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The Skills Gap in Four Industrial Sectors in Sri Lanka

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FOREWORD

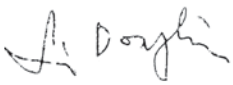
The International Labour Organization (ILO) helps member states integrate skills development into national and sector development strategies in order to better meet current and future labour market needs. It also focuses on expanding access to labour market oriented training so that youth, persons with disabilities and other vulnerable groups are better able to acquire skills and secure decent and productive employment while contributing to national development at the same time.

Furthermore, the ILO provides technical services to improve the ability of public employment services to provide career guidance, labour exchange services, and the delivery of active labour market programmes. ILO work on skills derives from ILO Recommendation 195 on Human Resource Development: Education, Training & Lifelong Learning; the ILC Conclusions on Skills for Improved Productivity, Employment Growth and Development; and the G20 Training Strategy.

In response to a request from the former Ministry of Youth Affairs and Skills Development to carry out an assessment of the skills gap in four initial priority sectors identified by the Government of Sri Lanka, the ILO commissioned this study to identify the critical issues that need to be addressed in order to bridge the gap generated by the skills mismatch in the four sectors. As such, this report serves as an overview of the skills gap in the information communication and technology industry, tourism and hospitality industry, construction industry, and light engineering industry.

All ILO activities are anchored in the Decent Work concept which was formulated by the ILO's constituents – governments, employers, and workers – as a means to promote decent work in the country. It is based on the understanding that work is a source of personal dignity, family stability, peace in the community, democracies that deliver for people, and economic growth that expands opportunities for productive jobs and enterprise development. Decent Work is a key element to achieve fair globalization, reduce poverty, and achieve equitable, inclusive, and sustainable development.

On this note, I would like to thank Professor Sunil Chandrasiri and Dr Ramani Gunatilaka, the ILO Consultants who conducted this study, for a praiseworthy job. Their work provides an invaluable contribution to the understanding of the skills mismatch in the Sri Lankan economy and delivers useful analysis for policy makers and other stakeholders involved in promoting decent work in the country.



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EXECUTIVE SUMMARY

Introduction

This paper attempts to review conditions of demand and supply related to skills development in four industrial sectors that the government of Sri Lanka has ear-marked for long term development. They are the information and communication technology industry (ICT), the tourism and hospitality industry (THI), construction and light engineering. These four sectors accounted for 9 per cent of GDP and 10 per cent of total employment in 2012. The IT and tourism industries are projected to earn US$ 5 billion each in 2022. The two sectors have also revealed their potential for high growth in terms of value addition and employment. The growth potential of sub-sectors belonging to these two service sectors are linked to export markets, while the growth potential of the construction and light engineering sectors are largely determined by product market conditions of the domestic market. Using already available secondary data in the form of survey data, administrative data, and published reports, the present paper assesses the training gaps in these four sectors using standard skills assessment methodologies.

Background

This study is part of the National Skills Sector Development Programme 2014-2020 (SSDP) that has been developed to improve the quality and relevance of skills training provision in Sri Lanka. The SSDP requires quality data on skills needs and forecasts to support planning and implementation efforts, in turn required to develop a training system produces industry relevant skills. In order to improve the quality of training and increase the numbers trained in priority sectors in Sri Lanka, the programme intends establishing a purchasing model to purchase training services from private and public training providers. Since Sri Lanka's economy is currently on a high growth trajectory, realising the country's long-term development goals would be greatly dependent on the ready supply of labour with the required mix of cognitive and non-cognitive skills. In fact, a large body of international evidence underlines the role of non-cognitive and job specific technical skills in enhancing the productivity and competitiveness of industry.

