insufficient funding and partially because of some difficulties in executing budgets as explained before.

With growing demand of increasing student intake at HEIs, lack of learning resource materials makes change difficult. Facilities are especially important for engineering education, where students need to develop their skills of applying theories to various situations.

(4) Quality assurance

Quality assurance is critical to assess the capacity of universities. Whereas most HEIs are accredited in Sri Lanka, only few of them are accredited by international accreditation agencies such as the Accreditation Board for Engineering and Technology (ABET).

The World Bank project prepares Sri Lankan Qualification Framework (SLQF) as a national standard for horizontal and vertical mobility. However, there are many challenges for universities in getting international accreditations.

(5) Strengthen non-university higher education

Access to state universities has been limited, and a few alternative HEIs have been available nationwide. Access to non-university higher education (SLIAT) has been limited, too.

The World Bank project works to increase enrollment in SLIATE up to 12,500 students by 2016. When the number of those enrolled has increased, the quality of education also has to be assured. For that, to strengthen academic staff at SLIATE would be very important.

(6) Students' employability development

University graduates face difficulties in choosing their future careers but there is no adequate programme for developing their employability. This is due to limited relevance in university education to employment markets and it leads to low employment rates of G.C.E (A/L) and above.

The World Bank projects offer university students programmes of English and IT skills that they call "soft skills". Organised career guidance gives more adequate information to students. Counselling activities can help students make better career choices. As social development is

progressing, fostering those who can respond flexibly to changes in society is of growing importance.

Entrepreneurship education could have another importance. New business development is vital for the economy. Even students who do not plan to start their own businesses, some elements included in entrepreneurship education such as creativity, judgment, communication capability and a spirit of challenge can be useful after graduation.

Table 4-14: Problems in higher education for industrial human resource development

Findings from a study in higher education	Professional Development of University Lecturers	Curriculum Development	Improving Facilities and Equipment	Quality Assurance	Strengthing Non University Higher Education	Students' employability Development
Description	Most teachers are lecturers or Probationary lecturers who do not have postgraduate degrees; few opportunities for pedagogical or advanced research training	Curriculum is outdated, many fields are not employment market friendly; heavy reliance on lecturers, limited individual work	Laboratories and equipment are outdated; libraries are inadequate, tend to be mostly textbooks, limited access to academic journals	Quality Assurance System is under development	Limited access to state universities; few alternative higher education available nationwide	Low employment rate of bachelor's degree graduates
Probable Reasons	Lack of funding, lack of access to international training programmes and institutional linkages	Lack relevant curricula, lack of capacity to work for developing curriculum	Not enough funding allocation from expenditure on university education	Quality Assurance & Accreditation Council (QAAC) is under the UGC	UGC has wide authority over university education	Lack relevant educational programs which required curricula for employment market
Supporting Evidence	low % of Phd holders at faculty, postgraduate education at Sri Lankan universities are weak	Low employment rate of G.C.E (A/L) and above	Poor laboratory facilities and equipment; library collections; limited access to electronic academic journals	Most HEIs were accredited in Sri Lanka, not by international agencies	Access to Non University Higher Education (SLIATE) is also limited	Low employment rate of G.C.E (A/L) and above
Other Dependencies	Without fostering new or prospective academics, no new curriculum can be properly implemented: new faculties would face great difficulties to run programmes	Lack of international and industry experience of faculty makes curriculum reform difficult	Lack of learning resource materials makes change difficult	Lack of the ability to obtain accreditation by internationally recognized agencies	Lack of recognition for private HEIs; undergraduate programs offered by Sri Lankan state university is free	The allocation of academic stream does not match current industry needs
Existing Actions	The World Bank project provides training for academic staff	Up to each faculty at university	New faculty buildings for universities and institutions	The World Bank project prepares Sri Lanka Qualification Framework (SLQF) for horizontal and vertical mobility; The QA Cycle with institutional reviews	The World Bank project works to increase enrollment in SLIATE up to 12,500 by the end of the project	The World Bank projects offer university students programs of English Language and IT skills; Government gives incentive to universities on increasing students' employability
Investment Cost	A part of US$23.00M (WB project) 2010-2016	Depends on university budget	Rs. 12,455 Million (estimated cost of projects in 2013-2015)	A part of US$0.90M (WB project) 2010-2016	US$5.30M (WB project) 2010-2016	A part of US$23.00M (WB project) 2010-2016

Source: JICA survey team

4.5 Challenges in Tertiary and Vocational Education

In this section we will present an overview of tertiary and vocational education, and present the challenges it faces.[35]

The word, "Tertiary and Vocational Education" means non-university and vocational education.[36] In the current tertiary and vocational education system, the Tertiary and Vocational Education Commission (TVEC), established under the provisions of the Tertiary, Vocational Education Act 20 of 1990 is committed to establishing, and maintaining an efficient, effective and quality assured Technical and Vocational Education and Training (TVET) system relevant to socio-economic goals and changing market needs.

Currently, two types of TVET system can be found in Sri Lanka: formal TVET, and non-formal TVET. The formal TVET sector comprises 348 public sector training centres and about 670 active private and Non-Governmental Organization (NGO) training centres. Figure 4-5 shows the diagram of the TVET system in Sri Lanka. The state TVET sector depends heavily on treasury funds, and additionally, a significant extent on donor funding and technical support; there are also numerous non-formal TVETs that focus mainly on Information Technology.

The National Vocational Qualifications Framework of Sri Lanka (NVQSL), recognises competencies acquired through informal learning such as workplace experiences; life experiences; self-directed study; informal uncertificated learning; formal uncertificated learning; informal undocumented study; in-service training; distance education or open learning; community based learning; and overseas education, training or experiences. Competencies are supposed to be assessed through recognition of prior learning against NVQSL before candidates are awarded a National Vocational Qualifications (NVQ) certificate at the appropriate level.

There are 382 training centres governed by the Ministry of Youth Affairs and Skills Development.[37] The total number of teaching staff is 3,251: permanent (1,191), contract (721), and visiting (1,339). The Special Teacher Training Facility, National Institute of Technical Education of Sri Lanka (NITEL) was upgraded in 2009 to University of Vocational Technology (UNIVOTEC), making the faculty of education in technology dedicated to staff development of the TVET sector. UNIVOTEC offers a course on Bachelor of Education in Technology for teachers in the sector and short-term training courses for TVET trainers and assessors.

International donor agencies including JICA support the development of TVET sectors. The major

[35] The tertiary and vocational education is not the main agenda of this study since it deals with middle managers or executive managers as a human resource

[36] Tertiary and vocational education commission (TVEC), Sri Lanka. The commission is under the Ministry of Youth Affairs and Skills Development.

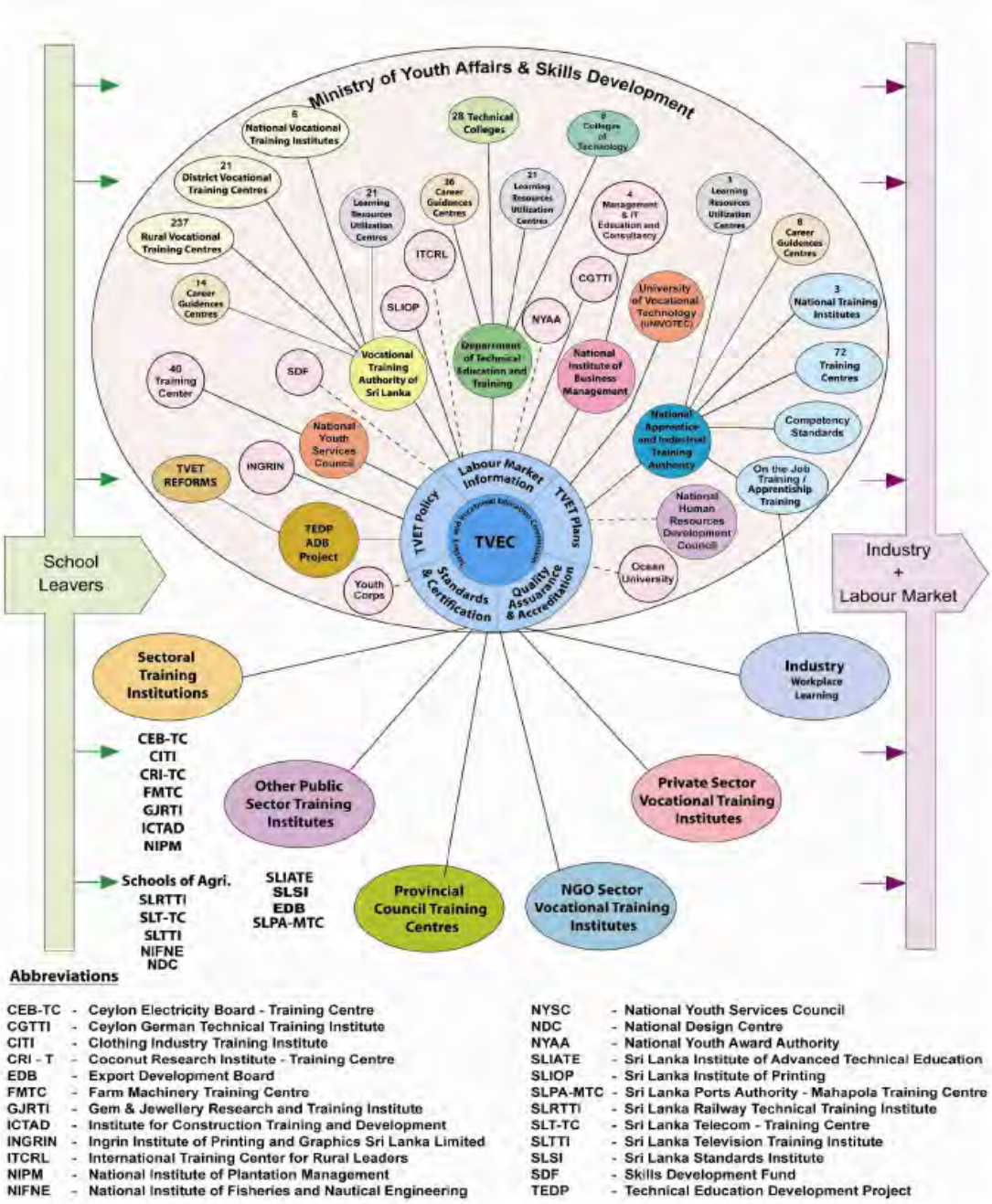
[37] TVEC data as of January 2012

support projects are as described in Table 4-15:

Table 4-15: Major support projects by international donor agencies

No.	Projects	Main Focus
1	Skills Development Project (2000-2006) The Asian Development Bank (ADB) US$20M	Facility development and capacity building of 6 national vocational training institutions, 6 technical colleges and 200 selected vocational training centres. Develop a policy framework for the institutionalization of Competency Based Training (CBT).
2	Establishment of Japan Sri Lanka College of Technology to Strenghen Technical Education and Training in Sri Lanka (2005-2010) JICA 749M JPY	NVQ levels 5&6 model training course are introduced and conducted effectively in SLcoT in the field of Information and Communication Technology (ICT), Mechatronics and Metal Work. Department of Technical Education and Training (DTET) establishes a system for the training course to fulfil industry's needs.
3	Technical Education Development Project (2006-2011) ADB US$20M	Develop more mid-level and highly skilled human resources to contribute to economic growth and social development. Develop 12 technician diploma programs in different subject areas. 12 competency standards are developed and validated. The first batch of UNIVOTEC graduates in B.Ed. Tec passed out in 2011.
4	Technical Education and Vocational Training Sector Development (2011-2012) ADB US$0.8 MTechnical Assistance	Increase employability of TEVT graduates. More effective management and coordination of the TEVT system and individual TEVT institutions, strengthened NVQF, improved staff development, improved provision of relevant teaching and learning materials and equipment, improved capacity to analyze, monitor and respond to emerging labor market needs, improved collaboration between public and private providers of TEVT, and a more inclusive TEVT system to cater to the needs of different groups and regions in line with Government s priorities particularly in the underserved areas.
5	Vocational Training in the North of Sri Lanka (2011-2015) 8 million Vocational centre in Kirinochchi	The new Sri Lankan-German Training Institute (SLGTI) provides needs-oriented training programmes. Improved employment opportunities for graduates support the socio-economic reintegration of population groups affected by the conflict, reduce the potential for conflict and strengthen the region economically.
6	Sri Lanka Tourism Resources Improvement Project (2012-2013) 500M JPY	Education, training and curriculum development for those who were involved in the tourism industry, and improvement of the Sri Lanka Institute of Tourism and Hotel Management (SLITHM) where those who want to work in the Tourism Industry, especially in the field of hotel management, are trained.
7	Skills Sector Enhancement Program (2014-2017) ADB US$100 M loan	Improve quality of TVET provision. Enhance industry partnership for TVET planning and provision Increase participation and improved equity in TVET Improve TVET sector management to implement policy, institutional, and operational reforms.

Source: JICA survey team



Abbreviations

CEB-TC	-	Ceylon Electricity Board - Training Centre
CGTTI	-	Ceylon German Technical Training Institute
CITI	-	Clothing Industry Training Institute
CRI - T	-	Coconut Research Institute - Training Centre
EDB	-	Export Development Board
FMTC	-	Farm Machinery Training Centre
GJRTI	-	Gem & Jewellery Research and Training Institute
ICTAD	-	Institute for Construction Training and Development
INGRIN	-	Ingrin Institute of Printing and Graphics Sri Lanka Limited
ITCRL	-	International Training Center for Rural Leaders
NIPM	-	National Institute of Plantation Management
NIFNE	-	National Institute of Fisheries and Nautical Engineering
NYSC	-	National Youth Services Council
NDC	-	National Design Centre
NYAA	-	National Youth Award Authority
SLIATE	-	Sri Lanka Institute of Advanced Technical Education
SLIOP	-	Sri Lanka Institute of Printing
SLPA-MTC	-	Sri Lanka Ports Authority - Mahapola Training Centre
SLRTTI	-	Sri Lanka Railway Technical Training Institute
SLT-TC	-	Sri Lanka Telecom - Training Centre
SLTTI	-	Sri Lanka Television Training Institute
SLSI	-	Sri Lanka Standards Institute
SDF	-	Skills Development Fund
TEDP	-	Technical Education Development Project

Source: UNESCO website, *World TVET Database* (http://www.unevoc.unesco.org/go.php?q=World+TVET+Database&ct=LKA)

Figure 4-5: Technical and Vocational Education and Training (TVET) System in Sri Lanka

CHAPTER5: CHALLENGES AND APPROACHES FOR STRENGTHENING INDUSTRIAL HUMAN RESOURCE DEVELOPMENT

5.1 Keys for Industrial Human Resource Development

There are various approaches to industrial human resource development (IHRD). In other words, there is no single answer to the way to strengthen industrial human resources. However, considering Sri Lanka, it seems there are three key issues for industrial human resource development.

(1) Cooperation between the Government, Higher Education and Industry

One of the findings from the survey is that governments, higher education, or industry (companies) alone cannot face the challenges for industrial human resource development. Cooperation or harmonised activities are required.

This is because human resource development is not only a simple task of transferring knowledge but 1) developing capacities of people, 2) creating an environment where people can utilize their developed capacities and 3) motivating people.

This situation can be explained this way: If we want to change some situation for the better, we need human resources who are capable of doing it. This person needs sufficient conditions for approaching tasks such as delegation of authorities and legal frameworks. In addition, we need to consider measures that will sustain their activities, including motivation.

(2) Necessity of Various Approaches for Industrial Human Resource Development

Another finding of the survey**:** although higher education is important for strengthening industrial human resources, there are many things we can do in other areas.

University graduates could be considered as being an important core of society. In this sense, improvements in higher education are inevitable. Especially in fostering human resources that fit to the demands of industry is an important challenge.

At the same time, however, in other areas, there are things we can and need to do; improvements at the operational levels of companies as well as vocational training. Moreover, an important thing to remember is that a larger number of the working population are not university graduates, and there are many things we can do for those people, too, in developing industries.

(3) Focus on Characteristics

Based on the discussions on industrial developments in Chapter 2 and 3, the images of desirable industrial human resources were analysed. As a result, it seems better to consider what kinds of characteristics industrial human resources needs to have rather than which specialties they are

trained to do. For instance, it is better considering a) a person who can apply studied knowledge to various realities than b) a person for the tourism industry. This is because problems in industrial human resources have possible commonalities in different industries, while the demands for specialised industrial human resources are also determined in line with a progress in industrial development and the labour market.

5.2 Possible Approaches to Industrial Human Resource Development

In consideration of the current situation of higher education explained in Chapter 4, effective approaches for fostering industrial human resources are considered by looking at the experiences of other countries. Table 5-1 is a summary of discussions.

Table 5-1: Approaches to the challenges

	Government	Higher Education	Industry
Common Issues	■Improving efficiency in administration procedures such as budget realization process ■Establishment of coordination mechanism between governmental organizations ■Modernization of laws and regulations: labor laws, industrial category, etc.	■University positioning	■Strengthen industrial association as a representative of industry
Upgrading Engineering Education	■Scholarship	■Introduction of up-to-date teaching methodology such as student-centered teaching ■Improving facilities like laboratory instruments, machinery, etc. ■Joint research/ industry funded research ■Industry studies (Internship as a part of course) ■Human Resource Exchange / Lecturers with industrial background ■International Exchange (lecturers, students) ■Effective utilization of returnees' organization from foreign universities ■Introduction of working ethics	
Strengthening Middle Layer	■Quality and productivity campaign ■(Subsidies for SMEs?)	■Quality and productivity training	■Quality and productivity improvement projects ■Corporate (in-house) training/ OJT ■Utilization of corporate training facilities (Purchasing Model)
	■Improving social status of workers at the middle layer		
Increase Awareness on Importance of Practical Experience	■Establishments of professional certificates (for example, ITEE, APEC engineer)	■Education on professional awareness	■Education on professional awareness
Soft Skill Development		■Introduction of up-to-date teaching methodology such as student-centered teaching	■Corporate (in-house) training/ OJT
Entrepreneurship	■Business startup support system	■Entrepreneurship training ■Fostering entrepreneurship culture	

Source: JICA survey team

(1) Common Issues

There are some issues necessary for consideration as a common basis for varied industrial human resource development.

One of the most important challenges is increasing efficiency in government administration, possibly including organizational restructuring. A clear example is the administration of university budgets. Sri Lanka is one of the few countries providing free university education. The Sri Lankan government provides budgets to public universities. Unfortunately, there are reports that about 50% of the budget is not used due to the time consuming process of the budget application-implementation process. As such a case implies, to increase efficiency in various administration processes, from policy making to implementation, monitoring and evaluation, would lead to an effective use of limited resources including human resources.

To increase efficiency, a reduction of transaction costs is necessary. This might imply the necessity of effective coordination mechanisms among governmental organizations and with higher education, and/or industries.

In addition, it is pointed out that we might need to reconsider laws and regulations in relation to human resources. We need to prepare the framework where industrial human resources can effectively work. It is reported that some laws are dated and not suitable to a modern business environment. For example, restrictions of labour hours would make shift work difficult.

Similarly, in the higher education sector, the consideration of the positioning of each university might be necessary when thinking of research, teaching, or co-working with the rural economy. With the limited resources of universities, specialization of universities makes development of higher education easier.

Regarding industry, possibly strengthening the industrial organization as a representative of a particular industry and a basis of gathering reliable data on the industry would be necessary.

(2) Upgrading Engineering Education

High employment rate of engineering graduates (according to MOHE, 95.1% in 2013) implies that industries want to hire more engineers, yet there is an observation of two problems in terms of the characteristics of engineers. Firstly, many engineers quit their jobs and leave the country to find employment in foreign countries. It is reported that they found working for companies in Sri Lanka uninteresting, since they cannot utilize their skillsets there. Unfortunately, many of them could not find engineering jobs in the foreign countries and worked in more simple jobs like driving or being a part of the hospitality industry. This is a loss for the country. Secondly, some people in the industrial sector said that newly graduated engineers are not useful since their knowledge is not practically applicable to the reality. On the other hand, it is said that many

engineering graduates easily can study for higher degrees such as a PhD in foreign countries like the U.S.A. or Australia.

In combining these situations, it might be that the primal problem of engineering education is not only in the limited number of engineers but mismatched characteristics and poor retention of graduates in Sri Lankan industries. It seems that university engineering graduates are good for research, but not always suitable to industry in reality.

Based on the information collected through the survey, the images of desirable engineers from industry side are summarised below.

- Engineering knowledge applicable to the reality of Sri Lankan industries
- Ability of considering solutions by using limited resources
- Willingness of working on sites together with workers instead of sitting in his/her room

To foster such an engineer, university education needs to change to a new, innovative educational style, where lecturers let students do many experiments and think independently instead of memorizing what lecturers have told them.

Making the changes in teaching methods would be important but a challenging issue: a majority of current lecturers have experiences in rather pure theoretical educational backgrounds, and might not know of other teaching methods. Together with the introduction of other teaching methods, it might be necessary to upgrade curriculums.

Shortage of facilities and equipment is one of the reasons for theory-oriented lectures in universities since universities do not have the luxury to allow students to use precious equipment freely. Thus, provisions of facilities and equipment could contribute to the change in education style.

In addition, cooperation between industry and universities should be reinforced. There are many things they can do together: joint research, cooperation in industrial studies programmes (internships) of universities, and human exchanges (e.g. some industrial researchers work for several years in a university and/or vice versa), for example. If we can strengthen the relationship between universities and industry, universities would be able to understand the real demands for industrial human resources of industry better.

International exchange of lecturers and students is one of the ways to encourage people to acquire new knowledge and open their eyes to the world. In this sense, utilizing organizations of returnees who studied abroad would be useful. The reason why organization matters is that even if a returnee wants to change the situation based on what they learned in foreign countries, it is difficult make a change by him/ her alone.

Besides, probably the biggest challenge is changing the mindsets of engineering students to work willingly for local industry. It should be pointed out that in this sense it is necessary to increase the number of engineering students in universities. Currently as the number of engineering students is small, they are very precious resources or “elites” of society. Thus, the increase in the number of engineering graduates would increase a possibility of them working for various industries in various positions: to popularize or foster engineers as a profession rather than them being elites of society. In addition, it might be necessary to have an opportunity of introducing work ethics, such as understanding the value of working on site as an engineer, together with happiness as an engineer like contributing to society through improving products.

(3) Strengthening human resources working at the middle layer of a company

Regarding the labour market structure, it seems there is a wide gap between elites/ university graduates and manual labours.

In the early age of industrialization, we needed a small number of elites for their intelligence and management, and a large number of manual labours who sold their time in exchange for wages. This structure is suitable to the world where large scale mass production is the key and changes in the economy are not so quick.

Now, we live in a very different situation. Economies of countries are closely connected with each other and change quickly and continuously. In addition, in line with its economic growth, Sri Lanka started to lose cost competitiveness in labour-intensive industries. To cope with this situation and compete with industries in other countries, we need a different industrial human resource structure.

By observing the current situation, it seems human resources at the middle layer of companies are weak and need to be strengthened: there are middle managers and ‘skilled’ workers. Middle managers are those who manage team(s)/ unit(s) on sites. Skilled workers are expected to be a leaders on production lines and competent at multi-tasking.

Several interviewees point out a shortage of these people. One of the reasons for the shortages is explained as a shortage of competent vocational training facilities. A commonality of these people is that they need both practical experience and some (junior to middle level) management knowledge.

It is said that there are few competent vocational training schools and/or courses in Sri Lanka. Thus, big enterprises such as Brandix established their own training schools to foster skilled workers and middle managers for their companies. Some companies sent their middle manager candidates to external schools providing knowledge on management and quality and productivity improvement like JASTECA (Japan Sri Lanka Technical & Cultural Association, which was

formed by the graduates of AOTS[38] training).

The current vocational training system is weak, and thus many international development partners are working on this. There seem to be many industrial areas where technicians and skilled workers can improve the situation. The cinnamon project mentioned above is an example showing the importance of upgrading skilled workers. One CEO of a manufacturing company said that the results of improving operational efficiency by introducing Kaizen (Japanese style quality and productivity improvement) are satisfactory, though it took huge efforts to change the workplace environment.

With regard to these examples, there seems to be room to upgrade human resources working at the middle layer of companies. Quality and productivity improvement activities could be one of the important areas. This is because a majority of quality and productivity improvements focuses on the activities where middle managers/ core workers take important roles as leaders. Thus, through introducing such activities, we can expect to strengthen middle layer people. For instance, Singapore seems to have succeeded in changing awareness in this area by introducing Japanese style quality and productivity improvement (or *Kaizen*) supported by JICA. One of the things that should be pointed out is that in Singapore, all actors of its government, education and industry took important roles. The Singaporean government led a national campaign on quality and productivity improvement as well as introducing 5S to all governmental agencies. They taught the core ideas of the area in compulsory education so that all students could have ideas of quality and productivity before they start work. Based on those people, companies could work on quality and productivity improvements. Such harmonised activities were considered important. Sri Lanka could do things in a similar way.

It is necessary for people in middle layers to understand what it is like on sites (or shop floors). We can only learn many things through real work experience. Therefore, in-house training or OJT (On-the-job training) takes an important role in fostering middle managers and core workers. As mentioned above, some large companies established a training institution to upgrade their human resources. However, SMEs cannot train their candidates by themselves as large companies do or send them to training institutes due to resource constraints. Thus, it might be necessary to consider the possibility of supporting SMEs to train their middle layer staff by way of providing subsidies for the training and effectively utilizing existing governmental training institutions. ADB is working on the purchasing model, which is the methods a company with its own training institute will train other companies' employees based on fees, and is one of the ways

[38] Association for Overseas Technical Scholarship. An organization which invited foreigners to Japan and provided trainings on areas such as Kaizen. AOTS was merged into HIDA (Overseas Human Resources and Industry Development Association) in 2012.

for supplementing the shortage of competent training institutions. Even in this case, SMEs would find difficulty in paying for the training, so some governmental support would be needed.

It should be said that in upgrading the middle-layer, it is very important to raise the status of these people in society, in other words, the perception of them. Some people reportedly consider students who fail to get places at universities as just one group of people, “others”. It means some people, or families consider that the only and ultimate goal is to graduate from a university, which it is obviously not. If such a notion exists, it would be very important to consider how we can change social perceptions on these middle layer people: the importance of middle managers and core workers. On this topic, cooperation between the government, universities, and industries would be necessary.

(4) Increase opportunities and awareness in importance of practical experiences

Practical field experiences are undoubtedly important**,** especially for engineers and technicians, since they can develop capacities of applying knowledge to various situations mainly through their experiences. There might be two important issues: opportunity and continuity.

In Japanese international cooperation projects, especially infrastructure development, Japanese consulting teams/ companies tend to hire local staff and work with local companies. More importantly, they tend to transfer skills and knowledge to local colleagues through “working together”. As a result, Japanese cooperation projects tend to foster many engineers in the countries where many projects were implemented**,** such as Indonesia. This could be one measure in creating opportunities for Sri Lankan engineers to acquire practical experience.

Secondly, it seems important to make engineers and technicians realise the importance of their continuing efforts. In the area of engineering, people need to develop their engineering capability through practical experience. It also requires continuous study. This is why university education has limitations. One of the options is creating professional certificate systems that require capabilities based on practical experiences like APEC engineers. By creating such a certificate system where continuous studies and considerations based on experiences are required, people would be motivated to do so. It is also essential that the certificates receive a higher evaluation and provide incentives. This is another area to be considered.

In addition to the framework of continuous education created by a certificate system, for example, we might need to teach the importance of continuous learning as a professional in universities and in companies.

(5) Development of soft skills

Throughout the survey, many people, both in the government and in the private sector, pointed

out the importance of developing “soft skills” of university students. The meaning of soft skills mentioned seems to vary; it seems there are mainly two different areas. The first area includes English, ICT literacy, and so forth, which could be developed**,** or rather taught by lecturers and trainers. The other area, which includes communication skills, leadership, and so forth, seems to be more difficult to develop through lectures or training.

These skills could be developed partially through some teaching methods, for example, group-based, student-centred, and progressive education. These teaching methods would provide opportunities for students to develop these second group soft skills, if lecturers are capable enough.

Additionally, the second group of soft skills is often developed through communication with other people. Thus, in addition to considering how to develop these through university education, it might be necessary to consider why many university students actually lack them. According to several people, hard competition for universities is making young students stay away from a social life and they spend time cramming for exams. If this is true, we also need to consider the approaches to primary to high school education.

(6) Entrepreneurship

To vitalize the economy of a country, it is often important to have new companies: new blood. In the interviews, some people pointed out there is/was a notion that graduating from a university and getting a governmental job is the best for children. This preference might be influenced by the fact that government employees can get retirement packages and pensions in addition to the not-high-but-stable salaries. However, for the vitalization of the economy, encouraging new companies is a very important issue; this is why entrepreneurship is important.

It should be noted that there is a tendency of confusing various issues in relation to new business development as entrepreneurships. In reality, there seem to be two areas: support for new business development and entrepreneurial spirit.

The former requires more institutional support by the government or private sector in providing a variety of support programmes to infant companies, such as financial help as well as management knowledge and skills training. This area could be strengthened by establishing certain schemes and institutions.

On the other hand, the support programmes cannot strengthen the latter. Only thing we might be able to do in this area is to improve the social perception on the status of entrepreneurs. In some countries, the word “entrepreneur” is a general term for a person who started their own business. In this case, the word “entrepreneur” sometimes includes rather negative senses of a person who cannot get into good companies or become an officer. On the contrary, in some countries, an

entrepreneur is a person who can challenge and become a millionaire in the future. The perceptions are different, probably influenced by the history and culture of each country. It might be important in Sri Lanka to change the image of entrepreneurs to positive ones.

5.3 Possible Approaches to Higher Education Sector

Within a limited survey period, the JICA survey team mainly focused on the roles and challenges of the higher education sector in industrial human resource developments. Especially, since strong demands for university engineering graduates were identified, the JICA survey team visited all five engineering faculties in Sri Lanka. Other universities were also visited in order to understand general conditions of universities and for comparison.

One of the important findings of the survey is that there are many things we can do to strengthen industrial human resource development apart from higher education, yet the importance or role of higher education cannot be denied. Thus, based on the information acquired through the visits, several approaches for supporting universities in strengthening their industrial human resource development are discussed.

As explained in 4.4, there are six areas where we could support to universities: 1) Professional development of university lecturers, 2) Curriculum development, 3) Improving facilities and equipment, 4) Quality assurance, 5) Strengthening non-university higher education, and 6) Students' employability development. Among these six areas, 4) Quality assurance and 5) Strengthening non-university higher education are tackled through the World Bank projects. Another issue of 6) Students' employability development is partially approached by also the World Bank project and discussed as soft skill development and entrepreneurship above.

The first issue 1) Professional development of university lecturers is also partially supported by the World Bank project. However, it seems that this issue is the core one for improving university education and thus we will discuss it with the other remaining two: 2) Curriculum development, 3) Improving facilities and equipment.