The prevalence of skills mismatches in Sri Lanka's labour market has been recognized since the early 1970s, particularly in the context of high rates of unemployment among educated youth. Skills mismatch involves both matching the numbers and the quality of graduates for a given industry sector. The first, related to numbers, involves comparing graduate output from the school education system and TVET sector with industry demand representing both domestic and foreign markets. The second relates to mismatches of quality involving the application of standard skill measurement models covering cognitive, soft and technical skills. Cognitive skills refer to conceptualization skills while technical skills refer to job specific technical skills. Soft skills refer to leadership, team orientation, coordination, etc. Several recent studies of skills mismatches in Sri Lanka have concentrated on skills demanded by employers and have highlighted shortages in cognitive, technical and non-technical skills. Significant gaps in technical skills such as proficiency in English language and computer are invariably highlighted.

Demand for training services

This study examined the demand for TVET training along four dimensions: a) The regional supply of labour, through an analysis of the distribution of Sri Lanka's population and internal migration rates; b) New entrants to the labour market; c) VET Plans; and d) Market demand for occupation specific skills. The information related to new entrants to the labour market pointed to three main findings: a) about 174,000 students leaving school education system go through skills development

programmes offered by public and private service providers, b) about 152,000 join the labour market without any training, and c) of the unemployed without vocational training, 51 per cent are without GCE O/L qualifications. Except the VET Plan for ICT, other VET Plans do not provide sufficient details on the demand for skills.

The demand for skills has been growing and changing in Sri Lanka as a result of the increasing role of the service sector, openness to new technology, and pressures of international competition. Efforts to diversify the economic and productive structure of the country in the long-term may further accentuate some of these patterns of skills demand. It is also necessary to re-launch the manufacturing sector as an engine of growth in order to increase the absorption of labour and generate decent job opportunities for the majority.

Supply of training services

Skills training for the four sectors are carried out internally through induction, in-house structured and externally through public, private, and non-government organizations. The relative magnitude of these sources varies across the four sectors. However, the low incidence of external training in the industries suggests that pre-employment training is very important in Sri Lanka. However, only the ICT VET Plan provides detailed information by type of training providers, coverage of programmes, professional qualifications, syllabi, targeted occupational groups and maps them with relevant NVQ levels. The ICT VET Plan provides comprehensive assessment of skill gaps, unlike the VET Plans of the other three sectors.

A cross-country assessment of training indicated that Sri Lankan employers provide more in-house training than do their counterparts in South Asia. Market survey evidence also indicated firms concentrating more on induction training, in-house structured training and OJT rather than relying on outside training providers. However, data from labour force surveys indicate that half the number of employees in the four key sectors is employed in small and medium establishments, and about a third in micro enterprises. Such establishments may find it more difficult to fund their own training and underline the need for appropriate training programmes to be publicly provided.

However, employers' assessment of the quality of training in technical and soft skills indicated the relatively low quality of public sector service providers in the tourism sector. In contrast, the technical skills provided by public sector training institutes for the ICT sector have been rated highly, unlike the quality of technical skills provided by training providers in the construction and tourism sectors. Nevertheless, employers appear to be more satisfied with the soft skills training received from public sector institutions in the construction sector than their counterparts in the ICT and tourism sectors. Overall, public sector training providers seem to have performed better in providing job related theoretical knowledge than in the development of soft skills.

In Sri Lanka, skills certification is organized in a national qualifications framework, the NVQ system. As at the end of October 2014, availability of National Competency Standards and Curricula (NVQ Level 1-4) stood at 144 and number of programmes relating to ICT, tourism, construction and engineering services were 6, 11, 6 and 40 respectively. The evidence also indicates a relatively high use of the NVQ system in terms of number of NVQ certificates issued, in ICT and light engineering services sectors as against the tourism and construction sectors.

Skills mismatch

Quantitative evidence on skills mismatch in the four sectors is scarce. The estimates by the National Planning Department (NPD) indicate that about 152,000 individuals join the labour market every

year without any training. The NPD has also estimated annual sector specific training gaps as follows: 25,500 trainees in tourism; 4,000 craft level workers in construction; and around 5,000 workers in the light engineering and manufacturing sectors. The ICT Workforce Survey (2014) indicated an unfilled gap of 468 graduates per year.