5.3.1 Structure of the Problems in University Education

Various problems that universities face are identified in Chapter 4. It seems that factors behind these problems are interlinked to each other.

Interrelationships between factors could be understood as that:

- One of the reasons for universities' limited access to funds is reportedly a long budget implementation approval process. Budgets of public universities are solely managed by UGC and it often takes a long time from applying to UGC for a budget execution to actual budget implementation, as pointed out before.

- Limited access to funds might lead to comparatively low salaries of lecturers, lack of sufficient research environment such as research funds, and difficulties in purchasing and/or maintaining facilities such as laboratory instruments.

- Three conditions mentioned above create an unattractive working environment in universities. Then since universities are not seen to be an attractive place to work, it is difficult to recruit qualified lecturers.

- Shortage of qualified lecturers leads back to poor working conditions: a few lecturers have to manage many classes.

- It became very difficult to provide postgraduate education due to a shortage of qualified lecturers. In addition, without competent lecturers, the quality of teaching might be questionable.

- It is difficult to introduce an up-to-date teaching methodology if universities cannot hire new recruits or current staff are too busy to learn any new methodology

- Limited opportunity for postgraduate study and difficulty in keeping high teaching standards leads to limited output: limited number of Master/PhD graduates from Sri Lankan universities.

- If there are no attractive places for further studies, some exceptional students may go abroad for further study if they can get scholarships. Reportedly, many prefer to remain in foreign countries for their jobs.

- From student side, they need to study hard to get a place at university: seats are very limited. It might lead to a lack of personal skills such as communication skills and leadership that many people could learn from their social lives. However, since they won the game of entering into universities, they are elites of the society and students might be proud of this.

- As lecturers are using traditional teacher-centred teaching methodology and providing theoretical lectures, it is very difficult for students to develop their abilities of applying theories to practice. It should be pointed out that theoretical teacher-centred teaching might not be a positive choice of the lecturer. However, if lecturers need to provide many classes and there are no sufficient facilities like laboratory instruments, theoretical teacher-centred teaching is most likely the choice.

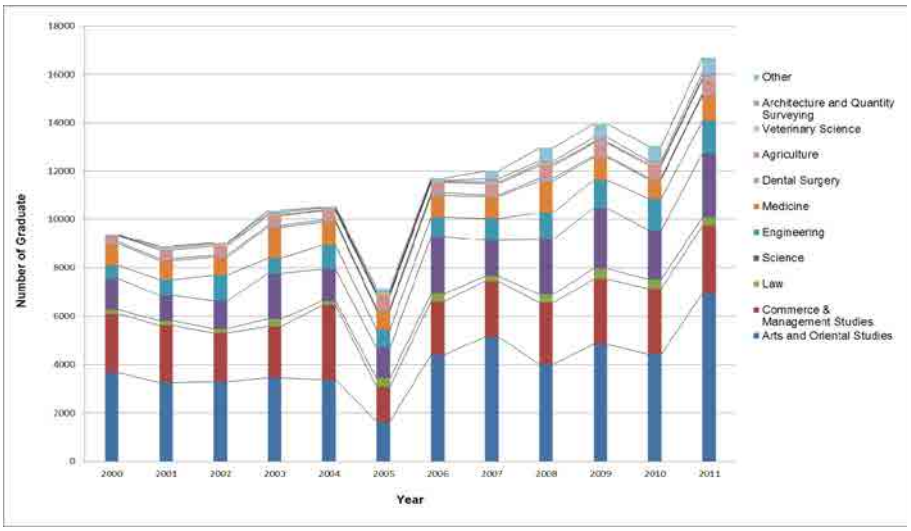
- It is reported that limited opportunities for various practical experience after school also results in difficulties for graduates in developing their capabilities, especially in cases of science and engineering.

- Because graduates only have theoretical knowledge and lack personal skills though feeling they are elites, they might face difficulties in adapting themselves to the real industrial world. Probably in some cases, they do not continuously work there. (Then some of them go abroad.)

This story is a hypothetical understanding on what is going on at universities.

In addition to the above picture, the high unemployment rate of Arts major graduates can be explained partially in this way.

Reportedly in response to the demands for educational opportunity at universities, the government increased places mainly in Arts and Management and Commerce majors. This may be because it is more costly to increase places in Science and Engineering majors: these majors requires facilities and equipment. Although the fact is not confirmed, trends of majors fit this situation.



Source: Central Bank of Sri Lanka, *Annual Report 2012*, 2009 Appendix, Salient Features of General and University Education, (http://www.cbsl.gov.lk/pics_n_docs/10_pub/_docs/efr/annual_report/AR2012/English/content.htm)

Figure 5-1: University graduates by major

As explained above, there are three languages that are used for university entrance examinations. In some majors such as Engineering, applicants need to take exams in English**,** whereas Arts major applicants can choose Sinhala or Tamil for their examinations. The reported situation of many

university graduates especially Arts majors, is their poor English ability, and this could be partially explained by this difference. It is also reported that many students majoring in Arts are not familiar with ICT compared to Science and Engineering majors. These situations might explain the high unemployment rate of Arts graduates, since industry increasingly values these two abilities; English and ICT.

5.3.2 Approaches to University Education

As explained above, there are basically three potential areas of improvement: 1) Professional development of university lecturers, 2) Curriculum development, 3) Improving facilities and equipment. These three issues are discussed in this section. However, here we discuss curriculum development in a larger frame of (2) Cooperation between universities since cooperation in educational programmes have several levels.

(1) Professional development of university lecturers

Lecturers are the key for the quality of education. Since opportunities to study in higher degree programmes like an MA or PhD or up-to-date knowledge are very limited in Sri Lankan universities, one of the ways to strengthen lecturers is to provide a scholarship to study abroad. The opportunity would widen their insights.

In fact, there are several scholarships which provide opportunities for studying for a Master or PhD abroad. The problem is reportedly that people who studied in foreign countries and got degrees tended to stay and get jobs there instead of returning to Sri Lanka.

It should be noted that, some scholarships require students to return to Sri Lanka to work for particular organizations which provided funding otherwise they need to pay it back. Even so, many of those studying abroad reportedly choose to pay back from their salaries by working in foreign countries.[39]

Thus, one important point is that it seems inevitable to impose a condition of coming back to Sri Lanka and working at a Sri Lankan university for a certain period of time. Otherwise those studying abroad might remain in other countries to get jobs. Thus, only when they accept the condition of working for domestic universities for several years, the scholarship would be granted. Such conditions for the scholarship should be clearly considered.

[39] The survey team listened to several people related to universities and found that those who study in Europe, Australia and the United States by scholarships have been inclined to stay there even after the completion of their studies.

(2) Cooperation between universities

There are various levels of cooperation between universities in educational and/or research programmes as seen below.

Table 5-2: Types of cooperative projects in higher education

Programme Type	Study in Japan	Degree Type	Japan's Presence	Cost for Students
Study in Japanese University	Fully	JPN Univ. Degree	Low	High
Twinning Programme	Partially	JPN Univ. Degree	Middle	Middle
Double Degree Programme	Partially	JPN/LKA 2 Degrees	Middle	Middle
Joint Degree Programme	Partially	JPN/LKA 1 Degree	Middle	Middle
Franchise Programme	None	JPN Univ. Degree	Slightly High	Slightly Low
Branch Campus	None	JPN Univ. Degree	High	Slightly Low
Assistance for establishing university	None	LKA Univ. Degree	Low	Low

Source: JICA survey team

As Table 5-2 shows, there are differences in characteristics depending on the types of possible cooperation. In addition to the support for lecturer/student to study abroad shown in the previous page, there are several types of collaborative programmes in upgrading university education.

1) International collaborative education programme[40]

Internationalisation of the university, teaching staff and students' international exposure are important issues to widen their insights.

International collaborative education programmes aim to cultivate industrial engineering human resources in Sri Lanka with cutting edge technology and work ethics of advanced countries through introducing the credit transfer programme to the engineering department in foreign partner universities.

Sri Lanka-Japan[41](or with another partner country) Special Joint Education Programme should be

[40] As a way of student exchange programmes between universities to obtain degrees, there are mainly three programmes: twinning programme (based on the premise of studying in Japanese university, a part of education programme is conducted in Sri Lanka/ degree is issued by Japanese university); double degree programme (obtaining degrees from both Sri Lankan and Japanese Universities through learning under common curriculum prepared by the universities); joint degree programme (study at both Sri Lankan and Japanese universities/ degree is issued jointly by the two universities)

[41] Indications of Japanese is simply because this survey was conducted by a JICA survey team. The

established at a model university. The students who completed the 2nd year of this programme can be transferred to the 3rd year of a Japanese university upon an additional few months of preparatory training. The students can also finish the whole degree programme at the model university.

2) Establish a franchise campus/branch campus

To establish a branch campus of foreign universities is a way of introducing different practices of foreign countries into Sri Lanka. It should be established by the self-effort of a university. A university could find their partner in Sri Lanka and work together for its establishment. One of the existing examples is the Academy of Design which is operated under a franchise contract with a UK university. Target areas of study will be selected by the foreign universities and local partner together.

3) Establish a new university

An establishment of a new university is a way of academic cooperation, which is the most costly but transferring larger knowhow and experience to Sri Lanka. Establishing a university is not an easy task either for a foreign university or a local institution. In most of the cases in other countries, a university has been established by the strong initiative of government and commitments from various stakeholders. In addition to the huge investment cost, coordination among stakeholders is critical, though it is time consuming and significantly difficult.

(3) Improving of facilities and equipment

Another area could be to improve the facilities and equipment of the universities. It would make it possible for students to work on experiments by themselves instead of just listening to lectures. This could enable returnees to continue their research and educational activities in Sri Lanka, too.

5.3.3 Cooperation Models

Based on the types of cooperation project above, the following cooperation models are prepared for further discussion.

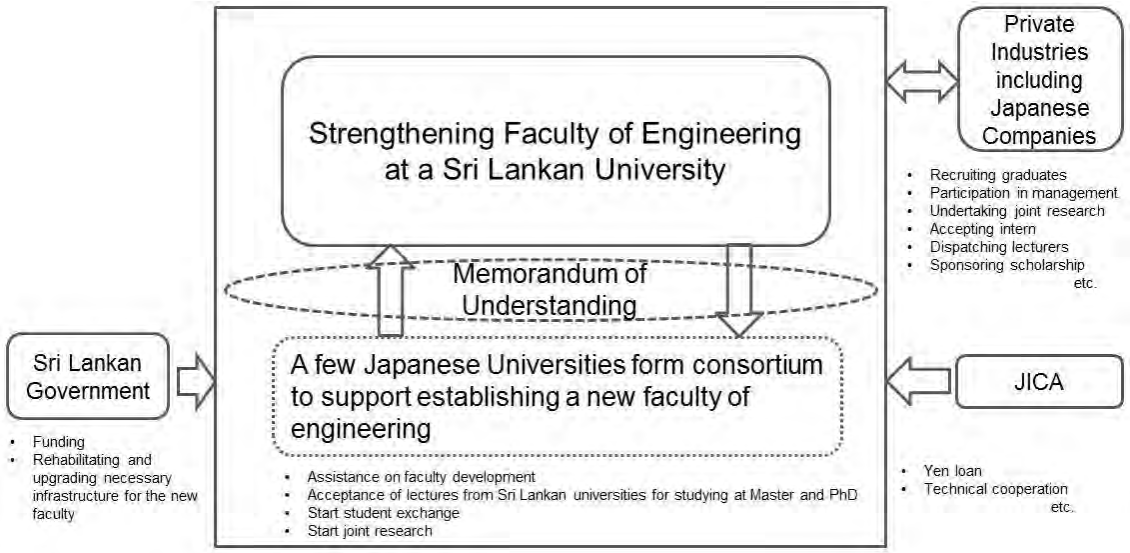
It should be clarified that this JICA survey is aiming to understand a broad picture of current situations of industrial human resource development based on the ideas on the potential directions of industrial development. In other words, this survey does not intend to formulate particular projects. These three cooperation models are, however, prepared for enabling more practical discussions between

---

discussions and figures are basically explaining schemes and not limited to Japanese actors.

stakeholders. In all models, Japanese (or partner) universities' commitment and capabilities would be the key factors for success and Sri Lankan and Sri Lankan universities need to work hard to attract Japanese universities.

(1) Cooperation model 1: Strengthening Faculty of Engineering at a Sri Lankan University



Main Activities

- Japanese university degree programme for teachers
- International collaborative education programme
- Curriculum development
- Improvement of equipment

Fear Factors of this Arrangement

- Financial guarantee from investors
- Vision of engineering education
- Management of a Japanese universities' consortium
- Selection of a model university: either choose an existing engineering faculty at an established university or establish a new engineering faculty at a new university
- Commitment of stakeholders
- Returnees may turn to his/her old bias, that existing faculties have, again

Cooperation model 1 is strengthening a faculty of engineering at a model Sri Lankan University by fostering faculty lecturers through studying in Japan.

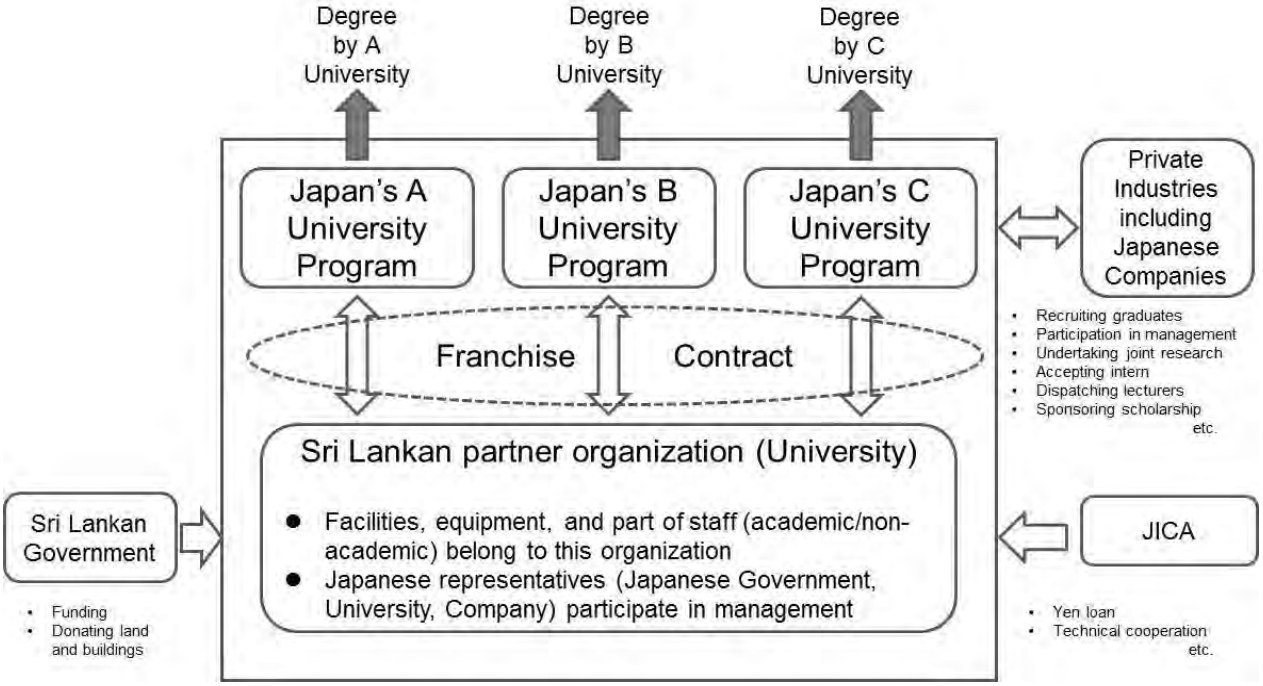
The major fear factors would be the finance, vision of engineering education and the selection of

university as the model for developing engineering education. In order to send a significant number of Sri Lankan teachers to study in Japan, a source of financing has to be secured.

Human resource development takes a long time to achieve its goals. The Sri Lankan Government would need to choose its way carefully; what kind of educational practices are suitable for the country and should be followed. Various factors necessary need consideration before making a choice.

As for selection of university, it might be easier to start a new engineering faculty in preferably influential university since it seems more difficult to change the lecturers' mindsets in existing faculties

(2) Cooperation model 2: Establishing a Franchise Programme/Branch Campus



Main Activities

- Offer a degree programme for Sri Lankan and international students with Japanese university degree
- Lecturers are dispatched from Japanese universities
- Japanese style engineering education such as class system and Project Based Learning (PBL) is implemented
- Internship or employment opportunities at Japanese companies in Sri Lanka (if possible)

- Offers also postgraduate programmes designed for university lectures

Fear Factors of this Arrangement

- Financial guarantee from investors
- Japanese law of university setting overseas
- Selection of Sri Lankan partner organizations
- Commitment or availability of Japanese companies

Cooperation model 2 is more focused on promoting higher education in Sri Lanka through attracting Japanese universities. The concept of "Franchise Programme" is not unfamiliar for Sri Lankan education providers, but it is quite new for Japanese universities. In addition, "Branch Campus" is a hot issue in Sri Lanka in terms of attracting investment from foreign higher education operators.[42] The Sri Lankan government plans to prepare special educational zones nationwide and to invite the foreign higher education operators to invest.

However, none of the Japanese universities have experienced holding a branch campus overseas.[43] It is only Japanese universities which do not have branch campuses outside their home country in the major economies, and East Asian universities such as Chinese and South Korean ones do have branch campuses. In Japan, there have been a lot of discussions about creating branch campuses outside of Japan, and a law for including the establishment of Japanese universities overseas was already prepared in 2008.

The cost of building a branch campus would be smaller compared to that of the establishment of a new university described on Cooperation model 3.

However, Japanese universities would not enter the Sri Lankan educational special zone unless strong demands for education and endorsement from their stakeholders are assured.

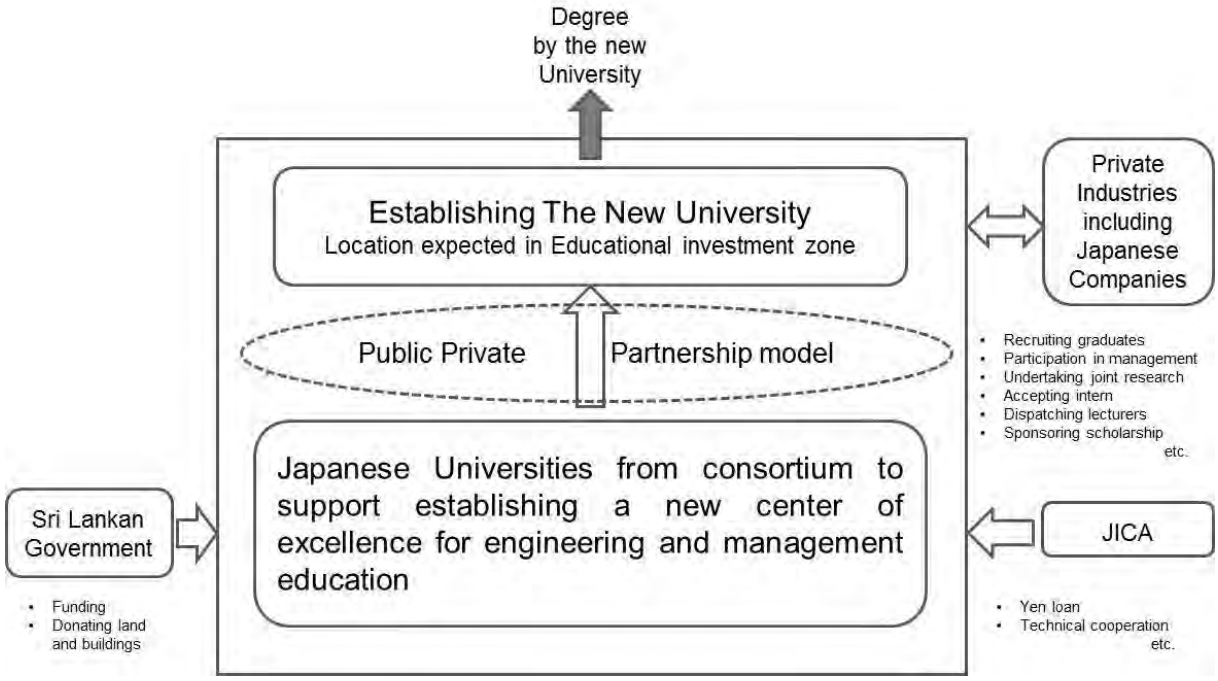
Nonetheless, some Japanese universities are keen on having a franchise programme overseas. They want to provide a franchise programme at foreign universities that have international exchange agreements with them. It would be a great obstacle if they have to prepare facilities and equipment by themselves. It is easier for them to manage the franchise programme if partner organization or university can offer facilities and equipment for the programme. Financial support from the Sri Lankan side for renovating facilities and equipment may be needed.

[42] University of Central Lancashire, UK and Raffles University, Singapore are those examples.

[43] Ritsumeikan University, Japan has established joint faculty of International Information Software in 2013 with Dalian University of Technology, China; this is the first joint faculty for Japanese universities but not a branch campus.

The diploma would be issued not from the Japanese university but from the Sri Lankan partner education operator: a Japanese university can endorse a diploma issued by a Sri Lankan partner if the programme is implemented using a Japanese university's curriculum.

(3) Cooperation model 3: Establishing a New University



Main Activities

- Offer a degree programme for Sri Lankan and international students with special or Sri Lankan university degree
- Lecturers are dispatched from Japanese universities under a consortium
- Japanese style engineering education such as class system and Project Based Learning (PBL) is implemented
- Internship or employment opportunities at Japanese companies in Sri Lanka
- Offer also postgraduate programmes designed for university lecturers

Fear Factors of this Arrangement

- Financial guarantee from investors
- Commitment of Japanese universities under a consortium
- Management of a Japanese University's consortium

- Selection of university: either choose an existing engineering faculty at an established university or establish a new engineering faculty at a new university
- Commitment of Japanese companies

Cooperation model 3 is the more extensive one in terms of financial cost and numbers of stakeholders. The concept of establishing a new university in Sri Lanka is a new approach in developing engineering education outside of the existing university context.

Three major fear factors would be finance, the consensus of university management including teaching and operation, and commitment of Japanese companies.

Finance is the biggest fear factor since costs for the entire infrastructure of a new university could be huge.

University management also needs special attention: opinion adjustment among consortium members would take a long time and the university needs qualified local teachers and staff as well. It is reported that some of the new universities established jointly together by Japan and recipient countries face difficulties in keeping Japanese lecturers, since academics prefer to stay in the place where research environments are better and do not want to visit recipient country.

As for employment of graduates, the extent to which Japanese companies could advance in Sri Lanka is questionable. However, it might be that if a university were established jointly with Japan, many students would expect employment opportunities in Japanese companies, measuring up to the higher engineering education standard. This is strongly linked with the sustainability of the new university. As we have observed in this survey, it is difficult to expect Japanese companies to make large-scale investments in Sri Lanka soon. Thus, we must be very careful not to disappoint prospective students.

Considering the prerequisites mentioned above, some universities that were developed jointly by Japan and the recipient country have had very difficult situations. There are some success cases with special conditions. The Thai-Nichi Institute of Technology was established in 2007 and offers engineering, IT and management courses in both undergraduate and postgraduate master courses, pursuing “Monozukuri” or Art of Design and Manufacturing education. Because the university is located in Thailand where many Japanese auto-manufacturing companies together with various supporting industries exist, the university enjoys the synergy of working together with Japanese industries and employment opportunities. Unfortunately, such a condition is very difficult to find in the world, and Sri Lanka is no exception. In other words, without such a condition, it might be extremely difficult to establish a new university.

Appendix-1 List of Interviewees

(Sorted by date of interview)

First survey in Japan:

Organization	Name	Position	Date
JETRO	Mr. Isamu Wakamatsu	Director, Asia and Oceania Division, Overseas Research Department	8 Jan
	Ms. Maki Kurasawa	Asia and Oceania Division, Overseas Research Department	
Tokyo University of Agriculture and Technology	Prof. Hiroyuki Sasahara	Professor	16 Jan

First field survey:

Organization	Name	Position	Date
JETRO Colombo	Mr. Masahide Sakishige	Resident Representative	20 Jan
JICA Sri Lanka Office	Mr. Harumi Ao	Chief Representative	20 Jan
	Mr. Hiroyuki Abe	Senior Representative	20 Jan
	Ms. Makiko Asaoka	Representative	20 Jan
Board of Investment of Sri Lanka (BOI)	Mr. Shivan de Silva	Executive Director (Promotion & Mega Projects)	21 Jan
	Mr. Dhammike Basnayake	Assistant Director / Desk Officer for Japan (Investment Promotion)	21 Jan
Central Engineering Consultancy Bureau (CECB)	Eng. Nihal Rupasinghe	Chairman	21 Jan
	Eng. S.S. Ediriweera	Executive Director, Central Engineering Services (Private) Limited（CESL）	21 Jan
Ministry of Higher Education	Dr. Sunil Jayantha Nawaratne	Secretary	21 Jan
Virtusa	Mr. Denver De Zylva	Director	22 Jan
SLASSCOM（Sri Lanka Association of Software and Service Companies）	Mr. Imran Furkan	Executive Director,	22 Jan
	Mr. Hariharan Padmanaban	General Council Member, (Business Development Manager, Orion Development (Pvt) Ltd)	22 Jan
	Mr. Denver De Zylva	Director, Virtusa	22 Jan
	Mr. Rasika Withanage	Head – Marketing, Sustainability & Communication, Virtusa	22 Jan
University of Moratuwa	Prof. Sisil Kumarawcdn	Dept. of Electric Engineering	22 Jan

Organization	Name	Position	Date
	Dr. Hans Le Asheykum	Dept. of Electrical Engineering	22 Jan
	Dr. Buddhika Jayasekara,	Dept. of Electrical Engineering	22 Jan
EMP Holdings Limited	Mr. Chandranandana Diyunuge	Chairman	22 Jan
	Mr. Suresh K. Thenuwara	Managing Director	22 Jan
Ministry of Higher Education	Mr. G. M. R. D. Aponsu	Deputy Director,	23 Jan
JICA Sri Lanka Office	Dr. Cabral Indika	Senior Project Specialist	23 Jan
	Ms. Makiko Asaoka	Representative	23 Jan
Sri Lanka Export Development Board (EDB)	Ms. Sujatha Weerakoon	Director General	23 Jan
	Ms. U.K. Dayani Wegapitiya	Acting Director, Policy & Strategic Planning	23 Jan
	Mr. Saman Maldeni,	Director, Export Services	23 Jan
ITOCHU Corporation Colombo Liaison Office	Mr. Hirokazu Naka	General Manager,	24 Jan
IFS	Mr. Ranil Rajapakse	Vice President & COO	24 Jan
	Mr. Pubudu Liyanage	Director Software Development	24 Jan
University Grant Committee (UGC)	Prof. Ranjith Senaratne	Vice Chairman	24 Jan
	Dr. Piyantha Premakumara	Additional Secretary	24 Jan
University of Moratuwa	Professor Rahula A. Attalage	Deputy Vice-Chancellor	27 Jan
Colombo Dockyard Plc	Mr. Akihiko Nakauchi	Chirman	27 Jan
	Mr. Mangala P.B. Yapa	Managing Director/ CEO	27 Jan
	Mr. Prince Lye	Head of Marketing	27 Jan
Mitsubishi Corporation Colombo Branch	Mr. Naoto Honda	General Manager	28 Jan
Taisei Corporation	Mr. Hiroki Horikawa	General Manager, International Div. (President, Japanese Commerce and Industry Association in Sri Lanka)	28 Jan
Sri Lanka-Japan Business Cooperation Committee, The Ceylon National Chamber of Commerce	Mr. Daya Weththasinghe,	President	28 Jan
	Ms. Lilakshini de Mel	Senior Assistant Secretary – General, The Ceylon Chamber of Commerce	28 Jan
University of Colombo	Prof. K.R. Ranjith Mahanama	Head, Department of Chemistry	29 Jan
Sabaragamuwa University of Sri Lanka	Prof. Dr. Mahinda S. Rupasinghe	Vice Chancellor	29 Jan
	Dr. Achini de Silva	Head, Department of Agribusiness Management,	29 Jan

Organization	Name	Position	Date
		Faculty of Agricultural Sciences	
	Dr. Udaya Rathnayaka	Dean, Faculty of Applied Sciences	29 Jan
The Open University of Sri Lanka	Prof. S.A. Ariadurai	Dean, Faculty of Engineering Technology	30 Jan
	Dr. Ajith P. Madurapperuma	Senior Lecturer, Department of Electrical & Computer Engineering, Faculty of Engineering Technology	30 Jan
Ministry of Industry and Commerce	Mr. Asitha K. Seneviratne	Additional Secretary (Policy Development)	30 Jan
	Mr. W.D. Jayasinghe	Additional Secretary (Regional Industrial Development), Project Director SMILE III	30 Jan

Second survey in Japan:

Organization	Name	Position	Date
The Japan Chamber of Commerce and Industry The Tokyo Chamber of Commerce and Industry	Mr. Takeshi Akagi	Project General Manager, International Division	24 Feb
	Mr. Chikara Shimizu	Manager, International Division	
	Mr. Tetsuo Harashima	Senior Project Manager, International Division	
	Ms. Marie Makabe	International Division	
Institute of Developing Economies – JETRO	Dr. Tatsufumi Yamagata	Director General, International Exchange and Training Department (Professor and Secretary General, IDE Advanced School (IDEAS))	25 Feb
	Dr. Imiya M. Kamala Liyanage	Visiting Research Fellow (Senior Professor, Department of Political Science, University of Peradeniya)	
ITOCHU Corporation	Mr. Koji Fukuda	Area Manager, ASEAN, South West Asia & Oceania, International Coordination Department, Research & Business Development Division	25 Feb
BIP Systems Corporation	Mr. Naoya Ishida	Administration Dept., General Manager	6 Mar

Second field survey:

Organization	Name	Position	Date
(Bangladesh)			
JICA Bangladesh Office	Mr. Yasuhiko Yuge	Advisor (Private Sector Development)	9 March
JETRO Dhaka Office	Ms. Nahoko Sako	Deputy Representative	9 March
ITOCHU Corporation			10 March