In contrast, the qualitative evidence on skills mismatch is more comprehensive and based on more recent data. But this information relates to all industrial sectors rather than the four sectors covered in the present study. For example, work by Dundar et al. (2014) employed standard skills methodology and the analysis presents a cross country comparison as well. The key findings are summarized below.

a) Individuals with higher education use cognitive skills, but the use of cognitive skills was as low as 52 per cent among individuals with primary and secondary education.
b) Among workers, only 16 per cent can use computers and only 24 per cent are proficient in English.
c) Across sectors, 28 per cent of the urban population and 8 per cent of rural residents use computers.
d) Differences in the ability to use computers and the English language between high-skilled and low-skilled workers were 44 and 8 per cent respectively.
e) About 77 per cent of workers effectively use team skills and 50 per cent use presentation skills.

Of the four VET Plans, only the ICT Plan reported significant difficulties associated with finding people with multi-disciplinary expertise in multiple professions, e.g. accounting and IT, HR and IT, law and IT, marketing and IT. The study by KPMG (2007) reported that the training gap was mainly prevalent at the expert level where training for most competencies varied between 10 to 40 per cent. It also reported availability of competencies at intermediate level in the range of 41 to 70 per cent.

Evidence from the National ICT Workforce Survey (ICTA, 2014), indicated skill gaps in soft skills as well as technical skills. The report highlights the inadequacy of soft skills particularly in the areas of business etiquette, high sense of business ethics, high professional standards and proficiency in English.

A recent survey (SIPL 2012a, b and c) of employers in the ICT, tourism and construction sectors confirms the better quality of training received by ICT graduates compared with those receiving training in the construction and tourism sectors. It also reveals high quality of training offered by service providers in job related theoretical knowledge and inadequate skills development in the area of job related practical skills, training in handling industry relevant equipment and tools, and creating positive attitudes.

A comprehensive assessment of soft skills (SIPL, 2012a, b and c) using 18 criteria indicates the relatively low quality of TVET trainees joining the tourism sector. Some of the most critical areas of soft skill development required in the tourism sector training include ability to read and write in English, positive work habits, creative and critical thinking, problem solving skills, leadership skills, commitment, and emotional stability. Overall, the quality of soft skills gained by TVET graduates joining the construction sector appears to be slightly better than their counterparts following ICT courses. The poor acquisition of English language skills in ICT training is also clearly noticeable.

Conclusions

Skills mismatch hypothesis continues to be valid in the Sri Lanka and the causal factors include quality and relevance of training, demand for soft skills and job specific technical skills, and high rates of labour turnover. The high incidence of outside training during the pre-employment period and low incidence of outside training during post-employment period raises important policy issues relating to both the demand and supply of skills development.

While there is some information available in relation to the mismatch in technical skills, there is less evidence about the availability of soft skills, and no evidence whatsoever about mismatches in cognitive skills in the four sectors. However, going by recent sector-wide skills assessments, it appears that Sri Lanka's general education system is failing to develop the cognitive skills of large numbers of its graduates. It has also failed to impart several urgently needed technical skills such as the ability to write and communicate clearly in even the mother tongue, let alone in English. Therefore, as a first step, the general education system needs to be overhauled in such a way that it shifts out of the business of imparting facts and moves into building the skills necessary to process and analyze the facts, make connections and see the big picture, and then communicate the analysis clearly and succinctly through presentations and report writing.

The VET Plan for the ICT sector provides a comprehensive analysis of the demand and supply for skills in the sector and identifies skills gaps in relation to the NVQ system. The VET Plan for tourism sector provides partial information on skill requirements of the sector. In contrast, the VET Plans for the construction and engineering sectors provide little useful data on skill requirements and even the limited information provided is much dated. Although the ICT industry employs far fewer workers than do the other three sectors, it has the greatest potential to offer decent work opportunities, particularly for women and young people, in the future. At present, most of the ICT training providers are catering to the lowest tier of competency triangle due to high demand as well as because of the lack of resource personnel and courses that can build higher level competencies in the sector. Therefore, training services to develop competencies at intermediate and expert level must be strengthened. The evidence also suggests that the number of NVQ (Level 1-4) programmes needs to be increased for ICT, tourism, and construction sectors, and their quality enhanced.

Survey evidence on labour market conditions suggests high rates of labour turnover in the construction, ICT and tourism sectors as an important reason for skill gaps. Labour turnover is significantly higher among unskilled workers in tourism and construction sectors and among technical workers in the ICT sector.

This study suggests that Sri Lanka's traditional approach to skills formation which focuses almost entirely on the imparting of technical skills may be out of step with the international requirements and trends. Sri Lanka needs to adopt a conceptual framework that rests on the three pillars of cognitive, technical, and soft skills, and reorient its training provision, both in general and technical education, accordingly. Sri Lanka's training providers perform better in creating job-specific technical skills, although here too, there is much that still needs to be done. The development of cognitive skills through the schools system is particularly important as it determines the extent to which individuals can acquire both technical and soft skills. Training providers, particularly in the public sector, need to strengthen their soft skills training components in all four sectors.

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ABBREVIATIONS

BCI	BPO Certifications Institute Inc.
BCS	British Computer Society
BPO	Business process outsourcing
CIMA	Chartered Institute of Management Accountants
CISI	Chartered Institute of Securities and Investments
DCS	Department of Census and Statistics
DTET	Department of Technical Education and Training
ICT	Information and communication technology
ICTAD	Institute for Construction Training and Development
ILO	International Labour Organization
IT	Information technology
GCE O/L	General Certificate of Education Ordinary Level
GCE A/L	General Certificate of Education Advanced Level
GDP	Gross Domestic Product
HR	Human resources
INGO	International non-governmental organization
LES	Light engineering services
LFS	Labour Force Survey
LMI	Labour Market Information
MYASD	Ministry of Youth Affairs and Skills Development
NAITA	National Apprentice and Industrial Training Authority
NGO	Non-governmental organization
NHREP	National Human Resources and Employment Policy
NPD	National Planning Department
NVQ	National Vocational Qualification
OJT	On-the-job-training
RPL	Recognition of prior learning
SLBFE	Sri Lanka Bureau of Foreign Employment
SLITHM	Sri Lanka Institute of Tourism and Hotel Management
SLTDA	Sri Lanka Tourism Development Authority
SME	Small and medium enterprises
SSDP	Skills Sector Development Programme
STEP	Skills Towards Employment and Productivity
THI	Tourism and hospitality industry
TVEC	Technical and Vocational Education Commission
TVET	Technical and Vocational Education and Training
VET	Vocational Education and Training
VTA	Vocational Training Authority