Organization	Name	Position	Date
Dhaka Liaison Office	Mr. Takuya Suzuki	Representative / General Manager	
YKK BANGLADESH PTE LTD	Mr. Kosuke Miimi	President & CEO	10 March
	Mr. Yuji Yamase	Senior Vice President	
Bangladesh Knitwear Manufacturers & Exporters Association (BKMEA)	Mr. Mohammad Hatem	1st Vice President	11 March
	Mr. M.S. Zaman,	Director (Managing Director, Micro Fibre Group)	
	Mr. Mostafa Jamal Pasha	Director	
	Mr. Lt. Cdr A A M Asadullah	Joint Secretary (HRD & Projects)	
	Ms. FarzanaSharmin	Sr. Deputy Secretary (Compliance)	
	Mr. Md. Faruk Hossain	Jr. Research Executive	
Capacity Building on ITEE Management Project, JICA	Mr. Hideo Hoya	JICA Expert (Chief Advisor)	12 March
	Mr. Akihiro Shoji	IT Management / Project Coordinator ITEE	
Bangladesh Association of Software & Information Services (BASIS)	Mr. Hashim Ahmed	Secretary,	12 March
Bangladesh Garment Manufacturers & Exporters Association (BGMEA)	Mr. MD. Shahidullah Azim	Vice President	12 March
JICA Bangladesh Office	Mr. Takashi Hiramatsu	Transport Specialist	13 March
Micro Fibre Ltd.	Mr. Ansar	Security Incharge	13 March
	Mr. Md. Kamrul Hasan	Assistant Manager, Admin & HR	
Ministry of Industries	Mr. TAGCHI Sadanobu	Senior Advisor (Industrial Policy)(JICA Expert)	13 March
(India)			
Metis Family Office Services Pvt. Ltd	Mr. I.A.S. Balamurugan	Co-founder & Director	17 March
JETRO Chennai	Mr. Hidehiro Ishiura	Director General	17 March
	Mr. Genzo Tsutsui	Deputy Director	
MOL Bulk Shipping (India) Pvt. Ltd.	Mr. Yasuo Suzuki	Managing Director	18 March
Indian Institute of Technology Madras (IITM)	Prof. Venkatesh Balasubramanian	Department of Engineering Design	19 March
Indian Institute of Technology Madras (IITM)	Dr. R. Nagarajan	Dean – International & Alumni Relations	19 March
	Dr. M. Kamaraj	Professor & Head – Department of Metallurgical and Materials Engineering	
ITOCHU India Pvt. Ltd.	Mr. Shinya Ishizuka	Chief Regional Officer - Chennai	20 March
	Mr. Masayuki Watanabe	Executive General Manager, Textile Department	
Indian Institute of Information Technology,	Prof. R. Gnanamoorthy	Director IIITD&M Kancheepuram	20 March

Organization	Name	Position	Date
Design and Manufacturing (IIITD&M)			
Takasago International India Pvt. Ltd.	Mr. Rajendra P. Ghogale	Managing Director	21 March
Sri Lanka Deputy High Commission, Chennai	Mr. Sam Wijesekara	Counsellor (Commercial)	21 March
(Sri Lanka)			
YKK LANKA (PVT) LTD.	Mr. Masaki Ishibashi	Managing Director / Factory Director	24 March
SAARC Chamber of Commerce & Industry	Mr. Kosala Wickramanayake,	Vice President of SAARC CCI / President, Federation of Chambers of Commerce and Industry of Sri Lanka (FCCISL) / President, International Business Council / C.E.O., Kosala Enterprises (PVT) Ltd.	25 March
World Bank Sri Lanka:	Ms. Melanie J. Kanaka	Head of Finance and Administration	26 March
	Ms. Dilinika Peiris Holsinger	Communication Associate, South Asia Region External Affairs	
AOD Colombo Private Limited	Ms. Linda Speldewinde	Managing Director	26 March
South Eastern University	Dr. S. M. Junaideen	Dean - Faculty of Engineering	26 March
University of Jaffna	Prof. V. Arasaratnam	Vice chancellor	27 March
	Dr. S. Sivachandiran	Dean, Faculty of Agriculture	
	Dr. A. Atputharajah	Dean, Faculty of Engineering	
UNIDO-WTO-SPICE COUNCIL Project	Mr. Shanka Dharmapala	Technical Analyst/ National Expert	27 March
	Ms. Dinusha Mahagamage	The Spice Council The Executive Officer	
Rohto Pharmaceutical Co., Ltd.	Ms. Thilanka Gayathri Ratnayake	Country Manager-Sri Lanka	28 March
World Bank Sri Lanka	Dr. Harsha Aturupane	Lead Education Specialist	28 March
ADB Sri Lanka Resident Mission	Ms. Nelun Gunasekera	Social Development and Gender Specialist	28 March
	Ms. Thusitha Molligoda	Senior Private Sector Development Officer	
	Mr. Sarath Muthugala	Senior Procurement Officer	
Freight Links International (Pte) Ltd	Mr. Niral Kadawatharatchie	President/CEO	31 March
	Mr. Suren Wikkramatilleke	Regional Director Business Development	
	Mr. Henry De Silva	General Manager Business Development	
	Mr. Janaka Sumithrarachchi	Assistant Manager Business Development	
Sri Lanka Export Development Board (EDB)	Ms. Chitranjali Dissanayake	Director - Industrial Products	31 March
	Ms. Separlika Jayawardhana	Deputy Director - Industrial Products	
	Mr. Harsha Pathberiya	Deputy Director – Industrial	

Organization	Name	Position	Date
		Products	
	Ms. Thajani de Alwis	Deputy Director, Industrial Products	
University of Ruhuna	Dr. P.D. Chandana Perera	Dean, Faculty of Engineering	1 April
	Dr. Anura P. Rathnayake	Head-Department of Mechanical and Manufacturing Engineering	
	Dr. Harsha Sooriyaarachchi	Head -Department of Civil and Environmental Engineering	
	Ms. S.N. Malkanthi	Head- Department of Interdisciplinary Studies	
Ministry of Finance and Planning	Mr S.S. Mudalige	Additional Director General, Department of National Planning	1 April
	Mr. Dammika Premarathna	Director, Department of National Planning	
Kandygs Handlooms (Exports) Ltd.	Ms Anuradha Yahampath	Director Designs & Marketing	1 April
OKAYA LANKA PVT LTD.	Mr. Manabu Misawa	President	2 April
	Mr. Shigeru Fukuda	Manager, Administration Headquarters, OKAYA Electric Industries Co., Ltd.	
	Mr. Chinthaka Nugegodage	General Manager	
Kelani Cables PLC	Mr. Mahinda Saranapala	Chief Executive Officer	2 April
	Mr. Devinda Lorensuhewa	Sales Manager – Exports	
	Mr. Anil Munasinghe	General Manager- Marketing	
	Mr. Palitha Ethulgama	Sales Manager (Projects)	
Japan Sri Lanka Technical & Cultural Association (JASTECA)	Mr. R.F. Edirisinghe (Athulla)	President	2 April
	Mr. Nihal Seneviratne	General Secretary	
	Mr. Dayasiri Warnakulasooriya	Vice Patron	
Sri Lanka Food Processors Association (SLFPA)	Ms. Sunanda Weerasinghe	President	3 April
	Mr. Mervin Gonawela	Honorary Secretary	
	Mr. Niranjan Fernando	Project Manager, SLFPA-SME Development Projects	
The Sri Lanka Society of Rubber Industry	Mr. Lakna Paranawithana	Senior Advisor, The Sri Lanka Society of Rubber Industry; Chief Advisor & Team Leader (Consultant), City Cluster Economic Development (CCED) Phase III (ADB project financed by AusAID)	3 April
	Mr. P.L.Upali Dissanayake	Consultant – Project Development (former Additional Secretary, Ministry of Plantation Industries)	
	Mr. C.Dias Bandaranayake	Secretary General	
	Ms. T.F. Angela Fenando	Project Associate, City Cluster Economic Development Phase III (AusAID funded ADB project)	

Organization	Name	Position	Date
GIZ	Mr. German Müller	Senior Advisor, GIZ-SME Development	3 April
Tertiary and Vocational Education Commission	Dr. Dayantha Wijeyesekera	Chairman	4 April
JICA Sri Lanka Office	Mr. Kiyoshi Amada	Chief Representative	4 April
	Mr. Hiroyuki Abe	Senior Representative	
	Ms. Makiko Asaoka	Representative	
	Mr. Yosuke Sato	Representative	
	Mr. Keizo Tsuchiya	JICA Expert	
University of Peradenia, International Research Centre	Dr. Nanda Guanawardhana	Director, International Research Centre, University of Peradenia	7 April
	Senior Prof. Imiya Kamala	Senior Professor, Department of Political Sciences	
	Dr. W.D.S.J Wickramasinghe	Senior Lecturer, Department of Parasitology, Faculty of Medicine	
	Prof. Ranjith Dissanayake	Head & Professor, Department of Civil Engineering	
	Prof. Missaka P.B. Wijayagunawardane	Professor, Department of Animal Science	
	Dr. Saliya De Silva	Senior Lecturer, Department of Agricultural Extension, Faculty of Agriculture	
Sri Lanka Institute of Nanotechnology (SLINTEC)	Prof. Nalin De Silva	Science Team Leader	8 April
	Dr. Shehan de Silva	Manager - Strategic Planning / Senior Scientist	
Sabragamuwa University	Prof. Dr. Mahinda S. Rupasinghe	Vice Chancellor	10 April
	Dr. Enoka P. Kudavidanage	Lecturer, Department of Natural Resources, Faculty of Applied Sciences	
Dialog-U of Moratuwa Mobile Communications Research Laboratory	Prof. Dileeka Dias	Director	11 April

Appendix-2 Overview of Industries and Keys for their Development

2.1 Apparel Industry

2.1.1 Overview

The apparel industry is the general term for various industries in relation to clothing. Since the industry has a labour-intensive character in its overall manufacturing process, there is a tendency for the main place of manufacturing the volume-zone (low and middle price range of) products to shift to countries with cheaper labour costs. On the other hand, brand values and the country image have greater importance for the marketing of higher-end products, in addition to quality aspects.

The apparel industry in Sri Lanka started to grow in the 1970s after the introduction of the quota system under the Multi-Fiber Agreement (MFA). The MFA prompted apparel exporters in East Asia such as Taiwan and Korea to move its production plants to South-East and South Asian countries. Sri Lanka was one of the chosen countries**,** for its low labour cost and access to the U.S. and European markets. Sri Lanka opened its economy in 1977, which accelerated the growth of the industry by attracting a large amount of foreign direct investment (FDI). After the phase-out of the MFA quota by the end of 2004, the growth of the industry was supported by export expansion to EU countries under the "Generalized System of Preferences (GSP) Plus" scheme which started in 2005.

The industry has been the largest component of Sri Lanka's export revenue, though the textile component is very small since Sri Lanka imports most of raw materials such as cotton and fabrics[1]. The export amount recorded USD3.99 billion in 2012, accounting for 41% of the total export earnings (Figure A2-1). The latest figure of 2013 export earned by the industry was USD4.3 billion. It is understood that about 80% of the apparel export amount is created by about 20 major firms out of the 350 exporters in total. The importance of the industry in the country can also be seen in employment. According to a government survey[2], over 336,000 people were engaged in 3,500 establishments in the industry in 2011[3]. This number of

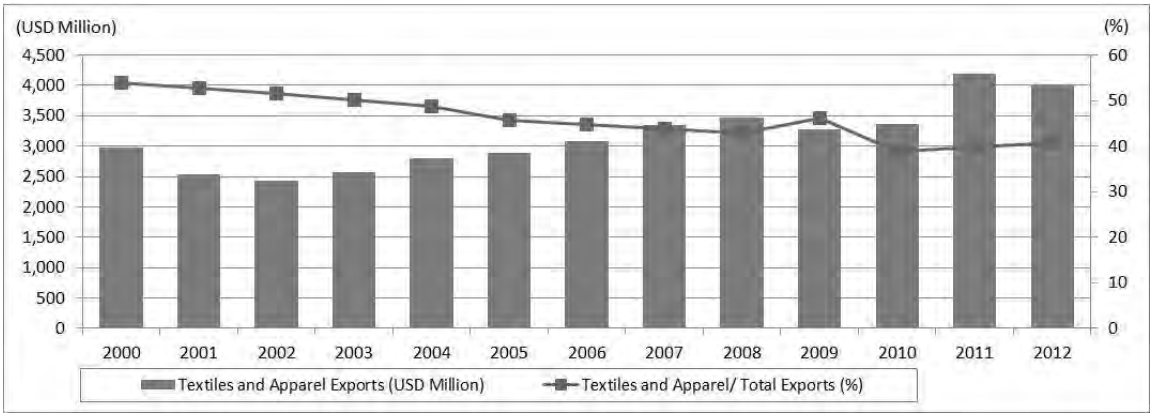
[1] Only 4% of export amount of the textiles and apparel industry came from the textiles sector in 2012. Sri Lanka's major source countries for textile materials are China, India, and Pakistan.

[2] Department of Census and Statistics, *Annual Survey of Industries 2012* (March 2014), Table II.

[3] These figures apply to establishments with 5 or more people engaged.

employees corresponds to 46% of the total workforce in the entire industrial sector and makes it the largest segment. In addition, it is estimated that a total of about 600,000-700,000 people are involved in the industry if all related jobs catering to the industry are included. The industry has also greatly contributed to the creation of employment opportunities for females, since a major portion of workers in the sewing factories is female. On the other hand, in terms of value added, the industry's share in the entire industrial sector is relatively low compared to its contribution to export and employment, which was 22% in 2011.

The government of Sri Lanka has supported the industry since the 1970s by offering various incentives such as income tax exemptions for foreign investment projects. In 1996, the government removed the import duty on textiles for the apparel industry. Exemptions or deferments of value added tax (VAT) on the purchase of fabric or materials are applied to the approved companies which purchase materials to produce export products. Recently, Port and Airport Development Levy (PAL)[4] on consumables for the apparel industry was reduced.



Source: Central Bank of Sri Lanka

Figure A2-1: Trend of textiles and apparel exports

2.1.2 Strength and Potential

As seen above, the growth of Sri Lanka's apparel industry has come largely from its exports to the U.S. and European countries, particularly by providing products for world-famous brands there, utilizing the quota system under the MFA and EU's GSP Plus scheme. Through its longtime relationship with the Western market, the industry has reportedly accumulated production and management skills, succeeding in gaining trust from apparel buyers in Europe and the U.S.A. It is regarded that compared to its rival countries in South East and South Asia,

[4] PAL is one of the import taxes/levies charged by the government.

Sri Lanka has strength in producing middle-end products such as overcoats, women's dresses and underwear, which need more talented employees with sewing skills than casual products such as T-shirts and jeans. This observation is supported by Table A2-1, which shows that Sri Lanka's export of these middle-end products is overrepresented compared with that of Bangladesh. Lead time from orders to deliveries to the buyers in the U.S. and EU are also considered to be a competitive edge of the Sri Lankan apparel industry.

Table A2-1: Apparel export products: Sri Lanka and Bangladesh (2007)

SITC (Rev.3)	Item	Sri Lanka	Bangladesh
		Export (USD Million)	
84	(A) Articles of apparel and clothing accessories	3,272	9,392
	(B) Total export of goods	7,661	13,143
	(A)/(B)	42.7%	71.5%
		Export (component %)	
84	Articles of apparel and clothing accessories	100.0%	100.0%
841	Men's or boys' coats, capes, jackets, suits, blazers, trousers, shorts, shirts, underwear, nightwear and similar articles of textile fabrics, not knitted or crocheted (other than those of subgroup 845.2)	14.7%	33.1%
8411	Overcoats, capes, cloaks, anoraks (including ski jackets), and similar articles	0.0%	0.4%
8413	Jackets and blazers	1.4%	3.0%
8414	Trousers, bib and brace overalls, breeches and shorts	8.5%	20.0%
8415	Shirts	4.1%	9.0%
842	Women's or girls' coats, capes, jackets, suits, trousers, shorts, shirts, dresses and skirts, underwear, nightwear and similar articles of textile fabrics, not knitted or crocheted (other than those of subgroup 842.2)	25.1%	13.9%
8423	Jackets and blazers	1.3%	1.0%
8424	Dresses	2.2%	0.0%
8425	Skirts and divided skirts	2.1%	0.8%
8426	Trousers, bib and brace overalls, breeches and shorts	14.5%	8.5%
8427	Blouses, shirts and shirt blouses	3.2%	2.1%
8428	Singlets, other vests, slips, petticoats, briefs, panties, and sijmilar articles	1.6%	0.5%
843	Men's or boys' coats, capes, jackets, suits, blazers, trousers, shorts, shirts, underwear, nightwear and similar articles of textile fabrics, knitted or crocheted (other than those of subgroup 845.2)	6.2%	6.8%
8432	Suits, ensembles, jacekts, blazers, trousers, bib and brace overalls, etc	1.4%	2.1%
8437	Shirts	2.7%	3.8%
8438	Underpants, briefs, pyjamas, bathrobes, dressing gowns and similar articles	2.1%	0.9%
844	Women's or girls' coats, capes, jackets, suits, trousers, shorts, shirts, dresses and skirts, underwear, nightwear and similar articles of textile fabrics, knitted or crocheted (other than those of subgroup 845.2)	17.6%	7.0%
8442	Suits, ensembles, jacekts, blazers, slirts, trousers, etc	6.1%	1.6%
8447	Blouses, shirts and shirt blouses	1.6%	1.1%
8448	Slips, petticoats, briefs, panties, nightdresses, pyjamas, and similar articles	9.8%	4.1%
845	Articles of apparel, of textile fabrics, whether or not knitted or crocheted, n.e.s.	27.2%	38.3%
8451	Babies' garments and clothing accessories	2.7%	0.8%
8453	Jerseys, pullovers, cardigans, waistcoats, similar articles, knitted/crocheted	4.6%	13.8%
8454	T-shirts, singlets and other vests, knitted or crocheted	10.7%	22.2%
8455	Brassieres, girdles, corsets, braces, suspenders, garters and similar articles	7.0%	0.0%
8456	Swimwear	1.8%	0.6%
846	Clothing accessories, of textile fabrics, whether or not knitted or crocheted (other than those for babies)	4.9%	0.0%
848	Articles of apparel and clothing accessories of other than textile fabrics; headgear of all materials	4.2%	0.7%

Source: United Nations, *International Trade Statistics Yearbook 2010*.

Some of the major Sri Lankan apparel companies have been tapping into high added value niche markets with higher technology, quality, or design such as swimwear and underwear. In addition, some manufactures have ventured to promote lines of products with their own brand overseas. At the moment, only MAS Holdings and the Timex and Fergasam Group have succeeded in establishing a presence in the Indian market: the former Amanté and the latter Aviraté.

Another distinguishing feature of the Sri Lankan apparel industry is its adherence to ethical business practice. The industry association has long been making a tremendous effort to position the industry as a 'Preferred Ethical Apparel Sourcing Destination' for buyers with the “Garments without Guilt” campaign.

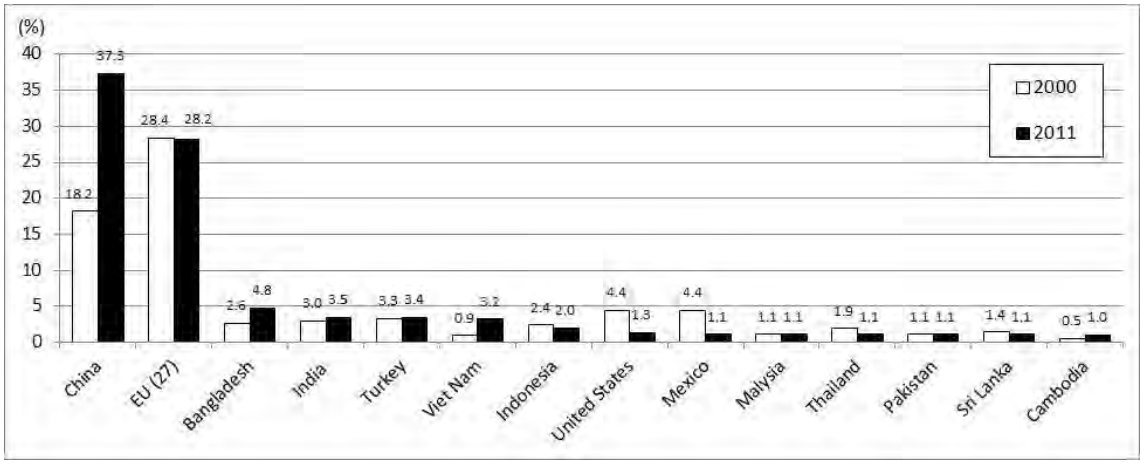
2.1.3 Major challenges

Major challenges the industry faces are as follows:

Apparel manufactures are increasingly having difficulty in finding workers for their factories, especially in the greater Colombo area. One of the major reasons for the labour shortage is that more people now prefer to work in the service sector, because of increasing job opportunities in the service sector, as well as people’s negative image on “traditional” factory work in the apparel industry. While labour costs are on the increase over the country, the apparel industry is trying to cope with the situation by promoting mechanisation or automation and by training workers to upgrade their skills. However, these measures themselves need a substantial amount of investment, presenting a huge challenge, especially for small and medium-sized manufacturers. Some major companies are reportedly pursuing plans to move their plants to foreign countries with cheaper labour costs such as India and Bangladesh, or investing into other industries to foresee the apparel industry weakening in its competitiveness.

While China, the world’s largest apparel exporter, is also facing a higher labour cost, there are many other competitor countries in the South and South-East Asia region with cheaper and abundant sources of labour, which have emerged as attractive to apparel suppliers to foreign buyers and retailers. In fact, Sri Lanka’s export share in the world market has dropped from above 1.4% in 2000 to around 1.0% in recent years. On the other hand, Bangladesh increased its share from 2.6% in 2000 to 4.8% in 2011 (Figure A2-2). Thus there is a pressing need for the industry to facilitate its moving-up to higher value products, including the exploration of Sri Lankan brands in the overseas market. In this sense, embarking upward on the design process is another important issue for Sri Lanka in moving away from a country only outsourced by buyers and retailers in the U.S. and EU.

Another challenge is how to link the progress of regional or bilateral economic integrations with the development of the industry. For instance, some interviewees of our survey expect that the Free Trade Agreement (FTA) with China currently under negotiation will provide a good chance for Sri Lanka to penetrate into the Chinese higher-end market. It needs to be carefully examined, however, that the FTA could end up with Chinese products, both cheap and higher quality, dominating the Sri Lankan market. This would have a detrimental effect on the country's apparel manufacturing.



Source: World Trade Organization, *International Trade Statistics 2012*

Figure A2-2: Major apparel exporters (% share in world exports)

2.2 Rubber Industry

2.2.1 Overview

The rubber industry is one of Sri Lanka's traditional industries, tracing its origin to 1870s. The industry currently consists of two separate but closely-related components: the rubber plantation industry, which produces raw natural rubber, and the rubber products industry. The whole industry is said to provide employment to more than 200,000 people[5].

Sri Lanka had an area of over 130,800 hectares of rubber plantations and produced 152,100 metric tons of natural rubber in 2012. The country was the world's ninth producer with a market share of 1.3%, while Thailand (32.5%), Indonesia (26.2%), Malaysia (7.9%), India (7.9%), Vietnam (7.4%) and China (6.8%) dominated the world market[6].

Sri Lanka's rubber is mainly grown in the wet lowlands of the south western, southern and central parts of Sri Lanka. Since there are two rainy seasons a year in these areas, double cropping is possible. The climate and soils of the areas are said to be better suited for rubber plantations than such major producer countries like Thailand, Indonesia, and Malaysia. In addition, Sri Lanka reputedly produces high-quality natural rubber with very low level of proteins.

Two thirds of the total rubber area of this country is held by over 127,000 small holders, with the rest by a total of 142 estates. The majority of small holders own less than 2 acres (approximately 0.8 ha) of land, while most estates hold 20 hectares or more[7].

The rubber products industry is an industry that caters to a wide range of user industries including automobile, information technology, machinery, and footwear. Sri Lanka's rubber products industry started to expand in the late 1970s. The products range from industrial products such as hoses, auto parts, industrial components, tubes, automotive and aviation tyres, to latex products such as medical, surgical and household gloves, and to general rubber products such as rubber bands, floor mats, carpets, sports goods, footwear and so on[8]. According to the

---

[5] Export Development Board (EDB), *Partner with Sri Lanka the Hub of Asia: Product Catalogue* (2012), p.37.

[6] Ministry of Plantation Industries, *Statistical Information on Plantation Crops 2012* (November 2013), p.73 & p.140.

[7] Ministry of Plantation Industries, *Statistical Information on Plantation Crops 2012* (November 2013), p.75.

[8] Export Development Board (EDB), *Partner with Sri Lanka the Hub of Asia: Product Catalogue* (2012), pp.36-37.

data from a government industrial survey, about 50,000 people were engaged in manufacturing rubber and plastic products at 600 companies in 2012[9].

The whole rubber industry (natural rubber and rubber products combined) has been the third largest export segment after the industries of textiles and garments and tea, accounting for about 10% of Sri Lanka's total export earnings in 2012. The export earnings from the rubber products industry now account for about 80-90% of total export earnings from the entire rubber industry, far exceeding those from the raw rubber industry (Table A2-2). Of the total export values of rubber products, rubber tyres and tubes occupied 62% and industrial and surgical gloves 22% in 2013[10].

Table A2-2: Key indicators of the rubber industry

	Unit	2005	2006	2007	2008	2009	2010	2011	2012
Production	Million Kg	104.4	109.2	117.6	129.2	136.9	153.0	158.2	152.1
Area under cultivation	Thousand ha	116.1	119.5	119.5	122.2	124.3	125.6	128.1	130.8
Yield	Kg/ha	1,171	1,128	1,246	1,382	1,437	1,582	1,555	1,459
Exports	Million Kg	31.6	46.3	51.4	48.6	56.0	51.5	42.6	37.4
Domestic consuption	Million Kg	72.7	63.1	73.9	80.1	84.9	107.2	111.7	110.3
Exports	% of production (kg)	30.3%	42.4%	43.7%	37.6%	40.9%	33.7%	26.9%	24.6%
Domestic consuption	% of production (kg)	69.6%	57.8%	62.8%	62.0%	62.0%	70.1%	70.6%	72.5%
Total Export Earnings	US$ Million	443	544	594	668	484	736	1,091	981
Raw Rubber	US$ Million	47	92	109	125	99	174	207	125
Processed and End Products	US$ Million	395	449	483	540	384	557	884	857
Raw Rubber	% of Total Export (US$)	10.6%	16.9%	18.4%	18.8%	20.4%	23.6%	19.0%	12.8%
Processed and End Products	% of Total Export (US$)	89.1%	82.6%	81.3%	80.8%	79.4%	75.7%	81.0%	87.3%

Source: (1) Ministry of Plantation Industries, *Statistical Information on Plantation Crops 2012* (November 2013), p.73; (2) Sri Lanka Export Development Board (EDB), *Export Performance Indicators 2003-2012* (2012), Table 9.

In regard to the linkage of the raw rubber industry and the rubber products industry, 25% of the total rubber production was exported and the remaining raw rubber was used for the domestic market in 2012 (Table A2-2). The government of Sri Lanka imposes a high rate of export tax (Rs.15 per kg) on the export of natural rubber in order to discourage the export of raw rubber and in turn divert local production to local consumption for finished products manufacturing, as well as a high rate of import tax (5% of CIF) on the import of natural rubber in addition to the

[9] Department of Census and Statistics, *Annual Survey of Industries 2012* (March 2014), Table II. These figures apply to establishments with 5 or more persons engaged.

[10] Central Bank of Sri Lanka, *Annual Report 2013 Statistical Appendix* (March 2014), Tables 74.

usual custom duties[11].

2.2.2 Strength and Potential

As mentioned in the previous section, Sri Lanka is endowed with natural conditions for producing high-quality natural rubber. Sri Lanka is the sole producer in the world of thick pale crepe 1X, which is considered to be the purest of all natural rubber grades[12]. It is recognised as the "Pride of Sri Lanka". The existence of the natural rubber industry producing high grade materials is obviously Sri Lanka's strength in itself as export sources of natural rubber; what is more, it also offers an advantage to the development of the rubber products industry. For instance, high-quality crepe rubber is used as a prime material for producing sophisticated products such as surgical and industrial gloves. Another example is solid tyres, whose main raw material is natural rubber. It is well known that Sri Lanka is the largest manufacturer of solid rubber tyres in the world. The local availability of raw materials has made these products competitive enough to become the prime export earners. This would further provide potential for the industry to enter new niche markets of high-value, sophisticated products, by applying the available resources to product development and manufacturing.

2.2.3 Major challenges

Major challenges the industry faces are as follows:

First, it is recognised by those in the industry that Sri Lanka has to keep pursuing niche markets by supplying high-value rubber materials and finished products, since the country cannot compete with giant rubber producers like Thailand, Indonesia and Malaysia in terms of production volume. Some experts working for one donor-funded project stress that this requires human resource development in all parts of the production chain, which needs to be tackled through the collaboration of the industry, the government and institutions of technology, including universities. For example, such people would need to be fostered as technicians, process engineers, machine operators, chemists, managers, and researchers or scientists in the private sector or at universities engaged in research and development to create innovative products.

---

[11] Ministry of Plantation Industries, *Statistical Information on Plantation Crops 2012* (November 2013), p.129. Tax rates are as of November 2013.

[12] Ekanayake S. and Abeysinghe D., *A Strategy on Competitive Intelligence for the Sri Lankan Rubber Industry to Generate Potential Value* (2011), p.3. [http://www.kln.ac.lk/fcms/ICBI2011/ICBI%20CD/ICBI%202011/Papers/ICT%20202.pdf]

Second, while the collective effort for being innovative is undoubtedly necessary, developing the capacity of workers in the plantations is understood to be another huge and important challenge. Although Sri Lanka has succeeded in increasing its rubber productivity and its average yield is currently higher than Indonesia and China, it is still lower than countries like Thailand, India, and Vietnam[13]. This implies that there is still room to improve products at the farm level. It is reported that the rubber plantation industry is faced with a shortage of labour, especially skilled tappers, an aging labour force, and inadequate resources, among others. In particular, these problems are salient in small holders. Some studies show that a large number of small holders lack knowledge in proper techniques of rubber planting, such as land maintenance, disease control, and tapping methods[14]. Tackling the constraints is very important not only for an expected direct impact on improving productivity, but also for a strengthening of the rubber industry as a whole.

[13] Average yield in 2012: Sri Lanka (1,459 Kg/ha), Indonesia (1,159 Kg/ha), China (1,242 Kg/ha), Malaysia (1,462 Kg/ha), India (1,823 Kg/ha), Vietnam (1,707 Kg/ha). Source: Ministry of Plantation Industries, *Statistical Information on Plantation Crops 2012* (November 2013), p.141.

[14] Daily News (online), *" Sri Lanka's rubber industry needs 21st century thinking"* (May 16, 2012), accessed on May 16, 2014. [http://archives.dailynews.lk/2012/05/16/bus25.asp]

2.3 Electrical and Electronics Industry

2.3.1 Overview

The electrical and electronics industry involves the manufacture of electrical and electronic machinery, equipment, components, parts and devices for industrial as well as consumer use. It includes a wide range of high-tech products with high added value. The electrical and electronics industry has the potential to develop by focusing on designing and research and development, since the industry typically does not need such a wide range of supporting industries as the machine industry such as in automobile production. In a practical sense, however, product design and development is largely led by major manufacturers such as multinational consumer-electronics and telecommunication equipment companies. Thus a key to the development of this industry is how to cope with the global needs such as the manufacturing of a wide variety of products in small quantities and frequent changes of product models.