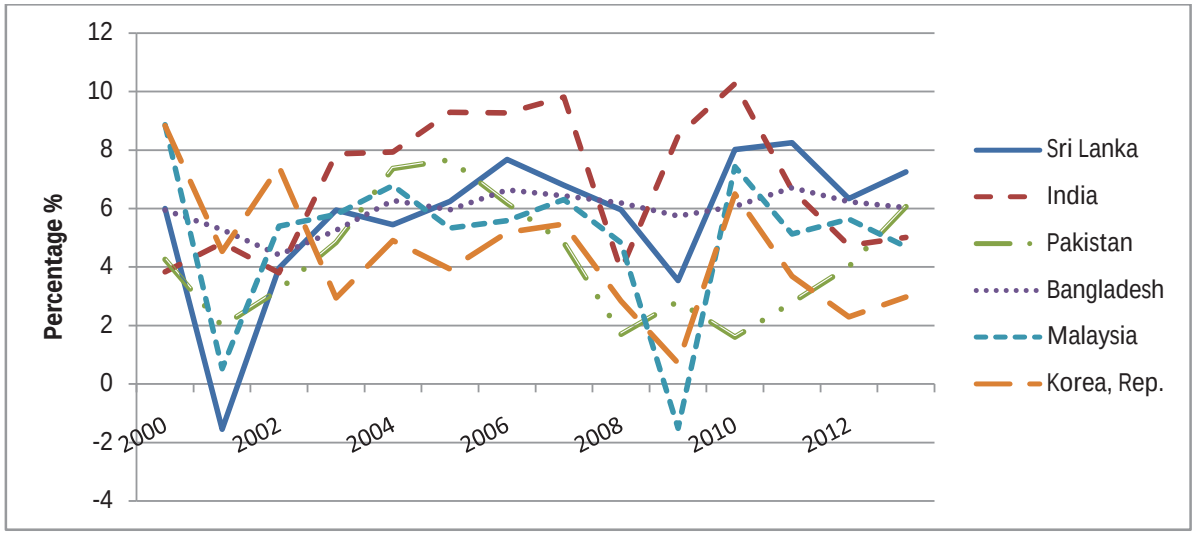
1

INTRODUCTION

1.1 Objectives

In recent years, Sri Lanka has posted some of the highest economic growth rates in South Asia, which have even exceeded the growth rates of some East Asian countries such as the Republic of Korea and Malaysia (Figure 1.1). Yet, Sri Lanka's per capita income of $2004 in 2013 was lower than the middle income country average, amounting to only a fourth of Malaysia's, and to less than a tenth of the Republic of Korea's. Nearly two thirds of employed Sri Lankans are earning low wages in poor working conditions in informal employment (Department of Census and Statistics 2014), and seven per cent of working Sri Lankans belonged to poor households in 2009/10 (Gunatilaka 2014). If Sri Lanka's economy is to continue to expand into higher value added sectors and reduce poverty, it needs to become efficiency-driven. But Sri Lankan firms cite the quality and supply of skilled technicians as the third most important barrier to growth (Dutz and O'Connell 2013). Thus, major skills shortages and mismatches appear to be holding back the country's development efforts (Dundar et al. 2014).

Figure 1.1: GDP growth Sri Lanka and the region, 2000-2013



Source: World Bank, World Development Indicators database, accessed 29 September 2014.

The present paper uses secondary data and other unpublished and processed material to identify the information gaps related to the demand and supply of skills in four key industrial sectors. The sectors are as follows: information and communication technology industry (ICT), the tourism and hospitality industry (THI), construction, and light engineering and services (LES). These sectors have been identified as key growth sectors in several key policy documents such as the *Public*

Investment Programme (NPD 2013) and the *Skills Sector Development Programme of Sri Lanka 2014-2020* (NPD 2014). Accordingly, this paper aims to inform a more rigorous, survey-based assessment of skills gaps in the four priority sectors that is being implemented concurrently, which will in turn inform policy designed to facilitate the demand-oriented provision of these skills by the private and public sectors.