This industry earns about USD100-300 million[15] every year from exports. The export earning occupies 3% of the total exports of Sri Lanka[16]. According to EDB, major products exported from Sri Lanka include boards and panels, electrical wires and transformers[17]. In terms of employment, more than 10,000 people were engaged in about 100 establishments in the industry in 2011[18]. It is estimated that 30 companies are engaged in exporting electronic products[19]. Origins of major foreign exporters are Japan, Switzerland and Northern European countries. Among them, several large companies employ 700-1,000 workers. Some companies such as CCS Lanka (Pvt) Ltd (Switzerland; SMD/THT[20] assemblies and coiled goods), Noratel

[15] It is often difficult to identify the industry's exact earnings from export from disclosed statistics because the statistics generally show the figures combined with other industries such as general machinery.

[16] Export Development Board (EDB), *Performance of the Export Sector of Sri Lanka January-December 2013 [Provisional]* (January 2014), p.5. This figure is for the category of "Electronic, Electrical and Machinery Products and Parts".

[17] Export Development Board (EDB), *Partner with Sri Lanka the Hub of Asia: Product Catalogue* (2012), p.92.

[18] Department of Census and Statistics, *Annual Survey of Industries 2012* (March 2014), Table II. These figures apply to establishments with 5 or more persons engaged.

[19] Export Development Board (EDB), *Partner with Sri Lanka the Hub of Asia: Product Catalogue* (2012), p.92.

[20] SMD: Surface Mount Device. THT: Through-Hole Technology.

International (Pvt) Ltd (Norway; transformers and inductors) and FDK Lanka (Pvt) Ltd (Japan; optical components and coil devices) have been in operation for more than 20 years. On the other hand, new foreign investments in this industry have been limited during recent years.

Customers of major exporters are scattered throughout the world, including North America, Europe, Japan and other Asian countries. Though some companies supply their products to the local market, the basic nature of the industry is export-oriented. In this regard, there has been no emergence of local assemblers of consumer electronics products observed in this country, as seen in Bangladesh, where a local home appliance manufacturer named Walton is growing rapidly in the domestic market and has even started to export. The exporters in Sri Lanka are reportedly sourcing most of their raw materials from outside Sri Lanka.

2.3.2 Strength and Potential

As stated above, the electrical and electronics industry usually does not need as many supporting industries as the automobile industry. This feature gives room to certain types of foreign companies investing in Sri Lanka. That is, for instance, the type of companies with a strong edge in manufacturing relatively small parts or components in the world market, and their customers, presently or expectantly, spreading worldwide. In terms of the product type, the technical level would not be highly sophisticated, but a certain amount of labour would be necessary for the assembly work. In fact, it is considered that many of the foreign electrical and electronics firms currently manufacturing in Sri Lanka can be included in this type. Sri Lankan workers' skillfulness with their hands, which is often described as their superior character, is a positive factor for these types of companies to assemble small products.

Although the geographical proximity of production places in the supply chain is less important for these types of companies, further development of the electrical and electronics industry in India provides the potential for the same industry in Sri Lanka. One foreign electronic components manufacturer interviewed in the survey stated that it chose to set up a plant in Sri Lanka partly because it intended to utilize the country's good access to India as a potential market as well as a supplier of materials.

2.3.3 Major challenges

Major challenges the industry faces are as follows:

As is the case with the apparel industry, manufacturers in the electrical and electronics industry are facing difficulty in hiring workers, partly because of severer competition with other companies such as apparel factories within the EPZ, and partly because of the overall labour

shortage in the industrial sector.

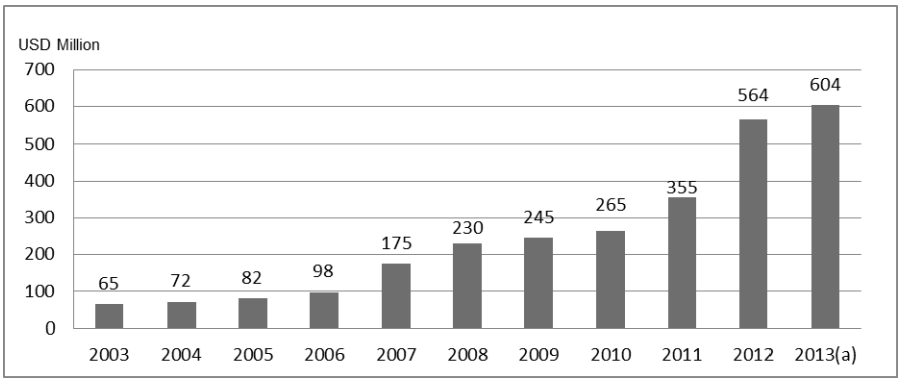
In addition to the general shortage of workers, one company interviewed recognises the difficulty in employing skilled technicians for middle-level jobs such as in machine maintenance. For this reason, the company has to train workers of this level on its own. Also, unlike the apparel industry where a pool of experienced “ready-to-work” workers exist and they often move from one factory to another, companies in the electrical and electronics industry need to take time to train newly employed workers. These cases indicate that the scarcity of labour in the industry is a constraint to its growth.

Another challenge for the industry is its low level of local procurement. As stated above, companies in the industry import most of the raw materials for their products from overseas. Instead, they cover the cost disadvantage by supplying high value added products to the global market. It is pointed out that there are difficulties even in procuring basic supplies locally. For example, a foreign company had to bring cardboard boxes from overseas to pack their products in the initial years of operation, because it was not able to find locally-produced boxes that had a sufficient quality for shipping to its customers.

2.4 IT/BPO Industry

2.4.1 Overview

IT/BPO[21] industry is one of the industries in Sri Lanka that has been experiencing a rapid growth in recent years. According to the Central Bank of Sri Lanka, earning from "computer and information services" increased up to nine-fold in the last decade, reaching USD 604 million in 2013. The industry grew at a high average annual growth rate of 25% during the period. The earnings in 2013 equated to about 6% of the total goods export (USD 10,394 million), making the industry an important foreign exchange earner after textile and garments, transport, travel, tea, and rubber products. The industry is recognised by the government as a high potential industry; it is named as a key economic area in the country's development policy framework, "Sri Lanka Emerging Wonder of Asia: Mahinda Chintana - Vision for the Future"[22].



(a): provisional

Source：Central Bank of Sri Lanka, *Annual Report* (various years).

Figure A2-3: Earnings from computer and information services

As an industry, IT is a brain industry. In particular, the software industry does not require large investments or supporting industries for its development in contrast to industries such as the automobile industry. However, as it is known from experience that the software industry, after reaching a certain point, can be further upgraded if there is also an IT hardware industry, the development of the electronics industry may also need to be considered. The industry is considered as a high value added industry without any need to import raw materials; human

[21] BPO stands for Business Process Outsourcing

[22] Ministry of Finance and Planning, *Sri Lanka Emerging Wonder of Asia: Mahinda Chintana - Vision for the Future* (2010), p.71.

resource is a critical capital for companies engaged in this field. Also, the industry is less likely to be affected by location if IT infrastructure such as the internet network is well facilitated.

Currently, Sri Lanka has more than 300 IT and BPO companies in operation[23], employing 63, 000 people in 2013[24]. The companies include global IT companies such as HSBC, WNS Global Services, Motorola, Industrial & Finance System (IFS), and Virtusa. Sri Lankan IT companies offer services to a wide variety of clients including leading global companies such as JP Morgan, Microsoft, Emirates Airline, Google, and British Telecom (BT). One of the global software companies interviewed revealed that their office in Sri Lanka is becoming the largest development centre for their group, comprising of about 65% of their total software development.

In the industry, there is an active industry group called SLASSCOM, Sri Lanka Association of Software and Service Companies, with 163 member companies as of January 2014, whose revenues comprise of between 90-92% of total IT/BPO exports. SLASSCOM has set a target of the industry to reach USD 1 billion export revenue by 2016. Furthermore, SLASSCOM has set a long-term goal for the industry to expand its revenue to USD 5 billion (ten times larger than in 2012), its employment to 200,000 (3 times larger than in 2012), and its startups to 1,000 by 2022[25].

It was mentioned by SLASSCOM that, as a strategy for a small country like Sri Lanka to compete with other larger countries, the industry targets small-scale but high value added businesses. In detail, they aim to "build niche focus global centre of excellence in financial services, mobile and telco, software testing, travel and aviation, legal process & product innovation for mid market (SME) companies and niche captives"[26]. Their key focus domains are software product engineering and finance and accounting outsourcing.

---

[23] SLASSCOM, *Presentation on SLASSCOM and the Sri Lankan IT/BPO and Knowledge Service Industry* (presented on 22 January 2014), p.10.

[24] Central Bank of Sri Lanka, *Annual Report 2013* (March 2014).

[25] SLASSCOM, *Presentation on SLASSCOM and the Sri Lankan IT/BPO and Knowledge Service Industry* (presented on 22 January 2014).

[26] Ditto.

2.4.2 Strength and Potential

Sri Lanka is increasingly attracting attention as an emerging destination for IT/BPO business. The country was ranked top 21 in the AT Kearney Global Outsourcing Destinations in 2011. Also Sri Lanka was ranked among 30 leading locations for offshore services 2010-2011 by Gartner. For its proximity to India, which is the top destination for IT/BPO, Sri Lanka is often said to have a potential to become a complement to Indian IT/BPO business to diversify the risk of focusing one's business only in India.

The biggest strength of the industry in Sri Lanka is considered to be its high quality workforce available at low cost. The small country is unable to offer an abundant workforce, while India and other countries can. However, the country attracts small and medium sized IT companies, as it enables them to easily access highly qualified human resources at relatively low cost. In India, since the country can offer a huge workforce, a variety of major IT companies have already developed businesses and hire many IT personnel, leaving it difficult for small and medium sized companies to access to the high quality workforce[27].

The highly educated workforce in Sri Lanka with its high literacy rate and fluency in English is an advantage for the industry's growth. People in Sri Lanka are often said to speak clear English, which is particularly important in the area of BPO, such as call centre services. In fact, one luxurious hotel chain as well as multinational company such as HSBC is known to have established their call centres in Sri Lanka. Additionally, Sri Lanka is a multi-cultural environment, and the people reportedly tend to adapt easily to other cultures. The software company interviewed also noted that Sri Lankan engineers are innovative; the company deploys two thirds of their staff in India, yet 70-80% of their patents originate from Sri Lanka.

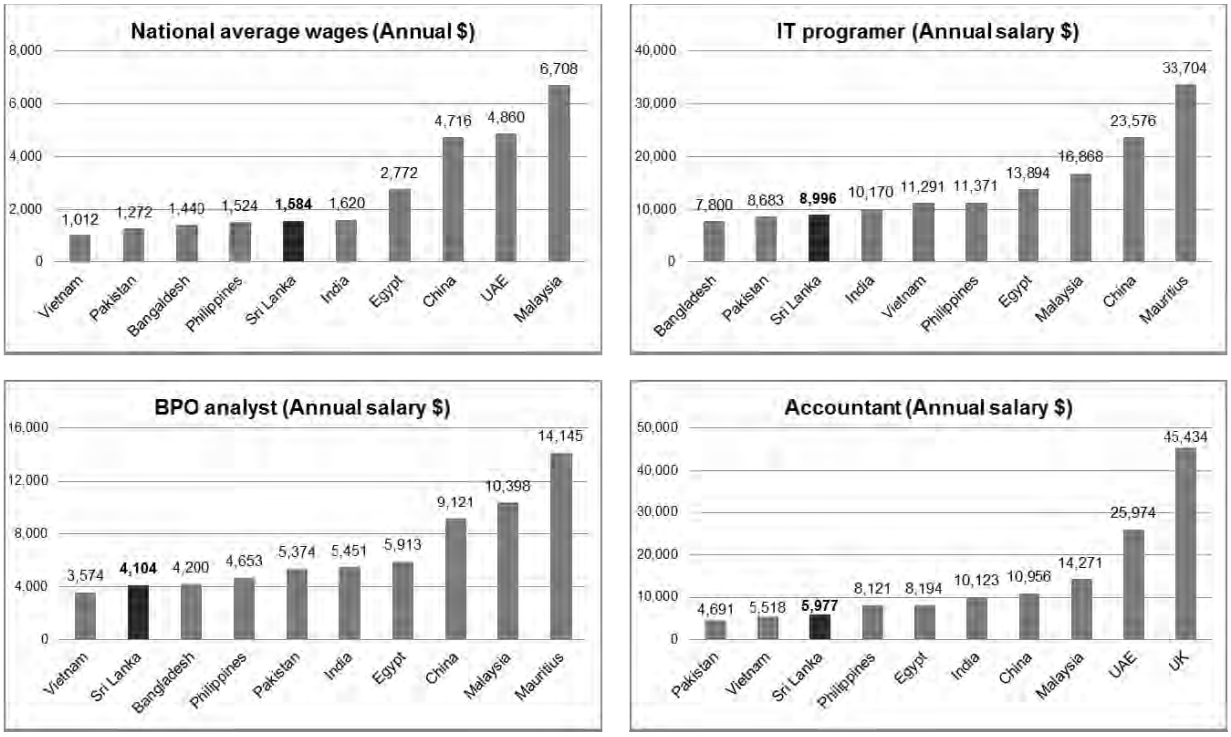
Also Sri Lanka boasts highly professional human resources, especially in accounting and legislation. There are many certified accountants in Sri Lanka. The country has second largest number of Chartered Institute of Management Accountants (CIMA) students, and a number of students study for a qualification from the Association of Chartered Certified Accountants (ACCA) and the Association of Accounting Technicians (AAT) as well as Certified Public Accountants (CPA)[28]. Thus, Sri Lanka is well positioned to compete in financial and accounting outsourcing. Also the legal system of Sri Lanka is based on English Common Law and the country holds a number of certified lawyers, leaving a selective advantage for Sri Lanka in legal process outsourcing. Both financial and accounting outsourcing and legal process

[27] A voice of the software company interviewed.

[28] AT Kearney, *Competitive Benchmarking: Sri Lanka Knowledge Services* (2012), p.3.

outsourcing are recognised as focus areas by SLASSCOM, as previously stated.

A significant factor of the advantage in human resources of Sri Lanka is that such high quality workforce is available at a lower cost, compared to other prominent destinations for IT/BPO. AT Kearney remarks that compensation cost, which is defined as the sum of basic salaries, benefits, bonuses and taxes, for an IT programmer with two to three years experience, BPO analyst, and accountant are all lower than in India and other candidates for outsourcing destinations (See Figure A2-4). Furthermore, upward pressure on wages is not as serious in Sri Lanka as India, China, and other prominent destinations.



Note: Compensation includes base salary plus benefits, tax, and bonus; estimates are used when data is not available; salaries do not reflect fully loaded seat costs; accountant salaries not available for Bangladesh and Mauritius.

Source: AT Kearney, *Competitive Benchmarking: Sri Lanka Knowledge Services* (2012), p.10-11.

Figure A2-4: Compensation costs comparison

Another critical advantage in regard to the cost of labour in Sri Lanka is that its attrition rate within the industry is marked low compared to India and other countries, where people freely move between companies. The rate in Sri Lanka is said to range from 10% to 15%. A

company visited even mentioned that their attrition rate is as low as 3-4%. It was said that people tend to stay 2-3 years in one company to acquire business experience, which is highly valued in the Sri Lankan labour market. Also, as people know each other in the industry, it is difficult for them to change their jobs. The low attrition rate enables companies to maintain product quality levels and minimizes the cost of training new employees.

Apart from its cheap, high quality human resource, solid infrastructure is a notable strength of Sri Lanka, as infrastructure is fundamental for development of IT/BPO industry. According to a study by AT Kearney, the quality of telecommunication in Sri Lanka is said to be similar to other competing countries, yet the cost is very competitive as a result of competition between providers. 3G and 4G were introduced to the country at an early stage. Electricity cost is relatively high in Sri Lanka, though its quality is evaluated to be superior to other competing countries. The same study reveals that the cost of real estate in Sri Lanka is very competitive[29].

2.4.3 Major challenges

A major impediment to the development of the IT/BPO industry in Sri Lanka is the shortage of talented workforce; the demand for labour surpasses the supply for labour in the industry. In particular, it was pointed out by SLASSCOM that every year about 4,500 to 5,000 IT graduates are ready for work, while the industry needs about 6,500. IT/BPO companies in Sri Lanka are said to be competing against each other on recruitment rather than in businesses. The demand for labour can be even larger if the flow of business to other countries due to a lack of labour could be stopped. As previously stated, SLASSCOM aims to expand its industry revenue to USD 5 billion and its employment to 200,000 by 2022. As those employed in the industry were 63,000 in 2013, the industry needs to increase to 137,000 in the next nine years, which seems to be challenging, given the fact that a limited number of students can access higher education in Sri Lanka.

Along with public universities, several private foreign universities as well as SLIIT (Sri Lanka Institute of Information Technology) have reportedly produced a few hundred IT personnel as of today. Companies surveyed also noted that they recruit graduates of other subjects and train them for their job positions. Industry players have called for public universities to increase investment and the number of enrolments in the field of IT. It was reported that the industry is currently working closely with universities such as in curriculum development and internship programmes so that the needs of the industry would be reflected in education.

[29] AT Kearney, *Competitive Benchmarking: Sri Lanka Knowledge Services* (2012).

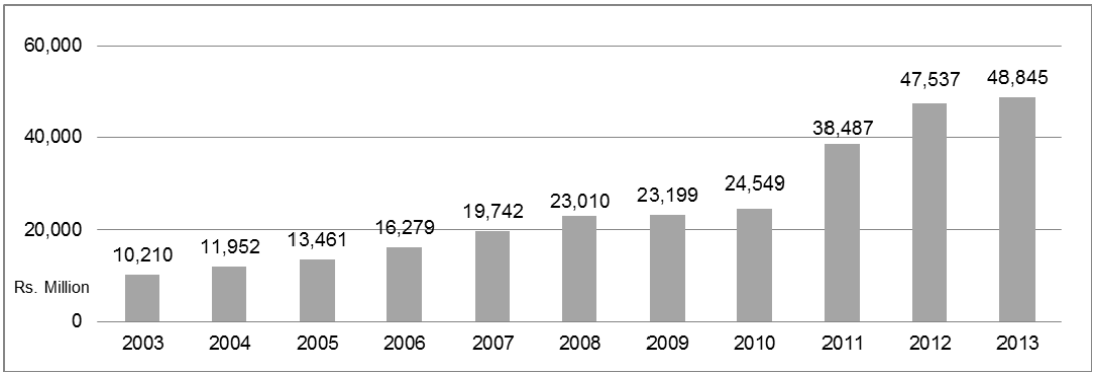
Increasing the supply for labour, however, could diminish the attractiveness of Sri Lanka for small and medium sized IT/BPO companies. Currently, it is not easy for large IT/BPO companies to secure an adequate workforce in Sri Lanka. In fact, Accenture together with Brandix began to develop their business in Sri Lanka and started by recruiting 300 employees. It is said that they plan to employ another 5,000 in next few years. If the country can increase the supply for labour, chances for such large companies to penetrate into the market may be enhanced, but it could impede existing small and medium size companies from accessing such a talented pool.

2.5 Pharmaceutical Industry

2.5.1 Overview

The size of the pharmaceutical market in Sri Lanka is not particularly large, though it has been experiencing continuous significant expansion in recent years. According to Business Monitor International, expenditure on pharmaceuticals in Sri Lanka was estimated to be USD 501 million in 2012, which is an increase of 9.4% from USD 458 million in 2011. And expenditure on healthcare was estimated to increase by 3.0% to USD 2.34 billion in 2012[30]. Over the period of ten years from 2002 to 2012, the government spending on pharmaceuticals increased at an average annual growth of 13.5% reaching Rs 16,796 million in 2012[31].

Aligning with such an increase in national demand for pharmaceuticals, the import of pharmaceutical products has grown drastically. As shown in the figure below, the import of "Medical and pharmaceutical products" was Rs 10,210 million in 2003, but after ten years in 2013, it reached Rs 48,845 million. The spending increased 3.5 times over the period.



Source: Central Bank of Sri Lanka, *Economic and Social Statistics of Sri Lanka 2013* (April 2013), p.78, Table 8.4; Central Bank of Sri Lanka, *Annual Report 2013 Statistical Appendix* (April 2014), Table 75.

Figure A2-5: Imports of medical and pharmaceutical products

As a feature of the pharmaceutical industry, research and development capability is crucial, and

[30] Business Monitor International, *The pharmaceutical Market : Sri Lanka* (April 2014), headline available from [http://www.espicom.com/sri-lanka-pharmaceutical-market.html].

[31] Ministry of Finance and Planning, *Annual Report 2012 Chapter 8 Expenditure Review* (March 2013), p.346.

development of new drugs is key for the growth of the industry. As the development requires considerable investments in time and money, large companies are usually in an advantageous position in the industry. If a company achieves a success in developing new drugs, it would guarantee earnings for the patent period. For such a reason, the industry maintains a high level of confidentiality. Manufacturing of generic medicine could be one of the business areas, yet the industry basically requires large investment. Thus, building a business and developing the industry from scratch is very challenging.

Currently, there are several multinational pharmaceutical companies in Sri Lanka as represented by GlaxoSmithKline as well as six local manufacturers. Japanese pharmaceutical firms such as Rohto Pharmaceutical Co. and Eisai Co. have also developed business in the market. GlaxoSmithKline is known to have entered the market as early as the late 1930s and it has over 500 staff directly and indirectly employed today. The company has manufacturing and research and development facilities for the local market. These multinational companies are said to be targeting the growing domestic market rather than exports. They are facing severe competition with cheap imported medicines.

The government recognises the need for enhancing the local manufacturing capacity to replace imports. The country is highly dependent on imports of pharmaceutical products at as much as 90%[32]. The government has identified the industry as a key economic area in the country's development policy framework, "Sri Lanka Emerging Wonder of Asia: Mahinda Chintana - Vision for the Future". The target of the government is to substitute 15% of the imports by 2016 by implementing initiatives such as providing tax incentives[33] and establishing investment promotion zones exclusively for the industry.

2.5.2 Strength and Potential

As a majority of raw material is needed to be imported, it is challenging for pharmaceutical companies to enhance profitability. Under such conditions, the industry has a potential to commoditize and promote traditional medicines or local herbal products. The government has also identified these as a potential area, thus it has established a Ministry of Indigenous Medicine to assist in the development of this area, as well as a state company named Sri Lanka Ayurvedic Drugs Corporation, for the manufacturing and marketing of Ayurvedic drugs.

---

[32] Ministry of Finance and Planning, *Unstoppable Sri Lanka 2020* (2013), p.270.

[33] Newly established pharmaceutical manufacturing companies, over USD 10 million investment, will be given tax holiday for 5 years and concessionary tax rate of 12% for the following years.

Ayurveda, traditional practiced ways of healing and preventing disease using natural resources such as herbs, is increasingly attracting global attention. It has been passed on over generations in Sri Lanka, and the country boasts in having abundant experts and expertise in the area. According to the Ministry of Indigenous Medicine, the country has 62 Ayurvedic hospitals and 208 central dispensaries administered by provincial councils as well as another 230 dispensaries administered by local government authorities. And there is about 20,000 Ayurvedic physicians registered under the Sri Lanka Ayurveda Medical Council. In addition to traditional cure treatments, Ayurveda is extending its service offerings to beauty and relaxation treatments in spas, resorts and hospitals. Capitalizing on the popularity of Ayurveda, healthcare or beauty Ayurveda products utilizing local resources leave great potential for the industry.

2.5.3 Major challenges

Although there is a high potential in commoditization and promotion of traditional medicine and Ayurvedic products, research and development as well as quality control seem to remain a challenge for its growth. It was pointed out that currently Ayurvedic products have not been allergy-tested and that Ayurvedic products for beauty purposes have not yet been developed in great volume. Not only to supply the local market but to export products to various countries requires that the products pass international quality standards. Also, it has been observed that the packaging quality of these traditional products leaves room for improvement. Therefore, there is a need for the industry to strengthen research and development as well as testing and quality control in this product area, and the Ministry of Indigenous Medicine has a critical role to play.

Also, it was reported that bureaucracy sometimes hinders business in the pharmaceutical industry. Medical services at public hospitals as well as prescribed medicines are offered for free in Sri Lanka. For such a medical system, pharmaceutical companies sell their products to the government, and the government sometime causes delays in payments. It is essential for the government to promote the industry for its growth.

2.6 Mineral Industry

2.6.1 Overview

Sri Lanka has a variety of minerals. They include graphite, ilmenite, rutile, zircon, quartz, feldspar, clay, kaolin, apatite (phosphate rock), silica sand, garnet sand, mica, calcite, dolomite, and gemstones. The most important non-ferrous mineral reserve in Sri Lanka is Pulmoddai beach sand deposit located north of Trincomalee. This deposit contains minerals including titanium which is one of the most expensive and sought after metals in the world[34]. The Pulmoddai mineral sands deposit is estimated to have a resource of about 12.5 million metric tons, and ilmenite accounts for 60% of the deposit[35]. Among non-metallic minerals, Sri Lankan graphite is reputed for its high purity: its vein graphite is the highest quality form of natural graphite in the world, containing more than 90% carbon content[36]. Graphite is utilized for traditional use such as graphite lubricants and refractory bricks, as well as for newly emerging products such as lithium-ion batteries.

In 2013, the mining and quarrying sector accounted for 2.1% of Sri Lanka's Gross Domestic Product (GDP) and employed about 100,000 people[37], including in the mining of gemstones. Industrial mineral exports recorded USD 51.6 million in the same year, accounting for 0.5% of the total exports[38]. Table A2-3 indicates Sri Lanka's recent trend of mineral exports. Two main buyers of Sri Lanka's mineral sands were China and India, and graphite products were exported to Australia, India, Japan, the Republic of Korea, Pakistan, and the United States in 2010[39]. According to EDB's statistics, the main destinations of silica and quartz were Japan, Singapore and the Republic of Korea in 2012. Articles of stones such as worked monumental stones were largely exported to India in the same year[40].

---

[34] Export Development Board (EDB), *Partner with Sri Lanka the Hub of Asia: Product Catalogue* (2012), p.120.

[35] U.S. Geological Survey, U.S. Department of the Interior, *2012 Minerals Yearbook Sri Lanka [Advance Release]* (November 2013), p.1.

[36] Ditto.

[37] Central Bank of Sri Lanka, *Annual Report 2013 Statistical Appendix* (March 2014), Tables 1 and 54.

[38] Central Bank of Sri Lanka, *Annual Report 2013* (March 2014), p.130.

[39] U.S. Geological Survey, U.S. Department of the Interior, *2011 Minerals Yearbook Sri Lanka [Advance Release]* (November 2012), pp.1-2.

[40] Policy and Strategic Planning Division, Export Development Board (EDB), *Export Performance*

Table A2-3: Trends of mineral exports

	Rs. Million							USD million						
	2007	2008	2009	2010	2011	2012	2013*	2007	2008	2009	2010	2011	2012	2013*
Natural Graphite	420	378	260	454	479	561	569	4	4	2	4	4	4	4
Natural Sands	133	126	148	191	157	28	9	1	1	1	2	1	…	…
Quartz	463	502	304	377	477	1,075	1,235	4	5	3	3	4	8	10
Other	1,615	1,304	1,569	1,717	2,518	6,169	4,914	15	12	14	15	23	48	38
Total Mineral Exports	2,631	2,311	2,280	2,739	3,631	7,833	6,727	24	21	20	24	33	61	52

Note: * provisional

Source: Central Bank of Sri Lanka, *Annual Report 2011/2013* (March 2012/March 2014), Table 72/74.

In regard to the industry structure, state-owned companies play a major role in mining, including Lanka Mineral Sands Ltd and Lanka Phosphate Ltd under the Ministry of State Resources and Economic Development (MSRED), and Kahatagaha Graphite Lanka Ltd under the Ministry of Industry and Commerce (MIAC). There are several private or private-public joint venture companies for mining and processing for export.

After nearly three decades of civil war, the government is actively promoting investment into the mining industry by offering tax incentives and liberal regulations. In 2013, the Minister of Environment and Renewable Energy expressed that mining companies would be charged a royalty of only 5% and that the government would not levy any other charges[41].

2.6.2 Strength and Potential

Among the mineral resources rich in Sri Lanka, some minerals such as graphite and mineral sands are gaining increased attention as strategic minerals, with the advancement of new technology. As stated above, Sri Lanka's graphite has a high reputation for its purity. In fact, the particular type (vein or lumpy and chippy dust graphite) is produced commercially only in Sri Lanka. The purity means that the material requires little purification, thus its prices in the open market are much higher than those of a lower grade. In addition to traditional use in steel and refractory industries, graphite is widely used in electronic items such as smartphones, laptops, televisions, and lithium-ion batteries. On top of that, it is predicted that the renewable

---

Indicators 2003-2012 (2013), Tables 16.100 and 16.101.

[41] Wall Street Journal (online), *Asian Business News:"Sri Lanka Seeks Investors for Nascent Mining Industry"* (March 15, 2013), accessed on May 10, 2014.
[http://online.wsj.com/news/articles/SB10001424127887324077704578361491643425354]

energy sector would create a greater demand for high quality graphite[42]. On the supply side, China produces more than 70% of the world graphite supply, dominating the market. Other main producers are India, Brazil and North Korea. Sri Lanka exported only 4,000 metric tons while China 800,000 in 2012[43]. In 2010, however, China introduced a 20% export duty, 17% value-added tax, and an export licensing system for graphite in an attempt to preserve its deposits and import most of its requirements from abroad. This pushed graphite prices higher and reportedly created concern about over-dependency on China among consumer countries in the world. Since it is difficult for Sri Lanka to compete with China in the ordinary graphite market, such as amorphous and flake, availability of high-grade graphite provides a great chance for Sri Lanka to capture the high-quality niche market.

2.6.3 Major challenges

Major challenges the industry faces are as follows:

Firstly, the production output of the key industrial minerals has not grown as much as expected since the end of the civil war (Table A2-4). The graphite mining industry in Sri Lanka has a very long history dating back 200 years, and during its peak period between the First and Second World Wars approximately 35,000 metric tons were produced annually. Many pits and small mines were in operation then. When the mining industry was nationalized in 1971, these pits and mines were abandoned except for the Bogala, Kahatagaha and Kokongaha mines, though significant reserves of lump and flake graphite were later found in these abandoned locations[44]. The private sector was allowed back into the industry in the early 1990s, but by that time, problems with the civil war were preventing development on a large scale. The mineral sands mining industry on the eastern coast, too, was halted from the 1980s: the factory of Lanka Mineral Sands Ltd at Pulmoddai remained closed for nearly 30 years. As a result, little exploration work has been conducted over the last five decades. Although the government is actively trying to promote exploration work in such areas as abandoned graphite mines by attracting private investors, a limited supply capacity will continue to be a constraint

---

[42] Ceylon Today (online), *"Graphite mining vigorously pursued"* (November 20, 2013), accessed on May 10, 2014.
[http://www.ceylontoday.lk/59-47979-news-detail-graphite-mining-vigorously-pursued.html]

[43] U.S. Geological Survey, *Mineral Commodity Summaries 2014* (February 2014), p.69.

[44] Daily Mirror (online), *"Revival of graphite mining in Sri Lanka – A critical review"* (September 25, 2013), accessed on May 10, 2014.
[http://www.dailymirror.lk/business/features/36006-revival-of-graphite-mining-in-sri-lanka--a-critical-review.html]

for some time to Sri Lanka tapping further into the high-quality graphite market in the world.

Table A2-4: Estimated production of selected minerals

(Metric tons)

	2008	2009	2010	2011	2012
Graphite, all grades	6,615	3,171	3,437	3,500	5,000
Phosphate rock, gross weight	41,947	36,347	47,778	48,000	49,000
Quartzite	37,196	30,409	34,437	36,000	37,000
Ilmenite	22,159	122,424	52,637	52,000	53,000
Rutile	11,335	2,276	2,568	2,700	2,800

Source: U.S. Geological Survey, *2012 Mineral Yearbook Sri Lanka [Advance Release]* (November 2013), Table 1.

Secondly, value addition to mineral products is something that has long been pursued but is still a great challenge to Sri Lanka. Currently, most industrial minerals exported from Sri Lanka are in raw form. In the case of titanium, for instance, titanium dioxide pigment or titanium metal is not produced in Sri Lanka. Titanium dioxide pigment is used in ceramics, paint, paper, plastics, and rubber applications and titanium metal is used in the aerospace industry[45]. Regarding graphite, Sri Lanka exports raw graphite at a price of Rs. 200 per kilogram, while a finished product, such as a carbon nano tube, could earn up to Rs. 150,000 per gram[46]. It has been reported that there are some movements in this regard, such as a joint-venture project between a local company, LAUGFS Holdings Ltd, and the Sri Lanka Institute of Nano Technology (SLINTEC) on a titanium dioxide manufacturing plant for both the domestic and export markets to add value to ilmenite exports. However, it is observed from news reports and other disclosed information that foreign companies coming to Sri Lanka for joint-venture projects in the current graphite boom, basically want Sri Lanka's high-quality natural graphite to export to the countries where downstream processing occurs in the close proximity of user industries. This situation provides a great challenge to Sri Lanka, because the basic structure of the mining industry is that capital goes to the place where resources are actually utilized and consumed. This implies that exports of raw materials will continue to dominate in Sri Lanka unless the industrial sectors that use the resources for manufacturing their products are developed. Developing user industries domestically is the key to the value addition retained in the country.

[45] U.S. Geological Survey, U.S. Department of the Interior, *2009 Minerals Yearbook Sri Lanka [Advance Release]* (November 2010), p.1.

[46] Ceylon Today (online), *"Graphite mining vigorously pursued"* (November 20, 2013), accessed on May 10, 2014. Prices quoted are at the time of the article released.

Thirdly, while a need for value addition to mineral products are recognised and shared widely in the country, there are concerns among experts and in the media about the lack of coordinated policy and implementation by the government. For example, one geologist and ex-public official points out that separate efforts being made by a number of ministries and organizations makes it difficult to evolve a national policy for value addition to minerals, causing confusion to the private sector trying to invest[47]. There are four ministries engaged in value addition to minerals: the Ministry of Environment and Renewable Resources (MOERE) as the lead ministry, the Coordinating Secretariat for Science, Technology and Innovation (COSTI), the Ministry of Industry and Commerce (MOIAC), and the Ministry of State Resources and Enterprise Development (MSRED). It is reported that several committees have been established by these ministries for the purpose of developing policy on value addition to minerals but working separately, even including the case of one ministry having three committees[48]. News media implies that the government's "vague policy of value addition" could prolong a state of industrial minerals being exported in their raw state[49].

[47] Daily Mirror (online), *"Need for national policy on minerals value addition"* (March 11, 2014), accessed on May 10, 2014. [http://www.dailymirror.lk/business/features/44298-need-for-national-policy-on-minerals-value-addition-.html]

[48] Ditto.

[49] Sunday Times (online), *Editorial:"Mining the family silver"* (December 29, 2013), accessed on May 10,2014. [http://www.sundaytimes.lk/131229/editorial/mining-the-family-silver-78078.html]

2.7 Food Processing Industry

2.7.1 Overview

The food processing industry deals with processed food products and beverages. It includes a wide range of products such as processed fruits, vegetables and juices, confectionery and bakery products, processed food, rice and cereals, animal food, mineral water, bottled drinking water and alcoholic beverages. This industry often has importance to a country's economic development, since it is a fundamental industry that is directly related to people's day-to-day lives, and that can be developed relatively easily, especially when there are natural resources available to be utilized. It is not that easy, however, to step out of the domestic market into the international market due to the many hurdles that need to be overcome such as safety and hygene standards, in addition to regular competition factors including quality, cost, delivery and supply capacity.

In Sri Lanka, too, the industry has been playing an important role in the economy. In 2013, the industry (the category of food, beverages and tobacco products) accounted for 7.3% of Sri Lanka's GDP. In the industrial sector, the category formed the largest part, or 47% of the added value, far exceeding the apparel industry (23%)[50]. The export earnings of this industry increased from around USD 50 million in 2003 to USD 299 million in 2013, although its contribution to the country's total export earnings is still modest: 2.9% in 2013[51]. Presently, USA, Germany, Netherlands, Maldives and Australia are the main markets for processed vegetables, fruits and juices. Indonesia, Singapore, Thailand, UAE, Hong Kong and Ethiopia are the main markets for Sri Lankan rice and cereals[52].

According to the government's industrial survey, the industry had over 4,300 establishments with 5 or more employees engaged, and more than 130,000 people were engaged in this sector in 2011[53]. The Sri Lanka Food Processors Association (SLFPA), which is the apex organization of companies in this industry, currently has about 160 member companies. Among them, about

---

[50] Central Bank of Sri Lanka, *Annual Report 2013 Statistical Appendix* (March 2014), Tables 2 and 22.

[51] (1) Export Development Board (EDB), *Export Performance Indicators 2003-2012* (2012), Table 9. (2) Central Bank of Sri Lanka, *Annual Report 2013 Statistical Appendix* (March 2014), Table 74.

[52] Website of Sri Lanka Export Development Board (EDB) [http://www.srilankabusiness.com/en/find-sri-lankan-suppliers/product-profiles/food-beverages-and-edible-oil], accessed on May 19, 2014.

[53] Department of Census and Statistics, *Annual Survey of Industries 2012* (March 2014), Table II.

10 members including foreign owned firms are large-scale companies with 1,000-1,500 employees. The remaining members are small or medium-scale local companies which employ 50-75 people on average[54].

2.7.2 Strength and Potential

The main strength of Sri Lanka's food processing industry is that the country is endowed with a variety of natural resources and climatic conditions offering a wide range of agricultural products such as crops, fruits and vegetables. According to EDB, about 80 different varieties of fruits and vegetables are grown in Sri Lanka's varied agro-climatic areas. Broadly speaking, the climatically cool and salubrious conditions in the hill country are ideal for temperate crops such as carrots, leeks, cabbages, cauliflowers, salad leaves, beets, beans, bell peppers, and salad cucumbers, while the well demarcated low country and dry wet areas are suitable for a variety of tropical fruits and vegetables ranging from green chillis, red onions, pumpkins, bitter gourds, melons, sweet and sour banana types, queen pineapples, papayas, mangoes, lemons and gherkins etc.[55] Grown in these rich conditions, Sri Lankan tropical fruits such as pineapples, mangosteens and rambutans are often described as unique in terms of their flavor, smell and color. The availability of diversified raw produce and the special characters of some fruits broaden chances for the food processing industry to expand its business.

In this connection, it is pointed out that there are many natural resources, or raw materials, which have not yet been fully explored for commercialization. Some people in the industry see a potential for improving grape cultivation to develop wine production in areas of the north. There are also expectations shown for fishery resources such as tuna, sea cucumbers and sea urchins for export, either fresh or processed products to the middle or upper class markets in such countries as Japan and China. In particular, there is much room for exploring in newly opened northern and eastern areas, which offer an enormous potential for agricultural and fishery development.

Another potential would be niche products. Sri Lanka cannot supply high-volume agricultural products to the world market compared to other countries that can utilize advantage of scale in agricultural production. Instead, it would be possible to target the market of particular products which may not be for mass markets, but are in constant demand from certain industries

[54] Information from an interview with SLFPA in April 2014.

[55] Website of Sri Lanka Export Development Board (EDB) [http://www.srilankabusiness.com/find-sri-lankan-suppliers/product-profiles/fruits-vegetables-cereals-cashew-and-other-agricultural-produce], accessed on May 19, 2014.

or consumers. A success case is gherkin pickles, whose processed products are used to make McDonalds' hamburgers worldwide in such places as Japan, Australia, the Netherlands and Thailand. The gherkins are grown by small farmers on a contract basis with a major processing company, which makes value added products for export. It implies that an important factor of the success is how to create an effective collaboration between the producers (farmers) and the industry (processing companies) in order to ensure product quality as well as sustainability.

2.7.3 Major challenges

Major challenges the industry faces are as follows:

First, there is a strong recognition among people in the leading positions of the industry that many workers at the processing factories, especially in small and medium-scale companies, are lacking in basic knowledge and skills in every aspect of the industry's work, such as food safety and hygiene, post-harvest activities and packaging. Skills improvement of these people, who constitute the most part of the industry demographic, is indispensable for its development. It is said that currently these workers have almost no chances or systems to prove their skills by means of certification, for instance, even if they have been engaged in the industry for a long time and gained a lot of experience on site. This could make it difficult for them to see a prospect on their future career in the industry, discouraging them to learn. SLFPA is currently working on this issue in collaboration with GIZ in the SLFPA SME Development Project, focusing on small and medium-scale enterprises in five provinces that economically lag behind.

Second, for the food processing industry, which has a strong connection to the agricultural sector, improving quality and productivity of raw products is fundamentally important. In this sense, it is observed in this survey that there is much room for improving the skills of agricultural workers at farm level. For example, as for cinnamon, it is reported that one of the key factors of high quality production is skilled labour who could harvest it regularly twice a year. During the civil war, however, their skills and knowledge at the operational level had faded. The WTO-UNIDO-TSC Cinnamon Project is working on fostering skilled labour. As seen above, collaborations between a leading processing/exporting company and small farmers can also be a measure to improve quality and productivity of raw products. In some areas, collaboration further with the government would be needed for the improvement of the agriculture sector. For instance, an industry source stresses the importance for introducing the Good Agricultural Practices (GAP) to Sri Lankan farmers in order for the food processing industry to be competitive in the overseas market. However, this is not possible only by the effort of the private sector: close cooperation among the industry, the government and farmers is

necessary.

Third, apart from the above challenges which are mainly related to improving basic skills and technology, key players in the industry recognise the need for higher levels of capacity by upgrading skills and knowledge of graduate workers such as engineers, in order to develop the industry in the increasingly competitive international market. SLFPA has recently established the Institute of Food Science and Technology Sri Lanka (IFSTSL) in cooperation with universities, in the hope that the institute will cater to the needs of the future.

2.8 Tourism Industry

2.8.1 Overview

The tourism industry is one of the prominent industries of Sri Lanka. Earning and employment in the industry has grown significantly, driven by a dramatic rise in the number of tourist arrivals.

The number of tourist arrivals recorded 1.27 million in 2013, a rise of 26.7% over the previous year (See Table A2-5). With the support of promotional campaigns, it exceeded its original target of 1.2 million. The country aims to increase tourist arrivals to 2.5 million by 2016[56]. In 2013, 76.9% of tourists visited Sri Lanka for pleasure, while 7.4% arrived for business. As for the origins of these tourists, India remains the top with the largest share of 16%, followed by U.K. (11%), Germany (7%), Maldives (6%) and France (5%). The number of tourists from these five countries makes up 45.2% of total tourists[57].

Earning from tourism reached USD 1,715 million in 2013, marking an increase of 65% from USD 1,039 million in 2012. In addition to this, it is well known that the industry produces extensive positive impacts on related industries such as transport, communication, and manufacturing, such as handicrafts. For instance, sales of passenger services to non-residents are not included in the earnings from tourism but in earnings from transport. Therefore, actual earning from tourism is expected to be much larger than the figure.

In Sri Lanka, investment made in tourism constitutes a significant portion of total foreign direct investment. "Hotels and restaurants" accounted for nearly 5% of the total foreign direct investment of BOI enterprises in 2013, and the share was even 20% in 2011 and 9% in 2012[58]. International hotel chains such as Shangri-La, Hyatt, Marriott and Sheraton have already decided to enter into the market and are currently in the process of constructing their facilities.

It is also important to note that the industry creates a large amount of employment. In 2013, direct employment by the industry was 112,550, and it is estimated that another 157,600 jobs were created indirectly by the industry. Direct and indirect employment by the industry together accounted for 3.2% of the total employment of the nation. The total

[56] Ministry of Finance and Planning, *Unstoppable Sri Lanka 2020 – public investment strategy 2014-2016* (2013), p.297

[57] Central Bank of Sri Lanka, *Annual Report 2013* (April 2014)

[58] Ditto.

employment—direct and indirect—by the industry was only 124,970 in 2009, so the number has more than doubled in the past five years. The industry contributes significantly to the Sri Lankan economy not only in terms of earning but also in terms of employment creation.

Table A2-5: Key indicators of the tourism industry

	Unit	2009	2010	2011	2012	2013(a)
Tourist Arrivals	No.	447,890	654,476	855,975	1,005,605	1,274,593
For pleasure	No.	358,188	516,538	663,343	748,436	980,162
For business	No.	38,473	83,270	68,097	90,040	94,320
For other purposes	No.	51,229	54,668	124,535	167,129	200,111
For pleasure	% of tourists	80.0%	78.9%	77.5%	74.4%	76.9%
For business	% of tourists	8.6%	12.7%	8.0%	9.0%	7.4%
For other purposes	% of tourists	11.4%	8.4%	14.5%	16.6%	15.7%
Earning	US$ million	350	575	830	1,039	1,715
Employment	No.					
Direct Employment	No.	52,071	55,023	57,786	67,862	112,550
Estimated Indirect Employment	No.	72,899	77,032	80,899	95,007	157,600

(a): provisional

Source: Central Bank of Sri Lanka, *Economic and Social Statistics of Sri Lanka 2013* (April 2013), p.87; Central Bank of Sri Lanka, *Annual Report 2013 Statistical Appendix* (April 2014), Table 80 and 82.

The government has set ambitious targets for the industry as noted in "Unstoppable Sri Lanka 2020 – public investment strategy 2014-2016" shown below. Public and private sectors are working hard to achieve the targets through initiatives such as launching promotional campaigns, implementing tourism development projects, and developing facilities.

Targets:

1. Increase tourist arrivals from 1 million in 2012 to 2.5 million by 2016.
2. Attract USD 3 billion as Foreign Direct Investment (FDI) to the country within the next 5 years.
3. Increase the tourism related employment from 125,000 in 2012 to 500,000 by 2016 and expand tourism based industry and services.
4. Distribute the economic benefits of tourism to a larger cross section of society.
5. Increase the foreign exchange earnings from USD 1 billion in 2012 to USD 2.5 billion by 2016.
6. Contribute towards improving the global trade and economic links of Sri Lanka.
7. Position Sri Lanka as the world's most treasured island for tourism.

Source: Ministry of Finance and Planning, *Unstoppable Sri Lanka 2020 – public investment strategy 2014-2016* (2013), p.297.

Figure A2-6: Targets for tourism industry development

2.8.2 Strength and Potential

Sri Lanka possesses a wide variety of high potential tourist attractions; the nation has historical and artistic heritage, rich natural resources including beautiful sea and wildlife, and a climate suitable for tourism. In such a small island, there are eight UNESCO World Heritage sites; six of them are cultural sites: Ancient City of Polonnaruwa, Ancient City of Sigiriya, Golden Temple of Dambulla, Old Town of Galle and its Fortifications, Sacred City of Anuradhapura, and Sacred City of Kandy. And two others have been inscribed as natural sites: Central Highlands of Sri Lanka, and Sinharaja Forest Reserve. Also, its English-speaking, warm and friendly people increase the comfort of tourists. With the peaceful environment of the country today, the nation is expected to continue to attract tourists.

Additionally, as Sri Lanka is geographically advantaged to become a regional logistics hub just like Singapore, there is a potential of so-called MICE industry—Meeting, Incentive, Convention, Exhibition industry—to be developed in the country within the tourism industry. The country's safety and security environment today could be another advantage for this industry's promotion. According to International Congress and Convention Association (ICCA), in 2013, 11,150 international conventions were held worldwide. Only 14 of the meetings were held in Sri Lanka, while Singapore was a venue for 150 of the meetings[59]. There could be tremendous impact on the economy if the country can additionally attract these business travelers.

The potential of the tourism industry in bringing positive effects to related industries is immeasurable. It is crucial to strategically promote related industries, especially in the areas that can utilize the local resources of Sri Lanka such as Ayurveda and local craftsmanship. Ayurveda, traditional way of healing disease, which Sri Lanka has accumulated expertise through generations, is increasingly attracting attention around the world. One of the benefits of Ayurveda is that it requires a long-term-stay for visitors. There could be a great gain from synergy between tourism and Ayurveda. Also, there is a great potential for locally-made goods that are targeting tourists in growing its business, such as handloom-made products.

2.8.3 Major Challenges

Major challenges the Sri Lankan tourism industry faces are as follows:

Firstly, one of the challenges faced by the tourism industry is its human resource development. Currently, the industry faces a significant shortfall in the number of industry professionals. It

[59] International Congress and Convention Association, *The International Association Meetings Market 2012* (July 2013)

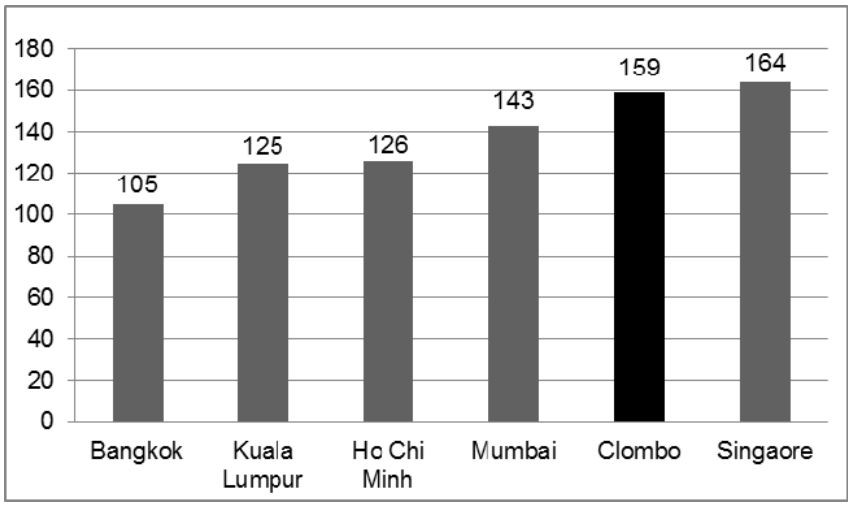
is said that every year 1,500 graduates are produced for the hotel and restaurant industry, while the industry needs 9,000 employees[60]. Also, there is often criticizism that the service standards of the industry still need to improve. To improve, efforts such as an enhancement of industry training as well as education programmes and the application of a licensing system are required for the industry. Both public and private sectors need to work jointly on such initiatives.

Secondly, shortages and highy-priced hotels are another challenge that the industry faces. As for accommodation capacity, it is estimated that the industry will need 49,800 rooms to accommodate the targeted number of tourists; an additional 27,000 rooms need to be constructed[61]. Balances between supply and demand of accommodation are assumed to vary according to regions, so the industry needs to map out plans according to regions. Also, it is often said that hotels in Sri Lanka are overpriced, particularly in the Colombo area. Minimum hotel rates decided by the government seem to contribute to this. The government's minimum rate for one room at five-star hotel in Colombo was set at USD 125 in 2011, which was a significant increase from USD 75, set in 2009. The minimum rate for four-star hotels and three star hotels are USD 95 and USD 75 respectively. The estimates by Capital Alliance notes that a trip for 10 days in Sri Lanka costs USD 500 to 800 higher than to similar trip destinations, and that hotel rates in Colombo are 23% higher than the average rate of similar destination cities[62] (Figure A2-7).

[60] Ministry of Finance and Planning, *Unstoppable Sri Lanka 2020 – public investment strategy 2014-2016* (2013), p.302.

[61] Ditto.

[62] CAL Research, *Trying to Live up to the Hype (Sample Report)* (February 2013), p.17-18.



Note: Rates given are for standard double occupancy/night; major cities were analysed due to lack of international hotel chains outside of Colombo.

Source: CAL Research, *Trying to Live up to the Hype (Sample Report)* (February 2013), p.19

Figure A2-7: 5-star city hotel regional rate comparison

Other challenges that industry faces include infrastructure development and minimization of environmental burdens. Access to tourist spots is reportedly not satisfactory, taking several hours due to the underdevelopment of infrastructure. Moreover, environmental burdens are one of the adverse effects of tourism development. The government seems to lay emphasis on sustainable environmental conservation. However, if the industry aims at its ambitious target of 2.5 million tourist arrivals, a tremendous effort will be needed to keep the impact on the environment to a minimum.

2.9 Logistics Industry

2.9.1 Overview

Given an advantage of geographical location close to the east-west sea-lane, there is a high potential for Sri Lanka to develop in the logistics industry. The government states that the nation aims to become a transportation hub in its "Sri Lanka Emerging Wonder of Asia: Mahinda Chintana - Vision for the Future". Out of total world trade, 90% of the carriage is transported through shipping. Container volume handled worldwide is projected to grow 5% to 5.5% over the next five years, according to Drewry Maritime Research[63].

Sri Lanka has six ports in the nation: Colombo, Hambantota, Galle, Oluvil, Trincomalee, and Kankesanthurai. Out of them, Colombo and Hambantota are international ports. In 2013, a total number of 3,976 vessels arrived in Sri Lanka and 66.2 million metric tons of cargo was handled (See

[63] Containerisation International, Top 100 ports 2013, p.8, accessed on 21st May, [http://europe.nxtbook.com/nxteu/informa/ci_top100ports2013/]

Table A2-6). The Port of Colombo, which has the largest capacity among ports in the region after the current expansion of South Terminal, and the new Hambantota Port, which has a large amount of backland for development, are competitive advantages for Sri Lanka. The Port of Colombo was ranked 32nd in Top 100 ports 2013 by Containerisation International64. In the last five years, Gross National Product (2002 constant price) by "Cargo Handling-Ports and Civil Aviation" grew at an annual average growth rate of 8.1%.

64 Ditto.

Table A2-6: Key indicators of port services

	Unit	2009	2010	2011	2012	2013(a)
Vessels Arrived	No.	4,456	4,067	4,332	4,134	3,976
Total Cargo Handled	MT Thousand	48,778	61,240	65,069	64,970	66,243
Colombo		46,373	58,768	62,016	61,669	63,482
Galle		167	318	464	422	207
Trincomalee		2,238	2,154	2,574	2,859	2,435
Hambantota				15	20	119
Total Container Traffic	TEUs Thousand	3,464	4,137	4,263	4,187	4,306
Transshipment Containers	TEUs Thousand	2,712	3,205	3,216	3,167	3,274
Transshipment Containers	% of Containers	78%	77%	75%	76%	76%
Employment (SLPA)	No.	13,367	12,828	11,008	10,200	9,886
GNP at Constant (2002) Prices of "Cargo Handling-Ports and Civil Aviation"	Rs. Million	16,017	18,706	20,060	21,194	21,842

(a): provisional

Source: Central Bank of Sri Lanka, *Annual Report 2013 Statistical Appendix* (March 2014), Table 2 and 36.

In regard to employment creation, one logistics company interviewed noted that currently about 5,000 people are considered to be employed directly by the whole logistics industry, and another 5,000 people indirectly in such jobs as in warehouses and deliveries. Therefore, a total of 10,000 jobs are assumed to have been created by the logistics industry. It was also noted that if there is a clear government policy framework to promote the industry, the number of those employed can be doubled within three years, considering the potential of the industry. Already, Sri Lanka Ports Authority employed 9,886 in 2013. Through the survey, it was found that most people in the logistics and supply chain management industry at the moment in Sri Lanka are experienced people that learned through practice, and there are only a very small number of university graduates in this area. However, Sri Lankan universities are now providing degrees in Logistics and producing about 60 graduates per year.

2.9.2 Strength and Potential

The biggest strength of the logistics industry in Sri Lanka is its strategic geographical location. Today, Asia is significantly increasing its presence in the world economy and trade. Containers shipped in Asia - North America route, Europe – Asia route and within the Asian region, cover more than half of the containers handled worldwide. And Sri Lanka is located in a perfect position in between Asia and Europe. In addition to cargo handling, ships have made stops at Colombo Port for replenishment of supplies, crew members' rest, ship repair, and so

on[65].

Since Sri Lanka as a consumer market is small, the country does not have a large volume of cargo to export. Thus, transshipment66 is a key potential area for its logistics industry. In Sri Lanka, out of total number of 4.3 million TEU67 containers handled in 2013, 76% (3.27 million TEU) was transshipments. As Sri Lanka is located to the south of countries facing the Bay of Bengal, such as India, Bangladesh, and Myanmar, whose economies are growing significantly, there is a potential for the Port of Colombo to absorb cargo from these countries to be transshipped. Additionally, the Hambantota Port has a potential to become a transshipment hub for automobiles. In Sri Lanka, all automobile handling has been shifted from the Port of Colombo to the Hambantota Port since 2012. Currently, as a world trend, a large number of automobiles are transshipped at the Port of Singapore; Japanese and Korean ships usually stop at the Port of Singapore for transshipment when transporting automobiles from their countries to the South Asian region. However, it was reported that the Port of Singapore is getting more congested with automobiles, so there is a possibility for the Hambantota Port being used instead for automobile transshipment.

Another strength of the logistics industry in Sri Lanka is that there are reportedly fewer labour issues compared to India. There are not many work stoppages and congestion at ports caused by strikes, while Indian ports suffer from frequent strikes. In that context, Sri Lankan ports are in a better position to secure the efficiency of their services.

2.9.3 Major Challenges

Major challenges the logistics industry faces are as follows:

Firstly, severe international competition between transshipment hub ports is a major challenge for the industry. Although there is a high potential for Sri Lanka to become a major transshipment hub, the competition between ports has grown increasingly fierce. A previous JICA study identified competitors of the ports in Sri Lanka: the Port of Singapore, the Port of Salalah (Oman), the Port of Chennai (India), and Cochin Port (India) as potential competitors. It is said that the competitiveness of transshipment hub ports largely depends on their cost and

[65] JICA and PADECO, *Data collection survey on Sri Lanka's international logistics* (November 2012), p.2-23

[66] Transshipment is transferring cargo from one ship to another.

[67] TEUs= Twenty-foot Equivalent Unit: a measurement unit used for indicating the capacity of the containers

scale, and shipping companies are always comparing ports in order to cut costs. The Port of Singapore is much larger in scale, handling more than seven times TEU of Sri Lanka. And its port charges are said to be very competitive, presumably made possible by its highly-efficient port service operation. The Port of Singapore has already accumulated experience and expertise in improving the efficiency of their services. Sri Lankan ports are faced with competition, and it is a tough competitor.

Secondly, the ports in Sri Lanka are disadvantageous in that volume of cargo exported is limited. The export volume of Sri Lanka is less than one-thirtieth of the volume of India. For ports that have cargo to export, such as the Port of Chennai, located in the manufacturing hub of South India, ships gather automatically to load goods from there. Shipping agents tends to operate direct routes once there is enough volume of cargo, lessening the chance of transshipment at the ports of Sri Lanka. And if Indian ports start to function as transshipment hubs, Sri Lankan ports will be in an even more difficult position. Therefore, the ports in Sri Lanka need to put tremendous effort into gaining competitiveness in order to attract ships.

Thirdly, it is critical for the nation to address the challenge of clarifying the division of roles played by the Port of Colombo and the Hambantota Port. It was often pointed out that the roles and objectives of the Hambantota Port are not very clear, while there is large backland available for development at the Hambantota Port. Currently, the port reportedly has no facilities such as cranes for handling containers, and reliable cargo handling companies cannot yet be found. There is a vital need for the government to map a long-term strategy to divide the roles of the Port of Colombo and Hambantota in order to gain their competitiveness in the future.

2.10 Shipyard Industry

2.10.1 Overview

The shipyard industry means shipbuilding and the ship repair businesses in this survey. The industry requires a vast area of land for docks and large-scale facilities such as berths, jib cranes and factories. However, it is basically a labour-intensive industry because the work is composed of many processes that are carried out manually. Ships usually start to be built by order. Contract price is decided based on various factors, including vessel type and size, supply-demand situation and its prospect in the world market, the shipbuilder's capacity, and so on. Thus, the industry is amenable to the external environment such as the world economy and competitors' situations.

The government of Sri Lanka considers the boat and ship building industry as a key export sector. With regard to the boat building segment, it is reported that there are around 20 to 25 active boat yards in the country, providing employment to around 2,000 people directly and 10,000 indirectly[68]. Boat building has a long history in Sri Lanka, but it had been a local business mainly to make boats for fishery. Currently, some companies have started to export, including a subsidiary of a world-famous sail maker in USA. On the other hand, shipbuilding and repair businesses are operated by one company, Colombo Dockyard PLC. The company provides direct employment to 3,200 people including permanent, project basis and subcontract employees[69]. It now earns almost all of its revenue from foreign customers.

The export value of the boat and ship building industry was only USD 2.1 million accounting for 0.04% of the total export earnings in 2003. It grew to USD 149.3 million and USD 56.6 million in 2011 and 2012, accounting for 1.4% and 0.6% of the total export amount respectively[70]. Although the breakdown figures by segment were not obtained by the survey team, the majority of export earnings from the boat and ship building industry are presumed to come from the shipbuilding and ship repair segment.

---

[68] Website of Sri Lanka Export Development Board (EDB) [http://www.srilankabusiness.com/find-sri-lankan-suppliers/product-profiles/boat-building-accessories], accessed on May 21, 2014.

[69] Colombo Dockyard PLC., *Annual Report 2013* (February 2014), p.70.

[70] Export Development Board (EDB), *Export Performance Indicators 2003-2012* (2012), Table 9.