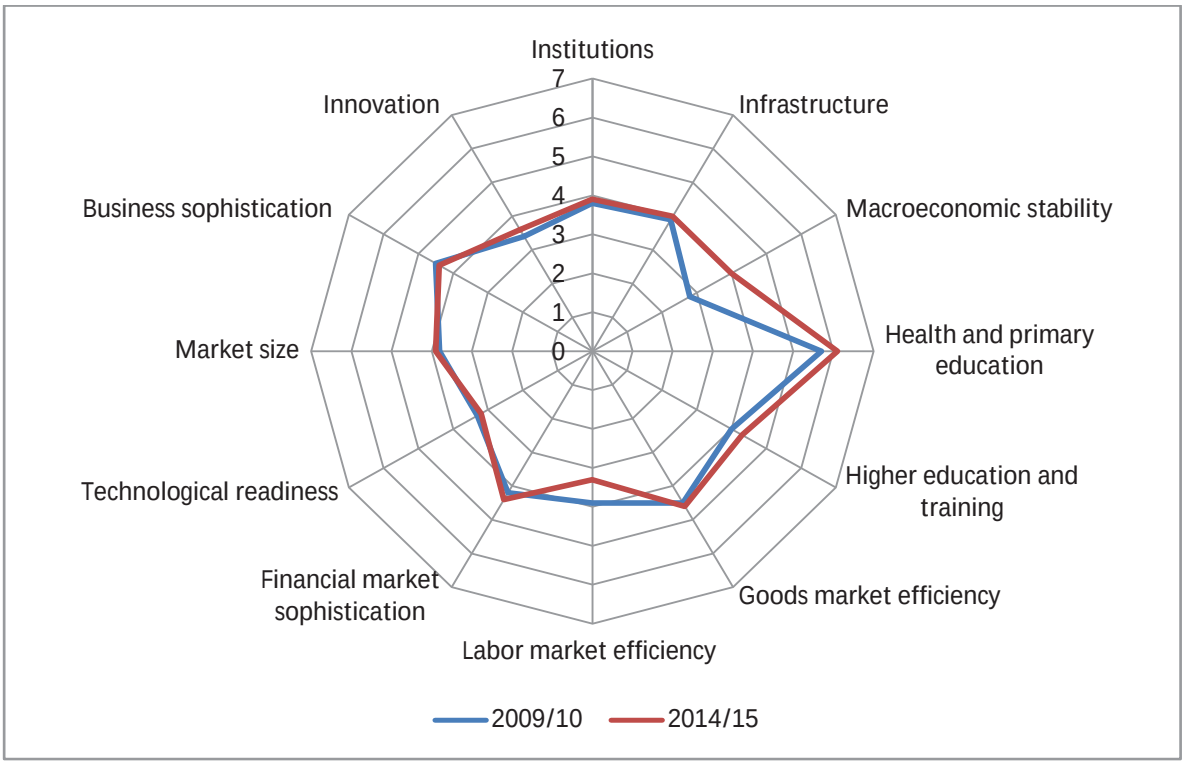
1.2 Rationale

A comparative assessment of Sri Lanka's relative competitiveness during the post-conflict period reveals that Sri Lanka is currently transiting from a factor-driven to an efficiency-driven stage of development. At this stage in the country's development trajectory, competitiveness will increasingly be driven by higher education and training. It can be seen from Figure 1.2 that improvements along the dimensions of key efficiency enhancers such as higher education and training, goods market, financial market development and market size, have been relatively marginal since the end of the conflict. The changes during this period were actually negative with respect to labour market efficiency and technological readiness. The further deterioration in the country's poor performance in tertiary education enrolment during this period is also cause for serious concern. Sri Lanka's ranking in tertiary education enrolment slipped from 92 (out of 133) to 98 (out of 144) during the past four years.

Further evidence that the lack of skills is depressing productivity and competitiveness in Sri Lanka is available from the country's rank in the Creative Productivity Index and the Global Competitiveness Index. Sri Lanka ranks 18 out of 24 Asian Economies in the Creative Productivity Index (ADB, 2014). The country only has an average human capital score (ranked 12 out of 24) and labour shortages have been evident in a number of sectors that require specific skills such as IT and English language skills. This suggests that Sri Lanka's performance in creating a knowledge–skill base and appropriate institutions has been lackluster. Meanwhile, Sri Lanka's rank in the Global Competitiveness Index dropped from 65 to 72 in the space of a year, between 2013/14 and 2014/15 (WEF, 2014/15). It is likely that slow progress in providing key efficiency enhancers, such as higher education and training, technologies, and labour market efficiency had an impact.

In fact, the higher education and training pillar in competitiveness measures secondary and tertiary enrolment rates as well as the quality of education as evaluated by business leaders. The extent of staff training is also taken into consideration because of the importance of TVET and continuous on-the-job training needed for a continuous process of upgrading workers' skills. Labour shortages in a number of sectors that require specific skills (e.g. IT, English language) remain a major constraint to expansion. In particular, Sri Lanka's progress with respect to higher education and training has been unimpressive over the past few years and points to several major problems in the skills development sector. The implications for economic growth are serious: with the emergence of global production systems, participation in value-chain trade is critical for small open economies such as Sri Lanka to benefit from trade liberalization. It has also been noted that the increased global flow of information made possible by new information technologies creates demand for "higher-level cognitive skills" (Riboud, Savchenko and Tang, 2007). Without an adequate supply of skilled labour Sri Lanka will lack the competitiveness necessary to benefit from international trade and progress to a higher stage of economic development.