2.10.2 Strength and Potential

One of the natural advantages for Sri Lanka's shipyard industry is the country's geographical location. Since it is located in an important position on the sea lanes connecting Asia, Europe and Africa, the industry is exposed to many potential customers worldwide. Its close proximity to India also provides great opportunities for accessing its huge and growing market, where a sustained demand is expected for ship construction and repair with a further development of infrastructure in ports and coasts. One shipyard company in Sri Lanka succeeded in taking off as an export company by taking advantage of this, starting its shipbuilding and ship repair businesses with customers in India and another neighbouring country, Maldives. The company then penetrated further into the Indian market as it accumulated experiences, while benefiting from its high level of technical skills in ship maintenance, as often described, in comparison with those of India. This contributed to the company gaining an international reputation. It now has strong customer records particularly from India and Singapore for shipbuilding, and from all over the world covering Europe, Asia and the Middle East for ship repair.

Another reason that the shipyard company successfully established its reputation is its focus on a niche market. In consideration of market prospects, the company strategically chose to build small and medium-sized vessels, especially in the Offshore Supply Vessel (OSV) market. Its recent shipbuilding revenue has been generated by OSVs including medium-scale Multipurpose Platform Supply Vessels and Anchor Handling Tug Supply Vessels, in addition to Passenger Vessels. There are some other factors pointed out as the company's strength, including relatively low labour cost and the clients' trust in quality and on time delivery against the background of the company being owned by a Japanese shipbuilder for about 20 years.

2.10.3 Major challenges

Major challenges the industry faces are as follows:

As explained earlier, the shipyard industry is likely to be influenced by the external environment such as the global economy. In this sense, it is an industry with a relatively high risk in nature. Even the Sri Lankan shipyard company that has successfully grown to become reputed in South Asia is currently facing difficulties in receiving orders for ship repair due to ship owners' weak demand in a slowdown of the world economy.

Another challenge is that the industry is gradually losing its cost competitiveness. Low labour costs of Sri Lanka compared with competitors have been considered to be advantageous for the industry, although the industry has to import all materials from abroad. However, this

advantage is expected to gradually diminish as the Sri Lankan economy continues to grow. It is also reported that competition is intensifying with other ship yards, especially those in the Asia region, which offer reduced rates for ship repairs to gain more volume-based business[71]. The industry is constantly under pressure to cut costs and increase productivity.

The growth of the shipbuilding business is subject to the production capacity of shipbuilders. In this respect, the government of Sri Lanka is planning to establish the shipyard industry in the newly-developed Hambantota Port. This may present a great potential for the development of the shipyard industry in Sri Lanka, as the Hambantota Port increases its importance possibly as a shipping hub in the Indian Ocean. However, it would be indisputable that the key to success is careful planning based on analysis of the situation and prospects of the world market and economy.

[71] Colombo Dockyard PLC., *Annual Report 2012* (February 2013), p.15.

2.11 Construction Consulting Industry

2.11.1 Overview

The construction consulting industry refers to the industry catering to the construction industry through engineering consultancy services. The Association of Consulting Engineers Sri Lanka (ACESL) defines the services provided by a consulting engineer as follows[72]:

- Pre-feasibility studies
- Feasibility studies
- Detail engineering design and preparation of tender documents
- Procurement
- Construction supervision and contract administration
- Project management
- Technical services
- Dispute review services

By its nature, this industry has a close relationship with the construction industry. Although there is no available data on the scale of this particular industry in the Sri Lankan economy, the industry has presumably benefited from the growth of the construction industry after the end of the civil war. From 2008 to 2013, the construction industry grew by 12.9% annually, and its contribution to the country's GDP increased from 6.5% to 8.7%, while the total GDP annual growth rate was 6.7%[73]. This growth was mainly driven by large-scale development projects for infrastructure and the tourism sector, and rehabilitation and resettlement programmes in northern and eastern provinces.

According to ACESL, it comprises of 13 firms and 91 individual members[74]. They include practicing consultants, private and public sector firms engaged in the entire range of engineering

[72] The Association of Consulting Engineers Sri Lanka Website, accessed on May 12, 2014. [http://www.acesl.org/services.php]

[73] At constant prices (2002). Source: Central Bank of Sri Lanka, *Annual Report 2012 and 2013 Statistical Appendix* (March 2013 and 2014), Tables 2.

[74] The Association of Consulting Engineers Sri Lanka Website, accessed on May 12, 2014. [http://www.acesl.org/acesl.php] However, there are about 20 member firms listed on the same website.

consultancy services and privatized infrastructure projects[75].

Table A2-7 shows major consultant firms by category.

Table A2-7: Major engineering consultancy firms

Area	Firms
All-round/ general	Central Engineering Consultancy Bureau (CECB), Resources Development Consultants (Pvt) Ltd. (RDC)
Structures	Stems Consultants (Pte) Ltd., Engineering Consultants (Pvt) Ltd. (ECL)
Hydraulics	Lanka Hydraulic Institute Ltd. (LHI)
Water Supply and Drainage	Environmental Engineering Consultants (Pvt) Ltd. (EEC), Ceywater Consultants (Pvt) Ltd.

Source: Compiled by the survey team based on AECSL participants' presentation materials at TCDPAP & FIDIC/ASPAC Conferences 2011 (April 2011) and 2012 (March 2012). [https://www.cidb.gov.my/tcdpap/docs/countrypapers/SriLanka.pdf], [http://www.acesl.org/TCDPAP-Colombo-Conference-2012/technical_papers.php]

The largest member firm in terms of scale is Central Engineering Consultancy Bureau (CECB), which is a governmental organization under the Ministry of Irrigation and Water Resources Management. Its business covers not only consultancy but also construction work, employing about 2,000 staff in total. Among them, there are 700 in-house engineers including 60 architects, 25 geologists, and 25 quantity surveyors. The organization was established initially for the purpose of providing consulting services for public projects for water resource and hydropower development, and it is now engaged in other sectors too, such as buildings, water supply and sanitation and transportation. It has further extended its business to the private sector and to projects overseas.

In the industry as a whole, it is presumed that there is a pool of engineers in various disciplines, though the size of the group constitutes a modest portion of the entire engineers' population.

[75] Export Development Board (EDB), *Partner with Sri Lanka the Hub of Asia: Product Catalogue* (2012), p.64.

2.11.2 Strength and Potential

According to our interviews with some of key organizations in these areas, engineers in the construction consulting as well as construction industry are competent in basic theories and techniques in respective specialties. In addition, major consulting firms have started to accumulate experiences in collaborating with international consulting firms as local consultants, as many donor-funded infrastructure projects have been conducted in Sri Lanka. Based on their solid knowledge base and experiences of large-scale projects within the country, some firms have stepped into the foreign market. For example, CECB provided consultancy services for development projects funded by international organizations in East Africa including Rwanda, Malawi, Tanzania and Uganda for such work as a feasibility study, Environmental Impact Assessment (EIA) and geotechnical study. A private consultancy firm specializing in hydraulics carried out studies and design works for projects in India, UAE, Oman, Algeria and South Korea, and so on[76].

It is broadly agreed by our interviewees that the competitiveness of Sri Lankan consultants in overseas projects comes largely from their cost advantage over competitors from other countries such as European consultants. In addition to that, although it may not be equal to the highest world standard, a reasonably sufficient level of their engineering services is believed to have won them the international bidding for certain projects in Africa, or other areas. This combination of cost competitiveness and engineering capability provides a potential for Sri Lankan consultants to further explore a certain category of niche market.

2.11.3 Major challenges

It is pointed out that the local firms in the construction industry, consultants as well as builders, still have limited experience in practicing projects in the sense of the roles that they play in the entire development project. Foreign engineering or construction companies are said to usually undertake technically advanced portions of a donor-funded large-scale infrastructure development project carried out in Sri Lanka, such as design of advanced-type concrete structures and ground improvement work. This means that local firms have not yet acquired such sophisticated construction techniques, including their management knowhow, which is held by companies in other ‘advanced’ countries in Europe, USA, and Asia. An executive officer of one foreign construction company based in Sri Lanka insists that acquiring a higher level of construction techniques and knowhow definitely needs a certain period of practice on site and

[76] Website of Lanka Hydraulic Institute Ltd. (LHI) [http://www.lhi.lk/projects_international.htm], accessed on May 12, 2014.

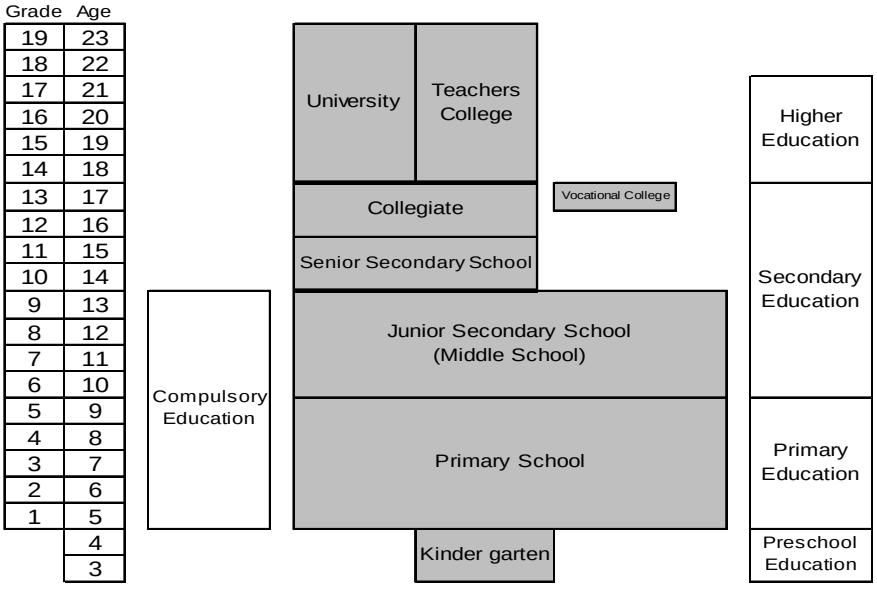
that Sri Lanka is lacking in this respect. In other words, experience matters. It is also said, however, that there are few opportunities for local firms to experience new techniques in traditional public projects paid for by the governement. Accumulating experience is the key to the development of the industry.

In addition, there is a growing recognition of the necessity for the firms in the industry to strengthen international competitiveness to make up for potential damages caused by the end of the current construction boom, since the industry faced the same difficulties after past booms. Though some firms are already engaged in projects in foreign countries as explained above, its proportion is said to be still rather insignificant. While the current cost advantage of Sri Lankan consultants is expected to gradually decrease in the future, penetrating further into the international market is a challenge, but provides a good chance to upgrade the engineering levels by accumulating experiences.

Appendix-3 Education System

3.1 Education System

Sri Lanka provides education for free from the primary to higher education levels. The country's literacy rate of 91.2%[77] remains at a high level in South Asian countries. Education structure in pre-higher education can be divided into four levels: five years of primary school, four years of junior secondary school, two years of senior secondary school and two years of collegiate. Compulsory Education is for nine years at primary and junior secondary schools. Students who would like to continue to collegiate level must pass the General Certificate of Education (G.C.E) Ordinary Level upon graduation from senior secondary school. At the end of secondary education, students take the G.C.E Advanced Level exam, which serves as an entrance examination to proceed to universities.



Source: B.M. Priyantha Rathnayaka, *Sri Lanka no kyoikuseido no genjo (Current Situation of Education in Sri Lanka)* (2013).

Figure A3-1: Education structure in Sri Lanka

[77] World Bank, *World Development Indicators.*

Out of the approx. 9,700 schools, only 72 schools are private and the rest are run by the government[78]. Enrolment ratios for each level are as follows: primary education 94%, secondary education 85%, and higher education 14%[79]. There are 9,662 government schools with about 3.94 million students.

Table A3-1: Number of government schools by functional grade span

Grade	1-5	1-8	1-11	1-13	6-11	6-13	Total
No. of schools	2,469	418	4,125	2,322	24	304	9,662

Source: Ministry of Education, *School Census 2008 Preliminary Report*

Table A3-2: Number of students in government schools by cycle

Level	No. of students
Primary cycle (Grades1-5 & Special Education)	1,672,809
Junior Secondary cycle (Grade 6-9)	1,220,123
Senior Secondary cycle (Grades 10-11)	610,492
Collegiate cycle (Grades 12-13)	436,648
Total	**3,940,072**

Source: Ministry of Education, *Sri Lanka Education Information 2010*

3.2 Governmental Agencies in Education

There are four main ministries in the area of education. The list of ministries with their main jurisdiction is as follows.

- Ministry of Education: Schools, Pirivenas (schools for Buddhist priests), Teachers'colleges, and Colleges of Education.

- Ministry of Higher Education: Universities

- Ministry of Youth Affairs and Skills Development: Vocational and technical education, including University of Vocational Technology and Ocean University.

- Ministry of Defence: General Sir John Kotelawada Defence University

[78] Ministry of Education, *Sri Lanka Education Information 2010*

[79] World Bank, *World Development Indicators.*

Appendix-4 Related Authorities and Types of Higher Education

4.1 Governmental Agencies in Higher Education

Governmental agencies responsible for higher education are as follows.

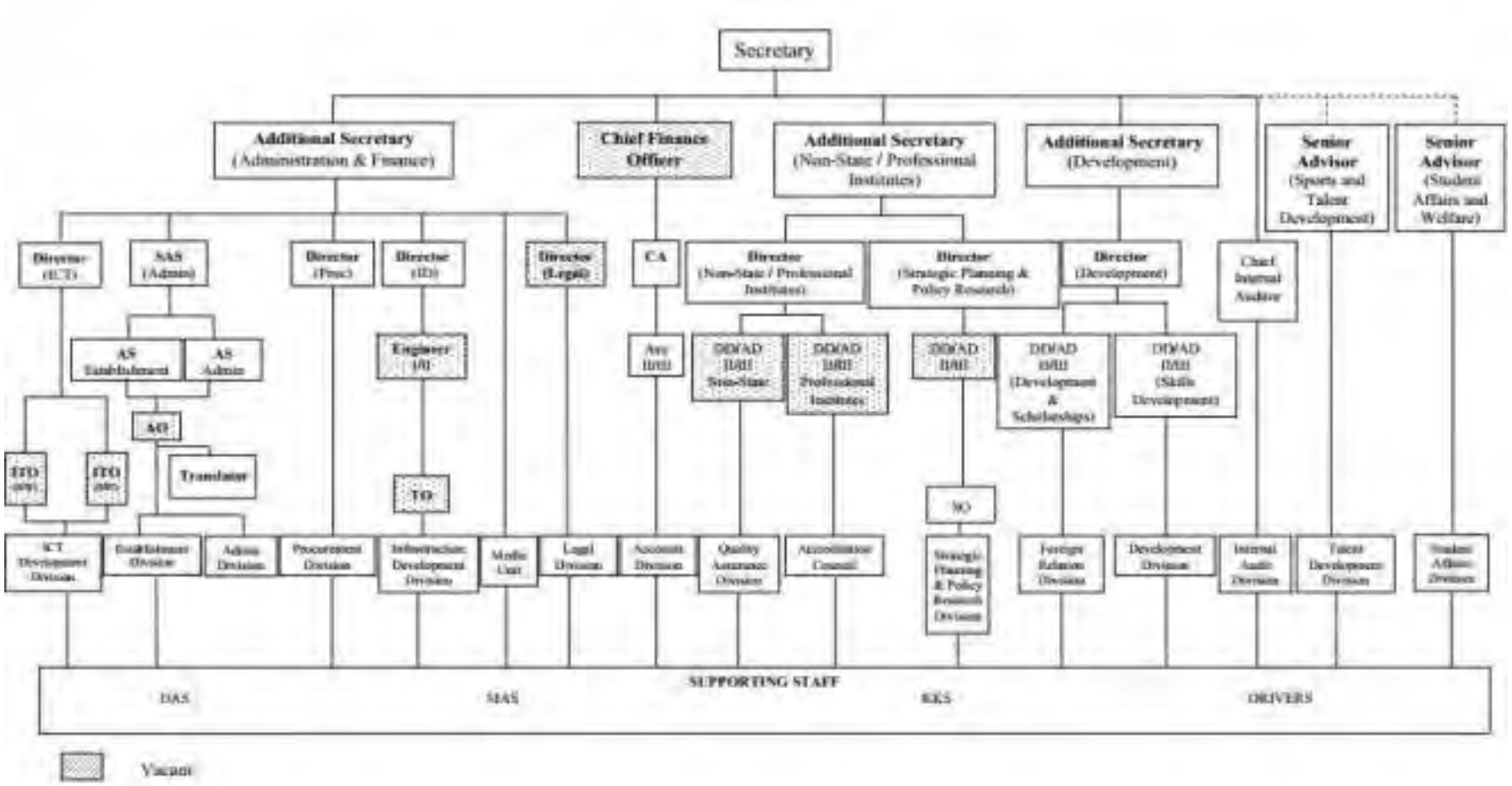
Ministry of Higher Education

The main roles of the Ministry of Higher Education are strategic and policy planning of higher education, provision of scholarships, and management of specialised institutes of higher education, such as Buddhist universities.

University Grants Commission (UGC)

UGC was established in 1978 as the regulatory body of national universities and Higher Education Institutes (HEIs) in Sri Lanka. The functions of UGC are planning and coordination of university education, allocation of funds to each institution, maintenance of academic standards, regulation of the administration of HEIs, and regulation of admission of students to HEIs, along with the policy planned by the Ministry of Higher Education.

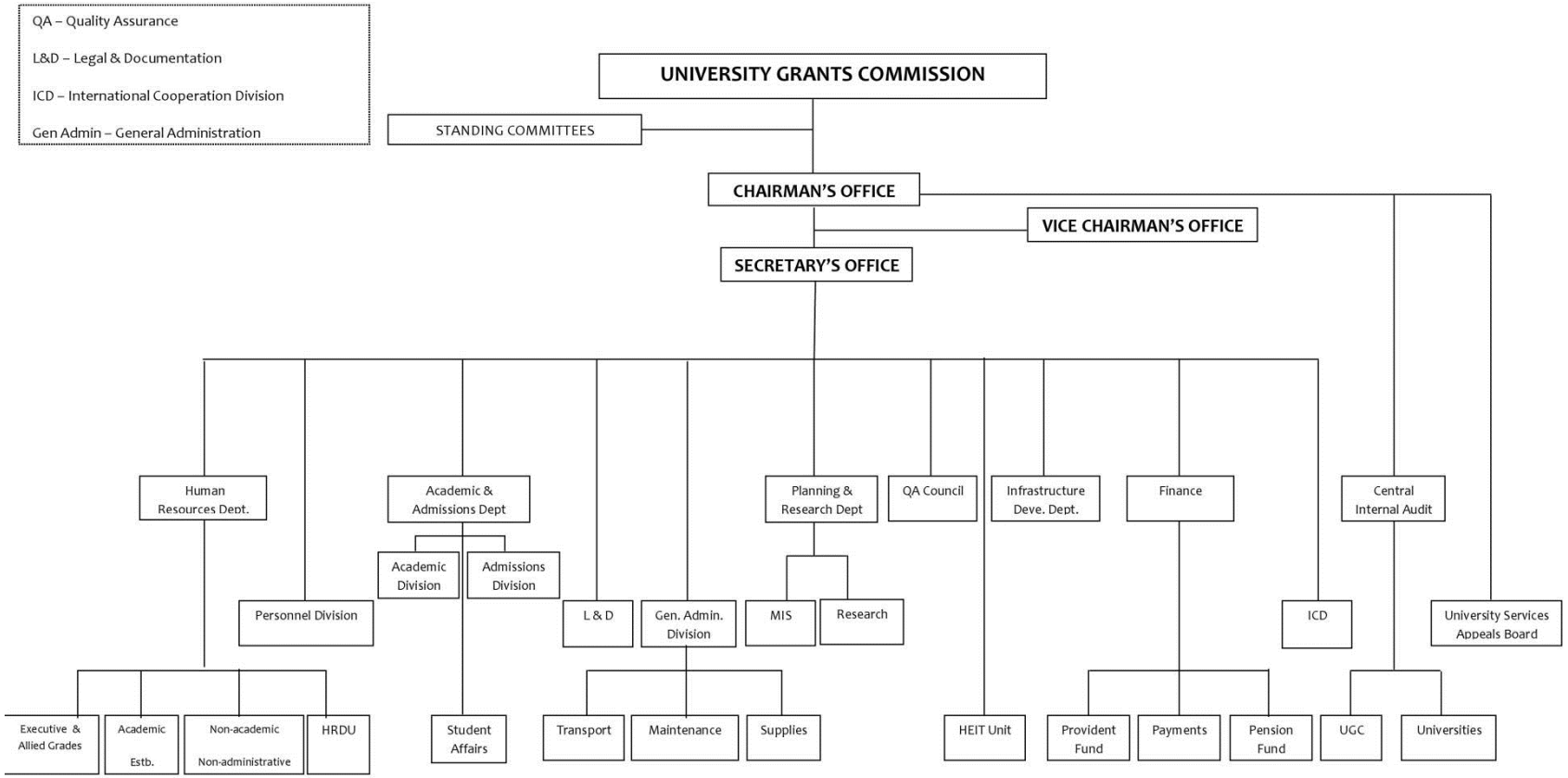
For details regarding other governmental agencies involved in higher education, refer to section 4.2.2) Public-Non-UGC.



Source: Ministry of Higher Education

Figure A4-1: Organizational structure of the Ministry of Higher Education

ORGANIZATIONAL CHART OF THE UNIVERSITY GRANTS COMMISSION



Source: University Grants Commission, *Corporate Plan 2011-2015*

Figure A4-2: Organizational structure of UGC

4.2 Types and List of HEIs

Higher Education Institutes in Sri Lanka can be classified into three categories, Public-UGC, Public-Non-UGC and Private Institutes[80].

1) Public-UGC (17)

HEIs, which are fully funded by the state, and managed under government regulations with admissions controlled by University Grants Commission (UGC), fall under this category. There are 14 state universities and three institutes affiliated with universities in the list of Public-UGC HEIs.

List of Public-UGC HEIs

1. University of Colombo
2. University of Peradeniya
3. University of Sri Jayewardenepura
4. University of Kelaniya
5. University of Ruhuna
6. University of Moratuwa
7. Swamy Vipulananda Institute of Aesthetic Studies
8. Sabaragamuwa University of Sri Lanka
9. University of the Visual & Performing Arts
10. University of Jaffna
11. Rajarata University of Sri Lanka
12. Wayamba University of Sri Lanka
13. Uva Wellassa University
14. Eastern University, Sri Lanka
15. Gampaha Wickramarachchi Ayurveda Institute
16. Institute of Indigenous Medicine
17. South Eastern University

Source: LIRNEasia, *Mapping the Higher Education Landscape in Sri Lanka* (2012)

2) Public-Non-UGC (10)

HEIs that are fully or partly funded by the state and managed with varying levels of

[80] LIRNEasia, *Mapping the Higher Education Landscape in Sri Lanka* (2012)

independence from the respective government authorities, with admission criteria determined independently of the UGC, fall under this category.

List of Public-Non-UGC HEIs with their corresponding managing agency or university

1. National Institute of Education	Ministry of Education
2. The Open University of Sri Lanka	State university provides distance education. Admission criteria is independent from UGC
3. National Institute of Business Management	Ministry of Youth Affairs and Skills Development
4. Institute of Human Resource Advancement	Institute attached to University of Colombo
5. Ocean University of Sri Lanka	Ministry of Youth Affairs and Skills Development
6. General Sir John Kotelawala Defence University (KDU)	Ministry of Defense
7. Institute for Agro - Technology and Rural Sciences	attached to University of Colombo
8. The National Institute of Social Development	Ministry of Social Services
9. University of Vocational Technology	Ministry of Youth Affairs and Skills Development
10. Institute of Surveying and Mapping	Survey Department of Sri Lanka
11. Buddhist and Pali University of Sri Lanka	Ministry of Higher Education
12. Bhiksu University of Sri Lanka	Ministry of Higher Education
13. Hardy Advanced Technological Institute	Ministry of Higher Education

Source: Survey team based on LIRNEasia, *Mapping the Higher Education Landscape in Sri Lanka* (2012) and Ministry of Higher Education

3) Private Institutes (46)

These are privately owned institutes. Most of them are foreign or governed by an intergovernmental board.

List of Private Institutions

1. Sri Lanka Institute of Information Technology (SLIIT)
2. IDM Computer Studies (Pvt) Ltd
3. South Asian Institute of Technology and Medicine (SAITM)
4. Regent International Institute for Higher Studies (RIIHS)
5. Business Management School (BMS)

6. Asia Pacific Institute of Information Technology (APIIT)
7. Auston Institute
8. Informatics Institute of Technology (IIT)
9. ESOFT Computer Studies (Pvt) Ltd.
10. Australian College of Business & Technology (ACBT)
11. CFPS Academy of Legal Studies
12. Colombo Institute of Research and Psychology
13. Matrix Institute of Information Technology
14. Royal Institute of Colombo
15. Colombo International Nautical & Engineering College (CINEC)
16. International College of Business & Technology (ICBT)*
17. Singapore Informatics
18. Academy of Design (AOD)
19. College of Chemical Sciences (CCS)
20. International Institute of Health Sciences (IIHS)
21. American National College / ANC Education
22. Mercury Institute of Management
23. Lanka Institute of Fashion Technology (LIFT)
24. Imperial Institute of Higher Education
25. Gateway Graduate School
26. University of Ballarat Sri Lanka Study Centre
27. Cosmopolitan College of Business and Technology (CCBT)
28. American College of Higher Education
29. Brandix College of Clothing Technology
30. City School of Architecture
31. Pioneer Institute of Business and Technology (PIBT)
32. AIMS College of Business & IT
33. GISM - Graduate Institute of Science & Management
34. Londontec City Campus
35. OpenArc School of Business and Technology Ltd
36. Colombo School of Construction Technology
37. Spectrum Institute of Science and Technology (Pvt) Ltd

38. Aquinas College of Higher Studies
39. Asian Aviation Centre
40. Oxford College of Business
41. British College of Legal Studies (BCLS)
42. Horizon Campus
43. London Business School (LBS)
44. British School of Commerce
45. Northshore College of Business and Technology
46. Western College for Management & Technology

Source: LIRNEasia, *Mapping the Higher Education Landscape in Sri Lanka* (2012)

Appendix-5 Higher Education Institutes of Engineering in Sri Lanka

No.	Institute	Location	Establishment	No. of Students	No. of Academic Staff	No. of Faculties
5.1	University of Peradeniya	Peradeniya, Central Province	1942	11,000	750	8
5.2	University of Moratuwa	Moratuwa (Suburb of Colombo), Western Province	1972	6,700	350	3
5.3	University of Ruhuna	Matara, Southern Province	1978	6,500	400	8
5.4	South Eastern University	Oluvil, Eastern Province	1995	2,300	350 including Admin. Staff	5
5.5	University of Jaffna	Jaffna, Northern Province	1974	6,500	43	9
5.6	University of Colombo	Colombo, Western Province	1921	11,600	500	8
5.7	Sabragamuwa University	Balangoda, Sabragamuwa Province	1991	3,758	225	5
5.8	Open University	Nugegoda (Suburb of Colombo), Western Province	1978	35,000	400	5
5.9	Sri Lanka Institute of Nanotechnology: SLINTEC	Pitipana (Suburb of Colombo), Western Province	2009	—	35 Research Staff	—

5.1 University of Peradeniya

	Item	Details
1	Name	University of Peradeniya (PDN)
2	Vice Chancellor	Senior Prof. Atula Senaratne
3	Address	Peradeniya, Central Province
4	URL	http://www.pdn.ac.lk/
5	Establishment	1942
6	Type	Public-UGC
7	Students	11,000 (including over 9,500 undergraduate students)
8	Academic Staff	750
9	Admin. Staff	
10	Budget	2,617.89 Million Rs. (Government grant, capital and recurrent)
11	Faculties and postgraduate institutes	(8 Faculties) Agriculture / Allied Health Science / Arts / Medicine / Dental Sciences / Science / Veterinary Medicine (2 Post graduate Institutes) Agriculture / Science
12	Programme	BSc (Agricultural Tech. and Mgt) / BSc (Animal Science & Fisheries) / BSc (Food Science & Technology) / BPharm / BSc (MLS) / BSc (Nursing) / BSc (Physiotherapy) /BSc (Radiography) / BA / BBA / LLB / BDS / BSc (Engineering) / MBBS / BSc (Science) / BSc (Computation & Management) / BSc (Statistics & OR) / BVSc / M.Sc / M. Phil / Ph.D
13	Centres/Units	(8) Centre for Distance & Continuing Education / Centre for Environmental Studies / Information Technology Centre / English Language Teaching Unit / Career Guidance and Counseling Unit / Staff Development Centre / Biotechnology Centre / Engineering Design Centre
14	Remarks	Almost all of the approx. 90 academic staff obtained doctoral degrees in Japan and interaction between the University and Japan is activated through them. International research centre was opened in 2012 to promote international exchange for the development of international standards at Sri Lankan universities. Establishment of Sri Lanka – Japan Study Centre is under consideration.

5.2 University of Moratuwa

	Item	Details
1	Name	University of Moratuwa (MRT)
2	Vice Chancellor	Professor Rahula A. Attalage
3	Address	Moratuwa (Suburb of Colombo), Western Province
4	URL	http://www.mrt.ac.lk/web/
5	Establishment	1972
6	Type	Public-UGC
7	Students	6,700 (Undergraduates 5,500 / Post Graduates 1,200)
8	Academic Staff	350
9	Admin. Staff	500
10	Budget	1,183.45 Million Rs. (Government grant, capital and recurrent)
11	Faculties and postgraduate institutes	(3) Architecture / Engineering / Information Technology
12	Programme	B Des / BArch / BSc (Facilities Mgt.) / BSc (Quantity Surveying) / BSc (Town & Country Planning) / B Des (FD & PD) / BSc (Earth Resources Engineering) / BSc (Engineering) / BSc (Textile & Clothing Technology) / BSc (Transportation & Logistics Mgt.) / BSc (IT) / BSc (IT & Management) / MPhill / Ph.D
13	Centres/Units	(12) Centres of Excellence (CoE) in Geoinformatics / Centre for Water and Environment Research and Modeling / Industrial Automation Research Centre / CoE on Localized Applications / CoE on Transport Research and Studies / Centre for Energy Studies / CoE in Project Management Services / Centre for Urban Environmental Research / Centre for Mass Customization of Apparel / Centre for Heritage and Culture Studies / Centre for Disaster Engineering and Mitigation Studies / CoE for Information Security Research and Studies
14	Remarks	250 academic staff obtained doctoral degrees at universities overseas. Industrial Training Division is attached to each faculty to manage students training in industries. Nearly 90% of graduates find work at private companies. The university promotes cooperation with industry and has opened nine research institutes funded by private companies.

5.3 University of Ruhuna

	Item	Details
1	Name	University of Ruhuna (RUH)
2	Vice Chancellor	Senior Prof. SGJN Senanayake
3	Address	Matara, Southern Province
4	URL	http://www.ruh.ac.lk/
5	Establishment	1978
6	Type	Public-UGC
7	Students	6,500
8	Academic Staff	400
9	Admin. Staff	
10	Budget	1,516.3 Million Rs. (Government grant, capital and recurrent)
11	Faculties and postgraduate institutes	(8) Agriculture/ Engineering/ Fisheries and Marine Sciences and Technology/ Humanity and Social Sciences/ Management and Finance/ Medicine/ Science / Graduate Studies
12	Programme	BSc (Agr.) / BSc (Eng.) / BSc (Fisheries and Marine Sciences) / BA / BBA / MBBS / BSc (MLS) / BSc (Nursing) / BSc (Pharmacy) / BSc (Science) / BSc (Computer Science)
13	Centres/Units	(6) English Unit (ELTU) / Cultural Centre / Physical Education / Staff Development Centre / Distance & Continuing Education / Centre for Multidisciplinary Studies and Research affiliated to University of Ruhuna
14	Remarks	3rd International Conference on Management and Economics was held on 26-27 February, 2014. MOU between RUH (Fisheries and Marine Sciences and Technology) and South China Sea Institute of Oceanology (China). Special Grants (UGC) will be given to Faculty of Engineering (137M Rs.).

5.4 South Eastern University of Sri Lanka

	Item	Details
1	Name	South Eastern University of Sri Lanka (SEUSL)
2	Vice Chancellor	Dr. S.M. Mohamed Ismail
3	Address	Oluvil, Eastern Province
4	URL	http://www.seu.ac.lk/
5	Establishment	May 15, 1996
6	Organization Type	Public-UGC
6	Students	2,300
7	Academic Staff	350 (including Admin. Staff)
8	Admin. Staff	
9	Budget	532.28 Million Rs. (Government grant, capital and recurrent)
10	Faculties and postgraduate institutes	(5) Applied Sciences/ Arts and Culture/ Engineering/ Islamic Studies & Arabic Language/ Management and Commerce
10	Programme	BSc (Science) / BA (Arts & Culture) / BA (Arabic Language) / BA (Islamic Studies) / BCom / BSc (MIT) / BBA / PGMA / MBA
11	Centres/Units	(5) Management Information Systems Unit / Computer Unit / Career Guidance Unit / ICT Centre / Postgraduate Unit
12	Remarks	Newly established Faculty of Engineering accepted the 1st batch of students for the undergraduate programme. The building of Faculty of Engineering has been supported by the Kuwait Foundation, and request was made to the Foundation for financial support of another two buildings under planning. 4th International Symposium of SEUSL will be held on 2-3 August, 2014.

5.5 University of Jaffna

	Item	Details
1	Name	University of Jaffna (UJA)
2	Vice Chancellor	Senior Prof. Vasanthy Arasaratnam
3	Address	Jaffna Campus: Thirunelvely, Jaffna Vavuniya Campus: Park Road, Vavuniya Kilinochchi Campus: Ariviyal Nagar, Kilinochchi
4	URL	http://www.jfn.ac.lk/ http://www.vau.jfn.ac.lk/
5	Establishment	1974
6	Type	Public-UGC
6	Students	6,500
7	Academic Staff	431
8	Admin. Staff	650
9	Budget	1,401.43 Million Rs. (Government grant, capital and recurrent)
10	Faculties and postgraduate institutes	(9) Agriculture/Applied Sciences/ Arts/ Business Studies/ Engineering/ Management Studies and Commerce/ Medicine/ Science / Graduate Studies
10	Programme	BSc (Agr.) / BA / LLB / B Com / BBA / MBBS / BPharm / BSc (MLS) / BSc (Nursing) / BFA / BSc (Science) / BSc (Computer Science) / BSM (Siddha Medicine) / BSc (Applied Science) / BBM / M. Phil / Ph.D
11	Centres/Units	(14) Allied Health Science Unit/Art and Design Unit/ Computer Unit/ English Language Teaching Centre/ External Examinations Unit/ Extra Mural Studies Unit/ Health Studies Unit/ Home Economics Unit/ Physical Education Unit/ Ramanathan Academy of Fine Arts/ Siddha Medicine Unit/ Staff Development Centre/ Sports Science Unit/ Workers' Education Unit
12	Remarks	Faculty of Agriculture will move to Kilinochchi Campus from April 2014. Newly established Faculty of Engineering accepted 39 1st batch students and will start the 1st undergraduate programme this year. Jaffna University International Research Conference will be held on 19-20 December, 2014. Jaffna University will host 12th Sri Lanka University Games in 2016.

5.6 University of Colombo

	Item	Details
1	Name	University of Colombo (CMB)
2	Vice Chancellor	Dr. W. K. Hirimburegama
3	Address	Colombo , Western Province
4	URL	http://www.cmb.ac.lk/
5	Establishment	1921
6	Type	Public-UGC
6	Students	11,600 (Undergraduates 9,100 / Post Graduates 2,500)
7	Academic Staff	500
8	Admin. Staff	
9	Budget	1,615.91 Million Rs. (Government grant, capital and recurrent)
10	Faculties and postgraduate institutes	(8) Arts / Education / Management and Finance / Medicine / Science / Law / Graduate Studies / Postgraduate Institute of Medicine /
10	Programme	BA / B Ed / LLB / BBA / MBBS / BPharm / BSc (Physiotherapy) / BSc (Science) / BSc (Industrial Statistics & Math. Finance) / BSc (Molecular Biology & Bio Chemistry) / BA (Mass Media) / BA (Performing Art) / M. Phil / MARDP / M.BS / M.DS / M.WS / M. LHRM / M.JS / M. CPS / M.HR / M.MM / M.AS / M. CP / M. Public Administration & Management / M. Environmental Management / Ph.D
11	Centres/Units	Institutes (5) Biochemistry, Molecular Biology & Biotechnology / Indigenous Medicine / Human Resource Advancement / National Institute of Library & Information Science / Agro Technology & Rural Science Centres (6) Staff Development Centre / National Education Research & Evaluation Centre / Centre for the Study of Human Rights / Social Policy Analysis & Research Centre / Centre for Contemporary Indian studies / Colombo University Community Extension Centre Units (2) Career Guidance Unit / International Unit
12	Remarks	The oldest and largest university in Sri Lanka. Influential to state development plan through academic staff being advisors / committee members of the government.

5.7 Sabragamuwa University

	Item	Details
1	Name	Sabaragamuwa University (SUSL)
2	Vice Chancellor	
3	Address	Balangoda, Sabragamuwa Province
4	URL	http://www.sab.ac.lk/
5	Establishment	1991
6	Type	Public-UGC
6	Students	3,758
7	Academic Staff	225
8	Admin. Staff	
9	Budget	767.48 Million Rs. (Government grant, capital and recurrent)
10	Faculties and postgraduate institutes	(5) Agricultural Science / Applied Science / Geometrics / Management Studies / Social Sciences and Languages
10	Programme	BSc (Agr.) / BSc (Applied Science) / Bsc (Computing & Information Systems) / BSc (Food Science & Tech) / BSc (Physical Education) / BSc (Sports Science Management) / BSc (BM / Financial Mgt / Tourism Mgt / Marketing) / BA
11	Centres/Units	(5) Career Guidance Unit / Computer Centre / External Unit / Indigenous Studies / Centre for Research and Knowledge Dissemination
12	Remarks	The university has only one Faculty of Geometrics in Sri Lanka, and it is the sole university that provides curriculum on Sports Management at the Department of Sports Science and Department in the Faculty of Applied Science in Sri Lanka. 99% of classes are given in English. The university is keen to promote international exchanges. Most of the academic staff obtained degrees overseas. Its unique characteristic is contributing for regional development, e.g. Farm-stay activities with local people for promotion of agri-tourism.

5.8 Open University

	Item	Details
1	Name	Open University (OUSL)
2	Vice Chancellor	Dr. Vijitha Nanayakkara
3	Address	Nugegoda (Suburb of Colombo), Western Province
4	URL	www.ou.ac.lk
5	Establishment	1978
6	Type	Public- UGC (Distance Education)
6	Students	35,000
7	Academic Staff	400
8	Admin. Staff	
9	Budget	719.39 Million Rs. (Government grant, capital and recurrent)
10	Faculties and postgraduate institutes	(5) Education / Engineering Technology / Humanities and Social Sciences / Natural Sciences / Post Graduate Institute of English
10	Programme	B Ed / B Tech / B Tech (Industrial Studies) / BSE / BA (English) / BA (Social Science) / BMgt / LLB / BSc (Natural Science) / BSc (Nursing)
11	Centres/Units	(2) Environmental Studies Unit / Centre for Educational Technology & Media
12	Remarks	The only university in Sri Lanka that provides diploma and degrees in both undergraduate and postgraduate education through distance learning. It has six regional centres and 19 learning centres across the state. Accepts enrollees who passed designated subjects at GCA-A level without entrance examination. Charge tuition to students unlike other public universities in Sri Lanka.

5.9 Sri Lanka Institute of Nanotechnology: SLINTEC

	Item	Details
1	Name	Sri Lanka Institute of Nanotechnology: SLINTEC
2	Chief Executive Officer	Harin De Silva Wijeyeratne
3	Address	Pitipana (Suburb of Colombo), Western Province
4	URL	http://slintec.lk/
5	Establishment	2009
6	Type	Private-Public Joint Institute
6	Students	-
7	Academic Staff	35 Research Staff
8	Admin. Staff	-
9	Budget	-
10	Faculties and postgraduate institutes	-
10	Programme	-
11	Centres/Units	-
12	Remarks	Established as private-public joint institute funded by five major private companies and the state government to promote cooperation between research institutes and industries. Successfully received five patents in U.S.A. for the first ten months since its establishment which was a large progress for Sri Lanka which had obtained one or two international patents per year. Members of the academic staff of University of Peradeniya and University of Moratuwa partly participate in SLINTEC's research activities.

Appendix-6 Results of questionnaire

6.1 Questionnaires

a) Questionnaire for Industry

Survey content:

Trend in recruitment, requirements and perspectives to employees, human resource training in companies, expectations towards universities.

Target respondents:

Top 100 Sri Lankan companies, members of the Ceylon Chamber of Commerce, Japanese companies in Sri Lanka.

b) Questionnaire for university students

Survey content:

Environment at universities, intentions of employment, requests to universities for career development support.

Target respondents:

Students in engineering and scientific fields at 15 state universities

Japan International Cooperation Agency
International Development Center of Japan Inc. (IDCJ)
Registered Non-Profit Organization Asia SEED, Japan
For Firms and Business Associations

"Survey on Sri Lankan Industrial Human Resource Development (HRD)"

Introduction:
On behalf of Japan International Cooperation Agency (JICA), International Development Center of Japan Inc. (IDCJ) and a registered non-profit organization Asia SEED in Japan are currently conducting a survey on "Industrial Human Resource Development in Sri Lanka". While human resource development is an integral factor in promoting industrialization, the number of students going on to higher education institutions, particularly those in engineering field, is very limited in Sri Lanka. Also, many university graduates work abroad since there are not sufficient employment opportunities for them within the country. Thus it is important to clarify issues and challenges in the area of higher education as an essential means of industrial promotion.

Purpose of the research:
It is a vital interest of JICA to understand the current situation of industrial HRD and to identify measures for future improvement among local and foreign companies in Sri Lanka.

Target respondent:
Human resource manager or representative officer in charge of human resource department in the company or business association.

Instructions:
Please answer the following questions by ticking appropriate boxes or choosing an appropriate number from pull-down menu, and send the completed questionnaire either via email to xxxxxx by **May 12, 2014**. Should you have any queries with regards to this survey, kindly contact us at:

Confidentiality:
The information collected by this survey is strictly used for the research purpose and any information that may identify a particular individual organization will not be published or disclosed to third parties.

Your cooperation is essential for this research and we are very grateful for your taking time to respond to this survey.

Thank you very much.

"Survey on Sri Lankan Industrial Human Resource Development"

Name of Company / Business Association	
Contact Personnel	
Email Address	

Section A. Company / Association Profile

1. Year of establishment _____

2. Main business sector (Please indicate the appropriate check box ☒)

☐	Agriculture	☐	Metal/ Metal Products
☐	Beverage	☐	Mining Industry
☐	Chemical/ Chemical Products	☐	Petroleum/ Petroleum Products
☐	Construction	☐	Pharmaceutical Industry
☐	Education	☐	Polymer Industry
☐	Electronic	☐	Power
☐	Engineering Consultancy	☐	Real Estate Business
☐	Financial Business	☐	Restaurant Business
☐	Fisheries	☐	Telecommunication
☐	Food Industry	☐	Textile/ Textile Products
☐	Forestry	☐	Tourism Business
☐	Gas	☐	Trading Business
☐	Hotel Business	☐	Transportation Service
☐	ICT Services	☐	Water
☐	Insurance Business	☐	Wood/ Wood Products
☐	Machinery/ Machinery Products	☐	Others (please specify) _____
☐	Mechanical & Electrical Service		
☐	Medical Service		

3. Number of employees
(For business association, please answer the average of number of employees in member companies)
(Please indicate the appropriate check box ⊠)

☐	1). 1 to 4	☒	2). 5 to 9		3). 10 to 50
☐	4). 51 to 100	☐	5). 101 to 499		6). More than 500

4. Ownership structure (For business association, please tick the box of 5). "Business association")

☐	1). Sri Lankan company (Foreign share: 0%)
☐	2). Joint venture (Foreign share: 50 to 99.99%)
☒	3). Joint venture (Foreign share: 0.01 to 49.99%)
☐	4). Foreign owned company (Foreign share: 100%)
☐	5). Business association
☐	6).Others ( )

Section B. Recruitment

1. Please describe the level of difficulty you experienced or anticipate to experience in finding suitable candidates of the following occupational groups in the three time frames: **past, present, and future prospect.**
(4: Very difficult, 3: Difficult, 2: Slightly difficult, 1: Not difficult, 0: Don't know or not applicable).

Occupational group	1. Past: < 2014	2. Present: year 2014	3. Future prospect: > 2014
a. High-level Manager (e.g. head of company, departmental head)			
b. Middle-level Manger (e.g. divisional head)			
c. Non-Executive staff (e.g. administrative clerk)			
d. Engineering manager			
e. Engineer			
f. Technician			
g. Machine Operator			
h. Others: please specify ( )			

2-a. Please indicate the average range of annual intake of undergraduate degree holders **over the last 3 years.** (Please indicate the appropriate check box ☒)

☐	1) 1-5	☐	2)6-10	☐	3)10-20	☐	4)20-50	☐	5)more than 50

2-b. Please indicate the annual intake of engineering graduates in details over the last 3 years (i.e. 2009 to 2013) and last year (i.e. 2013) and prospective demand for the next 3 years.
(Please indicate the appropriate check box ☒)

The number of engineering graduates	Average over the last 3 years		Last year (2013)		Prospective demand for the next three years	
	a. Engineering with Undergraduate degree	b. Engineering with Postgraduate degree	c. Engineering with Undergraduate degree	d. Engineering with Postgraduate degree	e. Engineering with Undergraduate degree	d. Engineering with Postgraduate degree
1. 1-5	☐	☐	☐	☐	☐	☐
2. 6-10	☐	☐	☐	☐	☐	☐
3. 11-20	☐	☐	☐	☐	☐	☐
4. 21-50	☐	☐	☐	☐	☐	☐
5. More than 50	☐	☐	☐	☐	☐	☐
6. Not applicable	☐	☐	☐	☐	☐	☐

3-a. How frequently do you recruit graduates from the following types of universities? (3: Regularly (every year), 2: Often (varies from year to year), 1: Rarely, 0: Never).

Type of university graduates	a. Undergraduate Engineers	b. Postgraduate Engineers	c. Undergraduate Non-engineers	d. Postgraduate Non-engineers
1. State university in Sri Lanka				
2. Private university in Sri Lanka				
3. Japanese university				
4-a. Australian university Study locally				
4-b. Australian university Study abroad				
5-a. British university Study locally				
5-b. British university Study abroad				
6-a. American university Study locally				
6-b. American university Study abroad				
7. Other foreign university Please specify :_____				

3-b. How do you recruit graduates? (TICK ALL THAT APPLY)

☐	a. Newspaper/ Magazine/ Internet advertisement
☐	b. Company website
☐	c. Recruitment agency
☐	d. Student employment service (University)
☐	e. Personal contacts
☐	f. Another way (please describe) :

4. When your firm employs engineering graduate, to what extent do you expect them to assume the following roles eventually? (4: Very much, 3: Considerably, 2: Somewhat, 1: Slightly, 0: Never).

	1. Undergraduate Engineers	2. Postgraduate Engineers
a. To become an engineering specialist in production site		
b. To become an engineering specialist in Research & Development		
c. To become a future managerial staff		

5. How important are the following in recruiting university graduates?
(4: Very important, 3: Important, 2: Slightly important, 1: Not important, 0: Don't know or not applicable).

	Undergraduate		Postgraduate		Undergraduate (Engineering)		Postgraduate (Engineering)	
	1. desired	2. actual	3. desired	4. actual	5. desired	6. actual	7. desired	8. actual
a. Specialized knowledge/skill								
b. Communication skills								
c. Time management								
d. Leadership								
e. Teamwork								
f. Problem solving / Analytical skills								
g. Work ethics (e.g. loyalty, respect)								
h. Computer literacy								
i. English proficiency								
j. Innovativeness								
k. Social involvement								

6. How important are the following in recruiting graduates?
(4: Very important, 3: Important, 2: Slightly important, 1: Not important, 0: Don't know or not applicable).

	1. Undergraduate	2. Postgraduate	3. Undergraduate with engineering degree	4. Postgraduate with engineering degree
a. The name of university				
b. Transcript record				
c. Internship experience at a firm				
d. Experience in foreign country				
e. Awards (e.g. scholarship award)				
f. Attitudes				

Section C. Employer's perspective on employees

1. How satisfied is your firm with the performance of employees with undergraduate/postgraduate degrees after 3 years since joining the firm? (Please indicate the appropriate check box ☒)

☐	1. Very satisfied	☐	2. Satisfied	☐	3. Slightly satisfied	☐	4. Not. satisfied

2-a. Please indicate the level of satisfaction about **the performance of your employees with undergraduate engineering degrees after 3 years since joining the firm,** in each of the following elements. (4: Very satisfied, 3: Satisfied, 2: Slightly satisfied, 1: Not satisfied, 0: Don't know or not applicable).

1. Specialized knowledge/skill	
2. Communication skills	
3. Time management	
4. Leadership	
5. Teamwork	
6. Problem solving skills	
7. Work ethics (e.g. loyalty, respect)	
8. Computer literacy	
9. English proficiency	
10. Innovativeness	
11. Social involvement	

2-b. Please indicate the level of strength of the two types of engineering graduates in the following elements. (4: Very strong, 3: Strong, 2: Fairly weak, 1: Weak, 0: Don't know or not applicable).

	1. Sri Lankan University	2. Foreign University
a. Specialized knowledge/skill		
b. Communication skills		
c. Time management		
d. Leadership		
e. Teamwork		
f. Problem solving skills		
g. Work ethics (e.g. loyalty, respect)		
h. Computer literacy		
i. English proficiency		
j. Innovativeness		
k. Social involvement		

3. How important are following elements for middle manager?
(4: Very important, 3: Important, 2: Slightly important, 1: Not important, 0: Don't know or not applicable).

	1. High level Manager (e.g. head of company, departmental head)	2. Middle level Manger (e.g. divisional head)
a. Business awareness		
b. Communication skills		
c. Administrative management		
d. Time management		
e. Leadership		
f. Teamwork		
g. Problem solving skills		
h. Work ethics (e.g. loyalty, respect)		
i. Computer Skill		
j. English proficiency		
k. Innovativeness		
l. Social involvement		

Section D. Training of Employees

1. Does your firm offer training to employees (internal/external)?

☐Yes ☐No ☐Not sure

(For those who ticked "Yes", please go to Q2. Otherwise, please go to section E).

2. Please indicate frequencies and topics of internal/external training conducted that the following in a year.
(4: 1-2 times, 3: 3-5 times, 2: more than 5 times, 1: None, 0: Not sure or not applicable).

Occupational group	Frequency of training	Topics (please specify)
1. High level Manager (e.g. head of company, departmental head)		
2. Middle level Manger (e.g. divisional head)		
3. Non Executive staff (e.g. administrative clerk)		
4. Engineer		
5. Production Operator		
6. Others: please specify ( )		

Section E. Expectation from university and higher education

1. What do you expect from Sri Lankan/Foreign University in education?
Please indicate the level of expectations for each of the following items for the two types of universities below. (4: Very much, 3: Considerably, 2: Somewhat, 1: Slightly, 0: Don't know or not applicable).

	Engineering graduate		Non-Engineering graduate	
	Sri Lankan University	Foreign University	Sri Lankan University	Foreign University
a. Advancing technology & knowledge				
b. Increasing opportunities to acquire practical knowledge (e.g. internship)				
c. Active collaboration with industry for education & research purposes				
d. Developing close relationship between universities to broaden their global view				

- Thank you for your kind cooperation.-

"Survey on University Student Intentions"

Name of University			
Name of Degree Programme			
Year of Study		Sex	☐M / ☐F

On behalf of Japan International Cooperation Agency (JICA), International Development Center of Japan Inc. (IDCJ) and a registered non-profit organization Asia SEED in Japan are currently conducting a survey on "Industrial Human Resource Development in Sri Lanka". This questionnaire is part of the project to investigate the career intentions and destinations of current students.

The information collected by this survey is strictly used for the research purpose only.
Contributors will not be identified in any published reports or papers.

Please answer the following questions by ticking appropriate boxes or choosing an appropriate number and send the completed questionnaire via email to xxxxxx by **March 14, 2014**.

For further information on the project email at xxxxxx.

Section A. School and your information

1. Please describe the level of satisfaction you experienced in studying at the university you attend.

	Satisfied	Somewhat satisfied	Somewhat dissatisfied	Dissatisfied	Unknown / Hard to answer
a. Contents of academic program	☐	☐	☐	☐	☐
b. Quality of academic staff	☐	☐	☐	☐	☐
c. Quality of technical staff	☐	☐	☐	☐	☐
d. Facilities for student project	☐	☐	☐	☐	☐
e. Funds for student project	☐	☐	☐	☐	☐
f. Laboratory facilities and equipment	☐	☐	☐	☐	☐
g. Access to latest edition of books	☐	☐	☐	☐	☐
h. Access to internet	☐	☐	☐	☐	☐
i. Industrial training	☐	☐	☐	☐	☐
j. Training on soft skills (e.g. leadership, communication skill, team building)	☐	☐	☐	☐	☐
k. Opportunity for international exposure	☐	☐	☐	☐	☐
l. Performance of university management	☐	☐	☐	☐	☐
m. Performance of university administration	☐	☐	☐	☐	☐
n. Dormitory	☐	☐	☐	☐	☐
o. Other facilities (Common room, study area, etc)	☐	☐	☐	☐	☐
p. Canteen	☐	☐	☐	☐	☐
q. Facilities for sports	☐	☐	☐	☐	☐
r. Facilities for social activity	☐	☐	☐	☐	☐
s. Library	☐	☐	☐	☐	☐

2. Which of the following Best describes your current situation?
If you are currently considering more than one option, please indicate your preferred choice.

☐	1. I am looking or intend to look for employment	Please go to section B
☐	2. I already have an offer of employment	Please go to section C
☐	3. I am looking or intend to look for a place for further study	Please go to section D
☐	4. I have not decided or do not know	Please go to section E

Section B. Employment after graduation (intentions)

1. If you are looking or intend to look for employment after graduation, which of the following BEST describes your intention? Please indicate your preferred choice.

☐	a. I intend to be employed full-time in paid work
☐	b. I intend to be employed part-time in paid work
☐	c. I intend to be self-employed / freelance / start my own business
☐	d. I intend to be engaged full-time in voluntary work / other unpaid work
☐	e. I intend to be engaged part-time in voluntary work / other unpaid work

2. If you intend to look for employment after graduation, please indicate the following:

2-a. The area(s) of work (e.g. marketing, civil engineering, education, etc)	☐ Not known
2-b. The type(s) of role (e.g. market researcher, engineer, lecturer)	☐ Not known
2-c. The type(s) of employer (e.g. Government, private enterprise, NGO)	☐ Not known

2-d. The location(s) (e.g. Colombo, Overseas)	☐ Not known

3. In your opinion, please describe the level of importance of the following for your future employer?
(4: Very important, 3: Important, 2: Slightly important, 1: Not difficult, 0: Don't know or not applicable).

☐	a. The subject (s) studied (e.g. Marketing, Civil Engineering)
☐	b. The level of study (e.g. BSc)
☐	c. The grade
☐	d. Extra qualification / Awards won
☐	e. Extra curricula activity (any award)
☐	f. Industrial training
☐	g. Student projects
☐	h. Soft skills (ex. Leadership, communication skill, team building)
☐	i. Others (please describe)

4. To find a job, what time of information resource will you use? (Tick ALL THAT APPLY)

☐	a. Information from university
☐	b. Newspaper or magazine advertisement
☐	c. Employer's website
☐	d. Recruitment agency
☐	e. Personal contacts, including family and friends, networking
☐	f. Job/ carrier fair organized by carrier guidance unit
☐	g. Others (please describe)

5. If you have any suggestion for university about career support, please describe below:

Thank you very much for your kind cooperation.

Section C. Employment after graduation (existing plans)

If you already have an offer of employment after graduation (including voluntary or other unpaid work) please continue with this section. If you know that you will have more than one job after graduation, please tell us about your main job.

1. Please indicate the followings:

1-a. What will your job title be?	
1-b. Briefly describe what your duties will be (as far as you know)	
1-c. The type(s) of employer (e.g. Government, private enterprise, NGO)	
1-d. The main office location (e.g. Colombo, Overseas)	

2. Which of the following BEST describes the basis on which you will be employed after graduation?

☐	a. On a permanent contract
☐	b. On a fixed-term contract lasting more than 1 year
☐	c. On a fixed-term contract lasting less than 1 year
☐	d. Self-employed or freelance
☐	e. On a part-time contract
☐	f. Other (please describe)

3. In your opinion, please describe the level of importance of the following for your future employer about your qualification?
(4: Very important, 3: Important, 2: Slightly important, 1: Not difficult, 0: Don't know or not applicable).

☐	g. The subject (s) studied (e.g. Marketing, Civil Engineering)
☐	h. The level of study (e.g. BSc)
☐	i. The grade
☐	j. Extra qualification / Awards won
☐	k. Extra curricula activity (any award)
☐	l. Industrial training
☐	m. Student projects
☐	n. Soft skills (ex. Leadership, communication skill, team building)
☐	o. Others (please describe)

4. Why did you decide to take this job? (TICK ALL THAT APPLY)

☐	a. It fits into my career plan
☐	b. It is the best job offer I have received
☐	c. It is an opportunity to join this organization
☐	d. To see if I will like the type of work involved
☐	e. To gain experience to get the type of job I really want
☐	f. In order to earn a living
☐	g. It is in the right location
☐	h. The job is well-paid

5. How did you find out about this job? (TICK ONE ANSWER)

☐	h. Information from university
☐	i. Newspaper or magazine advertisement
☐	j. Employer's website
☐	k. Recruitment agency
☐	l. Personal contacts, including family and friends, networking
☐	m. Job/ carrier fair organized by carrier guidance unit
☐	n. Others (please describe)

6. If you have any suggestion for university about career support, please describe below:

Section D. Further Study (intentions)

If you intended to undertake further study please continue with this section.

1. If you are looking or intend to undertake further study after graduation, which of the following BEST describes your intention?

☐	a. I intend to be a full time student
☐	f. I intend to be a part time student
☐	g. I intend to be a distance-learning student
☐	h. I intend to be self-study
☐	i. I intend to continue my further study when my financial condition is improved
☐	j. Others (please describe)

2. If you intend to undertake after graduation, please indicate the following:

a. The area(s) of study (e.g. marketing, civil engineering)	☐ Not known

b. The level(s) of study (e.g. MA, MPhil, PhD)	☐ Not known
c. The type(s) of school (e.g. Public, Private)	☐ Not known
d. The location(s) (e.g. Colombo, Overseas)	☐ Not known

3. If you have any suggestion for university about career support, please describe below:

Thank you very much for your kind cooperation

Section E. Career plan

1. Do you have a long term career plan?

☐Yes ☐No ☐Not sure

If yes, please give details:

2. If you have any suggestion for university about career support, please describe below:

Thank you very much for your kind cooperation

6.2 Overview of questionnaire results

a) Questionnaire for Industry

1) Level of difficulties experienced or anticipated in finding suitable candidates by occupational groups:

Companies find the recruitment of middle- to high-level managers the most difficult experience and/or anticipate that it will be more difficult in the future. The recruitment of engineers and engineering managers is ranked as the second most difficult.

2) Level of satisfaction about the performance of employees with engineering degrees in each of the chosen areas:

Level of satisfaction is relatively low in the chosen areas of “time management” and “leadership”, which are followed by “teamwork” and “English proficiency”.

3) Expectation towards universities and higher education:

Expectation for the four listed items “advanced technology and knowledge”, “Increasing opportunity to acquire practical knowledge, e.g. internships”, “Active collaboration with industry for education and research purposes”, and “developing close relationship with universities to broaden their global view” are all high. For graduates in the fields of engineering, expectation for “increasing opportunities in acquiring practical knowledge, e.g. internships” was the highest among the items but only by a small margin.

b) Questionnaire for University Students

1) Level of satisfaction in studying at university:

The choice that showed the most dissatisfaction is “Opportunity for international exposure” followed by “facilities for student projects”, “funds for student projects”, “canteens”, “performance of university administration”, and “ facilities for sports”.

The perceived reasons for dissatisfaction in “opportunity for international exposure” are as follows:

- The number of foreign students at undergraduate level in Sri Lankan universities is limited.
- At undergraduate level, students of Sri Lankan universities rarely have the chance for international exchanges such as short term study program abroad.
- Over 12,000 Sri Lankan students study abroad every year. Local students obtain a basis

of comparison through information received from friends exposed to the international atmosphere at foreign universities.

Many students answered that they are satisfied with the “contents of academic programmes” and the “Quality of academic staff”. However, the result might not be conclusive as education in Sri Lanka is teacher-oriented which may make students non-critical of teachers and universities.

2) Intentions and expectation for employment after graduation;

- The respondents are students in engineering and scientific fields. Many of them intend to continue to postgraduate level in foreign countries for master’s or doctoral degrees.
- Many of those who intend to find a job after their undergraduate study want to work in computer or marketing areas and be promoted to managers.
- It should be noted that a certain number of students in their 3rd grade have not decided to continue studying or start working, or do not have any career plans. Some of them commented that universities should improve career development support for students.

6.3 Summary of questionnaire results

a) Questionnaire for Industry

Number of respondents:	**71**

Section A. Company / Association profile

1. Year of establishment

1901 – 1920	(1)	1981 – 2000	(14)
1921 – 1940	(1)	After 2001	(8)
1941 – 1960	(2)	n/a	(37)
1961 – 1980	(8)		

2. Main business sector *Multiple Answers

Agriculture	(0)	Metal/ Metal products	(0)
Beverage	(1)	Mining industry	(0)
Chemical/ Chemical products	(1)	Petroleum/ Petroleum products	(0)
Construction	(1)	Pharmaceutical industry	(0)
Education	(2)	Polymer industry	(1)
Electronics	(4)	Power industry	(1)
Engineering consultancy	(1)	Real estate business	(0)
Financial business	(0)	Restaurant business	(2)
Fisheries	(0)	Telecommunications	(4)
Food industry	(1)	Textile/ Textile products	(4)
Forestry	(0)	Tourism business	(0)
Gas	(0)	Trading business	(1)
Hotel business	(1)	Transportation service	(0)
ICT services	(3)	Water	(0)
Insurance business	(0)	Wood/ Wood products	(0)
Machinery/ Machinery products	(1)	Others (please specify) - Activated carbon - Automotive - Ceramics - Ceramic sanitary ware industry - Manufacturing of cables - Tire rebuilding	(6)
Mechanical and electrical services	(0)		
Medical service	(0)		
		N/A	(41)

3. Number of employees (For business associations, please answer the average of number of employees in member companies)

1). 1 to 4	(0)	2). 5 to 9	(6)	3). 10 to 50	(3)
4). 51 to 100	(2)	5). 101 to 499	(11)	6). More than 500	(12)
				N/A	(37)

4. Ownership structure

1). Sri Lankan company (foreign share: 0%)	(19)
2). Joint venture (foreign share: 50 to 99.99%)	(1)
3). Joint venture (foreign share: 0.01 to 49.99%)	(2)
4). Foreign owned company (foreign share: 100%)	(4)
5). Business association	(0)
6).Other	(6)
N/A	(39)

Section B. Recruitment

1. Please describe the level of difficulty you experienced or anticipate to experience in finding suitable candidates of the following occupational groups in the three time frames:

	Average Score (4: Very difficult, 3: Difficult, 2: Slightly difficult, 1: Not difficult, 0: Don't know or not applicable).		
Occupational group	1. Past: < 2014	2. Present: year 2014	3. Future prospect: > 2014
a. High-level manager (e.g. head of company, departmental head)	(2.8)	(2.8)	(2.5)
b. Middle-level manger (e.g. divisional head)	(2.5)	(2.4)	(2.0)
c. Non-executive staff (e.g. administrative clerk)	(1.1)	(1.1)	(1.0)
d. Engineering manager	(2.0)	(2.0)	(1.6)
e. Engineer	(2.0)	(1.9)	(1.7)
f. Technician	(1.5)	(1.5)	(1.5)
g. Machine operator	(1.3)	(1.3)	(1.4)
h. Other			

2-a. Please indicate the average range of annual intake of undergraduate degree holders **over the last 3 years.** N=13

1) 1-5	(4)	2)6-10	(6)	3)10-20	(3)	4)20-50	(3)	5)More than 50	(1)

N/A=54

2-b. Please indicate the annual intake of engineering graduates in detail over the last 3 years (i.e. 2009 to 2013) and last year (i.e. 2013) and prospective demand for the next 3 years.

The number of engineering graduates	Average over the last 3 years		Last year (2013)		Prospective demand for the next three years	
	a. Engineering with undergraduate degree	b. Engineering with postgraduate degree	c. Engineering with undergraduate degree	d. Engineering with postgraduate degree	e. Engineering with undergraduate degree	d. Engineering with postgraduate degree
1. 1-5	(7)	(7)	(8)	(3)	(9)	(6)
2. 6-10	(2)	(4)	(3)	(9)	(2)	(0)
3. 11-20	(0)	(0)	(0)	(0)	(2)	(0)
4. 21-50	(0)	(2)	(0)	(0)	(0)	(0)
5. More than 50	(5)	(0)	(3)	(0)	(3)	(5)
6. Not applicable	(1)	(1)	(2)	(2)	(1)	(1)

3-a. How frequently do you recruit graduates from the following types of universities?

	(3: Regularly (every year), 2: Often (varies from year to year), 1: Rarely, 0: Never).			
Type of university graduates	a. Undergraduate engineers	b. Postgraduate engineers	c. Undergraduate non-engineers	d. Postgraduate non-engineers
1. State university in Sri Lanka	1(6)	1(15)	1(10)	1(17)
	2(24)	2(23)	2(20)	2(18)
	3(31)	3(8)	3(30)	3(10)
	4(8)	4(24)	4(7)	4(24)
2. Private university in Sri Lanka	1(15)	1(19)	1(12)	1(20)
	2(28)	2(13)	2(19)	2(11)
	3(9)	3(5)	3(21)	3(5)
	4(18)	4(33)	2(18)	4(34)
3. Japanese university	1(28)	1(17)	1(25)	1(11)
	2(2)	2(1)	2(1)	2(1)
	3(0)	3(0)	3(1)	3(1)
	4(40)	4(52)	4(42)	4(56)

4-a. Australian university: study locally	1(29)	1(17)	1(21)	1(20)
	2(10)	2(8)	2(16)	2(2)
	3(2)	3(0)	3(3)	3(0)
	4(29)	4(45)	4(30)	4(47)
4-b. Australian university: study abroad	1(31)	1(18)	1(32)	1(17)
	2(2)	2(4)	2(2)	2(3)
	3(1)	3(0)	3(0)	3(0)
	4(36)	4(48)	4(36)	4(50)
5-a. British university: study locally	1(32)	1(19)	1(24)	1(22)
	2(8)	2(7)	2(16)	2(4)
	3(3)	3(0)	3(2)	3(0)
	4(27)	4(44)	4(28)	4(44)
5-b. British university: study abroad	1(29)	1(21)	1(31)	1(20)
	2(2)	2(2)	2(2)	2(2)
	3(2)	3(1)	3(1)	3(1)
	4(37)	4(46)	4(36)	4(47)
6-a. American university: study locally	1(27)	1(15)	1(19)	1(18)
	2(9)	2(6)	2(16)	2(2)
	3(0)	3(0)	3(0)	3(0)
	4(34)	4(49)	4(35)	4(50)
6-b. American university: study abroad	1(26)	1(17)	1(27)	1(16)
	2(2)	2(3)	2(2)	2(3)
	3(2)	3(1)	3(0)	3(1)
	4(40)	4(49)	4(40)	4(50)
7. Other foreign university Please specify	1(19)	1(10)	1(11)	1(10)
	2(3)	2(2)	2(3)	2(1)
	3(0)	3(1)	3(0)	3(1)
	4(46)	4(55)	4(54)	4(56)

3-b. How do you recruit graduates? *Multiple answers.

a. Newspaper/ magazine/ internet advertisement	(10)
b. Company website	(7)
c. Recruitment agency	(5)
d. Student employment service (university)	(9)
e. Personal contacts	(9)

f. Another way	(1)

4. When your firm employs engineering graduates, to what extent do you expect them to assume the following roles eventually?

	Average Score (4: Very much, 3: Considerably, 2: Somewhat, 1: Slightly, 0: Never).	
	1. Undergraduate Engineers	2. Postgraduate Engineers
a. To become an engineering specialist on a production site	(2.3)	(2.4)
b. To become an engineering specialist in research and development	(1.8)	(2.0)
c. To become a future managerial staff	(2.2)	(2.3)

5. How important are the following in recruiting university graduates?

(4: Very important, 3: Important, 2: Slightly important, 1: Not important, 0: Don't know or not applicable).

	Average Score (4: Very important, 3: Important, 2: Slightly important, 1: Not important, 0: Don't know or not applicable).							
	Undergraduate		Postgraduate		Undergraduate (Engineering)		Postgraduate (Engineering)	
	1. desired	2. actual	3. desired	4. actual	5. desired	6. actual	7. desired	8. actual
a. Specialized knowledge/skill	(3.2)	(2.8)	(2.5)	(2.2)	(2.6)	(2.3)	(2.4)	(2.0)
b. Communication skills	(3.2)	(2.6)	(2.5)	(2.2)	(2.6)	(2.2)	(2.4)	(2.4)
c. Time management	(3.3)	(2.7)	(2.6)	(2.3)	(2.6)	(2.3)	(2.4)	(2.2)
d. Leadership	(2.9)	(2.4)	(2.4)	(2.2)	(2.4)	(2.1)	(2.3)	(2.1)
e. Teamwork	(3.3)	(2.7)	(2.5)	(2.2)	(2.7)	(2.4)	(2.5)	(2.3)
f. Problem solving / analytical skills	(3.1)	(2.4)	(2.4)	(2.1)	(2.6)	(2.1)	(2.4)	(2.1)
g. Work ethic (e.g. loyalty, respect)	(3.5)	(2.9)	(2.6)	(2.3)	(2.7)	(2.4)	(2.5)	(2.2)
h. Computer literacy	(3.3)	(2.9)	(2.5)	(2.4)	(2.7)	(2.6)	(2.5)	(2.4)
i. English proficiency	(3.0)	(2.4)	(2.4)	(2.1)	(2.5)	(2.2)	(2.3)	(2.1)
j. Innovativeness	(2.9)	(2.3)	(2.4)	(2.1)	(2.5)	(2.2)	(2.4)	(2.1)
k. Social involvement	(2.7)	(2.4)	(2.2)	(2.0)	(2.0)	(1.9)	(1.9)	(1.8)

6. How important are the following in recruiting graduates?

	Average Score (4: Very important, 3: Important, 2: Slightly important, 1: Not important, 0: Don't know or not applicable).			
	1. Undergraduate	2. Postgraduate	3. Undergraduate with engineering degree	4. Postgraduate with engineering degree
a. The name of university	(2.2)	(1.7)	(1.9)	(1.7)
b. Transcript record	(2.2)	(1.9)	(2.0)	(1.7)
c. Internship experience at a firm	(2.5)	(2.1)	(2.2)	(1.9)
d. Experience in foreign country	(1.4)	(1.2)	(1.3)	(1.3)
e. Awards (e.g. scholarship award)	(1.7)	(1.3)	(1.5)	(1.3)
f. Attitudes	(3.3)	(2.6)	(2.6)	(2.4)

Section C. Employer's perspectives on employees

1. How satisfied is your firm with the performance of employees with undergraduate/postgraduate degrees after 3 years of joining the firm?

1. Very satisfied (4)	2. Satisfied (27)	3. Slightly satisfied (21)	4. Not satisfied (6)	N/A (13)

2-a. Please indicate the level of satisfaction about the performance of your employees with undergraduate engineering degrees after 3 years of joining the firm, in each of the following elements.

Items and Average Score (4: Very satisfied, 3: Satisfied, 2: Slightly satisfied, 1: Not satisfied, 0: Don't know or not applicable).	
1. Specialized knowledge/skill	(2.5)
2. Communication skills	(2.1)
3. Time management	(2.1)
4. Leadership	(2.0)
5. Teamwork	(2.2)
6. Problem solving skills	(2.0)
7. Work ethic (e.g. loyalty, respect)	(2.3)
8. Computer literacy	(2.4)
9. English proficiency	(2.1)
10. Innovativeness	(2.1)
11. Social involvement	(2.0)

2-b. Please indicate the level of strength of the two types of engineering graduates in the following elements.

	Average Score (4: Very strong, 3: Strong, 2: Fairly weak, 1: Weak, 0: Don't know or not applicable).	
	1. Sri Lankan university	2. Foreign university
a. Specialized knowledge/skill	(2.7)	(2.0)
b. Communication skills	(2.1)	(2.2)
c. Time management	(2.1)	(1.9)
d. Leadership	(2.3)	(2.0)
e. Teamwork	(2.4)	(1.9)
f. Problem solving skills	(2.4)	(1.9)
g. Work ethic (e.g. loyalty, respect)	(2.4)	(1.9)
h. Computer literacy	(2.5)	(2.4)
i. English proficiency	(2.0)	(2.4)
j. Innovativeness	(2.4)	(1.9)
k. Social involvement	(2.3)	(2.1)

3. How important are following elements for a middle manager?

	Average Score (4: Very important, 3: Important, 2: Slightly important, 1: Not important, 0: Don't know or not applicable).	
	1. High level manager (e.g. head of company, departmental head)	2. Middle level manger (e.g. divisional head)
a. Business awareness	(3.8)	(3.4)
b. Communication skills	(3.8)	(3.6)
c. Administrative management	(3.4)	(3.4)
d. Time management	(3.8)	(3.6)
e. Leadership	(3.9)	(3.6)
f. Teamwork	(3.5)	(3.6)
g. Problem solving skills	(3.7)	(3.6)
h. Work ethic (e.g. loyalty, respect)	(3.7)	(3.5)
i. Computer skill	(3.4)	(3.3)
j. English proficiency	(3.6)	(3.2)
k. Innovativeness	(3.7)	(3.4)
l. Social involvement	(3.5)	(3.4)

Section D. Training of employees

1. Does your firm offer training to employees (internal/external)?

Yes	(31)	No	(6)	Not sure	(6)

(For those who ticked "Yes", please go to Q2. Otherwise, please go to section E).

2. Please indicate the frequencies and topics of internal/external training conducted in a year.

Occupational group	(4: 1-2 times, 3: 3-5 times, 2: more than 5 times, 1: None, 0: Not sure or not applicable). Frequency of training	Topics (please specify)
1. High level manager (e.g. head of company, departmental head)	4(23) 3(10) 2(3) 1(3) 0(29)	▪ New Technology ▪ Workshop on the Business implications of the WTO Trade facilitation Agreement ▪ Managerial Skills ▪ Leadership/Lean ▪ Human resource management, conflict management, communication, process development ▪ Finance, HR, QA, Technical ▪ Business policies ▪ Performance management ▪ Work Related ▪ Outward bound training, Six Sigma and lean management, System management ▪ Positive thinking & Leadership skills
2. Middle level manger (e.g. divisional head)	4(23) 3(9) 2(3) 1(3) 0(31)	▪ Product installation, Trouble shooting, etc. ▪ New Technology ▪ Awareness on BRC and SQMS Management System ▪ Managerial Skills ▪ Leadership/Lean ▪ OBT, Leadership ▪ Sewing, QA, Industrial engineering ▪ projects ▪ Work Related ▪ Outward bound training, Six Sigma and lean management, System management ▪ Positive thinking & Leadership skills

3. Non-executive staff (e.g. administrative clerk)	4(21) 3(11) 2(6) 1(1) 0(31)	▪ General ▪ Good Manufacturing Practices ▪ Interpersonal Skills ▪ Leadership Training ▪ Lean ▪ OBT, Leadership ▪ HR ▪ projects ▪ Personal Development, Customer satisfaction, time management ▪ Positive thinking & Leadership skills
4. Engineer	4(17) 3(9) 2(7) 1(0) 0(36)	▪ Health and safety aspects of the industry. ▪ New Technology ▪ Product Training ▪ Application Training ▪ TPM ▪ Process knowledge ▪ Product training , First aid, scripting courses ▪ Electric engineering + management ▪ PLC & Pneumatic TP training
5. Production operator	4(14) 3(8) 2(8) 1(2) 0(38)	▪ On the job trainings ▪ General ▪ Online Job Training ▪ Product Training and process Training ▪ Lean/soft skills ▪ On the job ▪ On various sewing methods ▪ Work Related ▪ Awareness on Safety, First aid, Fire, Personal development ▪ Positiveness & Social responsibility outward bound training
6. Other	4(1) 3(0) 2(0) 1(3) 0(65)	

Section E. Expectation from university and higher education

1. What do you expect from a Sri Lankan/ foreign university education?
Please indicate the level of expectations for each of the following items for the two types of universities below.

	Average Score (4: Very much, 3: Considerably, 2: Somewhat,1: Slightly, 0: Don't know or not applicable).			
	Engineering graduate		Non-Engineering graduate	
	Sri Lankan university	Foreign university	Sri Lankan university	Foreign university
a. Advancing technology and knowledge	(2.8)	(2.5)	(2.9)	(2.5)
b. Increasing opportunities to acquire practical knowledge (e.g. internship)	(2.6)	(2.3)	(2.9)	(2.4)
c. Active collaboration with industry for education and research purposes	(2.7)	(2.4)	(2.8)	(2.4)
d. Developing close relationships between universities to broaden their global view	(2.5)	(2.0)	(2.7)	(2.2)

b) Questionnaire for university students

Basic information of respondents

Number of respondents	89
Universities Attending	General Sir John Kotelawala Defence University (KDU) (10) University of Colombo (10) University of Kelaniya (10) University of Moratuwa (10) University of Ruhuna (10) University of Sri Jayawardenepura (10) Wayamba University of Sri Lanka (10) University of Peradeniya (6) University of Uva Wellassa (6) University of Jaffna (4) Sabaragamuwa University of Sri Lanka (3)
Areas of study	Engineering (40) Science (27) Computer / Information technology (19) Sports Science (3)
Year of Study	1st year (3), 2nd year (19), 3rd year (50), 4th year (10), n/a (7)
Sex	Male (50), Female (37), n/a(2)

Section A. School and your information (For all respondents)

1. Please describe the level of satisfaction you experienced in studying at the university you attend..

Item and average score (4: Satisfied, 3: Somewhat satisfied, 2: Somewhat dissatisfied, 1: Dissatisfied, 0: Unknown/Hard to answer)	
a. Contents of academic programme	(3.44)
b. Quality of academic staff	(3.34)
h. Access to internet	(3.57)
s. Library	(3.41)
c. Quality of technical staff	(3.06)
i. Industrial training	(3.05)
f. Laboratory facilities and equipment	(3.02)

g. Access to latest edition of books	(3.01)
j. Training on soft skills (e.g. leadership, communication skills, team building)	(2.95)
o. Other facilities (common rooms, study areas, etc)	(2.95)
q. Facilities for sports	(2.94)
r. Facilities for social activity	(2.94)
n. Dormitories	(2.89)
m. Performance of university administration	(2.83)
l. Performance of university management	(2.76)
d. Facilities for student projects	(2.75)
p. Canteens	(2.54)
e. Funds for student projects	(2.42)
k. Opportunity for international exposure	(2.21)

2. Which of the following Best describes your current situation? *Multiple answers.

	numbers of answers/respondents
1. Looking or intending to look for employment (Please go to section B)	(32/89)
2. Already have an offer of employment (Please go to section C)	(12/89)
3. Looking or intending to look for a place of further study (Please go to section D)	(35/89)
4. Have not decided or do not know (please go to section E)	(16/89)
No answer	(6/89)
Total	(101/89)

Section B. Employment after graduation (intentions)
(For respondents looking or intending to look for employment)

1. If you are looking or intend to look for employment after graduation, which of the following best describes your intention? Please indicate your preferred choice. *Multiple answers.

	numbers of answers/respondents
a. Intend to be employed full-time in paid work	(31/38)
b. Intend to be employed part-time in paid work	(2/38)
c. Intend to be self-employed / freelance / start my own business	(5/38)
d. Intend to be engaged in full-time in voluntary work / other unpaid work	(1/38)
e. Intend to be engaged in part-time in voluntary work / other unpaid work	(0/38)
Total	(39/38)

2. If you intend to look for employment after graduation, please indicate the following:

		numbers of answers/respondents
2-a. The area(s) of work	Engineering	(18/36)
	IT	(8/36)
	Management	(5/36)
	Marketing	(3/36)
	Finance	(1/36)
	Education	(1/36)
	Total	(36/36)
2-b. The type(s) of role *Multiple answers allowed	Engineer	(20/36)
	Software/Web developer, System Administrator	(6/36)
	Business Analyst	(5/36)
	Manager	(3/36)
	Researcher	(2/36)
	Quality Assurer	(2/36)
	Others / Not Known	(7/36)
	Total	(45/36)
2-c. The type(s) of employer	Private	(20/37)
	Government	(8/37)
	Government or Private	(6/37)
	Private or NGO	(1/37)
	Not Known	(2/37)
	Total	(37/37)
2-d. The location(s) *Multiple answers allowed	Colombo	(20/37)
	Overseas	(8/37)
	In Sri Lanka, other cities than Colombo	(5/37)
	Within Sri Lanka	(3/37)
	Anywhere	(1/37)
	Knot known	(3/37)
	Total	(40/37)

3. Please describe the level of importance of the following for your future employer.
(4: Very important, 3: Important, 2: Slightly important, 1: Not important, 0: Don't know or not applicable).

Item and average score (4: Very important, 3: Important, 2: Slightly important, 1: Not important, 0: Don't know or not applicable)	
c. The grade	(2.18)
e. Extra curricula activity (any award)	(2.03)
d. Extra qualification / awards won	(1.87)
a. The subject (s) studied (e.g. Marketing, Civil Engineering)	(1.64)
b. The level of study (e.g. BSc)	(1.62)
f. Industrial training	(1.47)
g. Student projects	(1.42)
h. Soft skills (e.g.. leadership, communication skills, team building)	(1.37)
Other (please describe) - Knowledge of international companies - Discipline and obedience	

4. To find a job, what types of information resources will you use? *Multiple answers.

	numbers of answers / respondents
a. Information from university	(33/39)
e. Personal contacts, including family and friends, networking	(33/39)
c. Employer's website	(29/39)
b. Newspaper or magazine advertisement	(27/39)
f. Job/ career fair organized by career guidance unit	(25/39)
d. Recruitment agency	(11/39)
g. Other	(1/39)
Total	(159/39)

5. If you have any suggestions for your university about career support, please describe.

<Improvement of career support including increase of contacts with those in industry>
- I prefer more interactive sessions with industrial people.
- It's very helpful, if university support for building connection with foreign universities and job

market.

- More info on job opportunities

- We should have a job fair in the faculty.

- It's better if we could have a job fair, where we can meet employers, have interviews there and negotiate.

- Organize more carrier fair for students

- Need a good support for students' projects from university.

<Introduction of more professional trainings>
- High level of Industrial training should be provided for every undergraduate to get an equal opportunity for career.

- Need Professional Lectures for degree program.

- University should provide a better idea on the market in need. Should organize more programs to develop the soft skills of the students

- To give a good platform under the study and to offer a solid training and industrial knowledge on the industry. To give a vivid analysis of the job market and the course units should change according to the dynamic change of the market without stick into a hierarchy.

- Inclusion of more industrial subjects

- It is very useful if they can give some more experience in Industrial and practical fields. Because I think the knowledge in books is not essential for future world.

- If we can have more carrier related projects and practical studies, that will be more useful.

- It is better if every student can have some kind of professional qualification before leaving the university.

- As an example: It is better the subjects that we study are more practicable than doing so many theories and so on. The only thing happen in most of the subjects are students got good results by learn by hard. Like parrots but they know even what is the subject content but they passed the exam. I think this is the problem of getting jobs. Industry need an employee's with practical knowledge they did not need a parrot.

<Development of university lectures and facilities>
- Need good laboratories and laboratory equipments.

- Increase the facilities provided and qualified senior lecturers to lecture

- It is Essential for more lecturers for specialized areas of computer science and Information Technology areas

<Promotion of entrepreneurship>
- Overseas universities encourage students for startups. In the first two years they encourage students to start a business and give 90% of the ownership to students and keep 10% with the university the next two years its 50 fifty and after their graduation, it becomes 10% for students and 90% for university. This model helps students to posses business knowledge while studying their academic. I firmly believe that if we also can come up with similar thing, it would be a welcome move in students' career path after their graduation

Section C. Employment after graduation (existing plans)
(For respondents who already have an offer of employment)

1. Please indicate the following:

		numbers of answers / respondents
1-a. What will your job title be?	- Engineer of the Sri Lankan Army / Navy *All respondents are KDU students who are engaged to serve in the Sri Lankan Army for a certain number of years after graduation	(8/12)
	- Officers in the Sri Lanka Army / Air Force (2) * Both of respondents are KDU students	(2/12)
	- Transport Manager (1)	(1/12)
	- Aeronautical Engineer	(1/12)
	Total	(12/12)
1-b. Briefly describe what your duties will be (as far as you know)	- Engineering work, including construction and administration in the Sri Lankan Army/ Navy / Air Force *All respondents are KDU students	(10/12)

	- Manage Fleet of Vehicles & optimize the performance of the vehicle	(1/12)
	- Developing Design Systemic Manufacturing (Assembly & Modify) Flight Testing Programme	(1/12)
	Total	(12/12)
1-c. The type(s) of employer (e.g. government, private enterprise, NGO)	- Government *KDU students	(10/13)
	- Private	(3/13)
	Total	(13/13)
1-d. The main office location (e.g. Colombo, overseas)	- Colombo and other regions *KDU students	(10/13)
	- Colombo	(2/13)
	- Overseas	(1/13)
	Total	(13/13)

2. Which of the following best describes the basis on which you will be employed after graduation?

	numbers of answers / respondents
a. On a permanent contract	(10/13)*KDU students
b. On a fixed-term contract lasting more than 1 year	(1/13)
c. On a fixed-term contract lasting less than 1 year	(0/13)
d. Self-employed or freelance	(0/13)
e. On a part-time contract	(1/13)
f. Other	(1/13)
Total	(13/13)

3. Please describe the level of importance of the following for your future employer regarding your qualification?

Items and Average Score (4: Very important, 3: Important, 2: Slightly important, 1: Not important, 0: Don't know or not applicable).	
g. Student projects	(2.85)
e. Extra curricula activity (any award)	(2.77)
d. Extra qualification / awards won	(2.46)
c. The grade	(2.15)
a. The subject (s) studied (e.g. Marketing, Civil Engineering)	(1.38)
b. The level of study (e.g. BSc)	(1.23)

f.	Industrial training	(1.08)
h.	Soft skills (ex. leadership, communication skills, team building)	(1.08)
i.	Other	0

4. Why did you decide to take this job? *Multiple answers.

		numbers of answers / respondents
c.	It is an opportunity to join this organization	(8/13)
e.	To gain experience to get the type of job I really want	(6/13)
d.	To see if I will like the type of work involved	(4/13)
a.	It fits into my career plan	(3/13)
f.	In order to earn a living	(2/13)
g.	It is in the right location	(1/13)
b.	It is the best job offer I have received	(0/13)
h.	The job is well-paid	(0/13)
	Total	(24/13)

5. How did you find out about this job? *Multiple answers.

		numbers of answers / respondents
c.	Employer's website	(5/31)
e.	Personal contacts, including family and friends, networking	(5/31)
b.	Newspaper or magazine advertisement	(4/13)
a.	Information from university	(0/13)
d.	Recruitment agency	(0/13)
f.	Job/ career fair organized by career guidance unit	(0/13)
g.	Other (please describe)	(0/13)
	Total	(14/13)

6. If you have any suggestions for your university about career support, please describe.

- There should be more effective way of arranging internship programs where it helps to develop abilities of a graduate to work in an environment of the job/ company; which will help to create an employment/job opportunity!

- Need more facilities for practices as well as in paper materials to refer.

Section D. Further study (intentions)
(For respondents looking or intending to look for a place for further study)

1. Which of the following best describes your intention?

	numbers of answers / respondents
b. I intend to be a part time student	(8/37)
a. I intend to be a full time student	(27/37)
e. I intend to continue my further studies when my financial condition is improved	(2/37)
d. I intend to be self-study	(1/37)
c. I intend to be a distance-learning student	(0/37)
f. Other	(0/37)
Total	(38/37)

2. If you intend to undertake education after graduation, please indicate the following:

		numbers of answers / respondents
a. The area(s) of study	Engineering	(11/37)
	Management	(7/37)
	Computer/Software	(5/37)
	Science	(4/37)
	Statistics	(4/37)
	Military affairs	(4/37)
	Marketing	(2/37)
	Accounting	(2/37)
	Civil engineering	(2/37)
	Telecommunications	(1/37)
	Mining	(1/37)
	Energy	(1/37)
	Total	(41/37)
b. The level(s) of study	Master's Level	(17/37)
	Doctoral level	(14/37)
	Others	(1/37)

	Not known/not yet determined	(5/37)
	Total	(37/37)
c. The type(s) of school (e.g. public, private)	Public	(6/36)
	Private	(17/36)
	Not known/not yet determined	(13/36)
	Total	(36/36)
	*12 of those intend to enter private schools are those who intend to study overseas	
d. The location(s) (e.g. Colombo, overseas)	Overseas	(24/35)
	Colombo	(8/35)
	Not known	(3/35)
	Total	(35/35)

3. If you have any suggestion for your university about career support, please describe.

- Internships should be given to students who are doing the general degree also.

- Better to provide qualified lecturers.

- University gives scholarships for selected students each year

- I think education must be based on the industrial requirement and the new technology which has to be with fewer exams and more projects and industrial experience.

Section E. Career plans
(for respondents have not decided or do not know)

1. Do you have a long term career plan?

Yes (4/14)	No (6/14)	Not Sure (4/14)

If yes, please give details:

- Despite my not having a clear idea of what exactly I would want to pursue, it's my intention to put my best effort into whatever is my career, which I believe would eventually lead me to working in a field best suited for me. However, based on my passion for mathematics, English and music, it's my wish that I would someday find an occupation suited for these subjects. Furthermore, it's my wish to serve for my motherland, especially because we have immensely

benefited from free education in Sri Lanka. I assume my sense of self-gratification would be much enhanced if my occupation happened to be one that assisted the helpless in some manner.
- Expecting to go as much as higher in my section

2. If you have any suggestions for your university about career support, please describe.

- Course content to be more careers focused for those who don't wish to continue further studies. Career guidance unit to be more active
- Career guidance programs must see much improvement in my point of view, in our nation. In fact, by the time we leave school for universities, the majority of students have next to no idea of what career they must pursue, or what suits them best. Even those who have a clear idea of what they might want to do are obliged to do something entirely different from their field of expertise, due to the very competitive nature of the A/L exam, and due to lack of facilities to render students the opportunity of doing what they like. This results in certain students being very distressed at universities, having to be in a field they dislike for the rest of their lives. Hence, it's my opinion that students must be given a glimpse of various careers when they are schooling itself, so that by the time they leave for universities they would have an idea as to what they would want to pursue. Furthermore, students must be given more chances of selecting what they like, without constraining them with a certain criteria based on A/L results, so that ones who are not at the very top are left to be content with any subject offered for them.
- Universities must conduct job fairs and they should invite corporate personals to give some lectures on the job market. Functionality of the career guidance units must increase.
- Please minimize exams and increase more opportunities for real work like researches and projects and more development base projects. In addition to this the lecture hours has to be minimized and students must be given enough time to learn themselves under special criteria from university and the aids from institutions and government should have to be there. And especially we need more resources both human and technical. I think this survey won't be just and survey and hope you would have some real solutions for this.
- If they organize seminars it will be a good thing
- The university should seek & provide students opportunities for international career experience, especially with regard to electronics.


JICA