Figure 1.2: Sri Lanka's competitiveness, 2009/10 – 2014/15



Source: WEF (2009 and 2014).

The issue of skills mismatches in Sri Lanka's labour market has been studied before, particularly in the context of high rates of unemployment among educated youth. Seers (1971) was the first to draw attention to it, suggesting that prolonged job search by educated youth with high job aspirations but without the skills demanded by the market, was the root cause of youth unemployment. Glewwe (1987) and Dickens and Lang (1991) provided empirical support for the hypothesis. Rama (1999), however, rejected it. By comparing actual earnings with reservation wages among people with different endowments of educational attainment, Rama (1999) argued that educated youth queued for public sector jobs which had more attractive remuneration and working conditions than the private sector had. In fact, Seers (1971) had also suggested that young people tend to wait for good job that pay better, offer better social security and involve higher social status. In contrast, Tan and Chandrasiri (2004) found that the more educated and better-trained found jobs faster than those who were not, but that the share of public sector jobs was highly correlated with the probability of being unemployed. Low rates of formal job creation due to restrictive labour laws have also been cited as a cause for high levels of unemployment as they discouraged employers from investments that would expand the number of jobs (Rama 1999 and Abidoye et al. 2009). While these studies tested the three hypotheses through indirect means, Arunatilake and Jayawardena (2010) used Jobsnet data on job aspirations and job vacancies to test the hypotheses more directly. They found some evidence to support both the skills mismatch and queuing hypotheses and concluded that the main source of mismatch in the labour market derives from employment aspirations driven by educational attainment.

More recently, Dundar et al. (2014) used data from a household skills measurement survey and an employer survey carried out in 2012 by the World Bank in its Skills Toward Employment and Productivity (STEP) multi-country analysis, to assess skills demand and supply in Sri Lanka. The study also investigated the factors shaping skills demand, and the responsiveness of the education and training system. The study compared employers' perceptions of skills demand with the skills

available in the workforce and found serious mismatches in education and training supply and demand. For example, with regard to education, they found that while 56 per cent of employers believed that high skilled workers should have passed the GCE A-Levels, only 18 per cent of the population had done so. On the other hand, 70 per cent of employers thought an average low-skilled worker should have passed the GCE O-Levels, but only 35 per cent of low-skilled employees and 40 per cent of the self-employed had done so. With respect to training, 60 per cent of employers expected workers in a high-skilled occupation to have completed technical or vocational education and training, while 24 per cent thought that low-skilled workers should have completed it. But only 16 per cent of the population had done any such training at all. The study also found serious mismatches in the demand for, and supply of, workers with English language and computer skills. For example, 80 per cent of employers expected a higher skilled worker to know English and 40 per cent expected that of less skilled workers. But only 20 per cent of workers were fluent in English. At the same time, while 75 per cent of employers thought that an average higher-skilled worker should have computer skills and 38 per cent expected the same of lower-skilled workers, whereas only 15 per cent of the population could actually use computers (Dundar et al. 2014). Results of the survey also revealed that many employers questioned the quality and relevance of Technical and Vocational Education and Training (TVET) curricula in terms of conveying up-to-date knowledge (50 per cent) or producing the kinds or levels of skills needed (54 per cent and 52 per cent respectively) (ibid.).

Dundar et al.'s (2014) study highlighted several weaknesses in the TVET system. Among them were low levels of organization and management effectiveness; issues of access and equity; internal efficiency and effectiveness; and relevance or external efficiency. Among the factors associated with poor programme quality, the authors identified the poor quality of primary and secondary education that limits student outcomes; weak and limited involvement of the private sector in skills development; public institutions lacking the flexibility to replace obsolete training courses, change curricula and involving the private sector in decision-making so as to become more responsive to market conditions; outdated training standards and curricula; shortage of qualified instructors, materials, equipment and facilities; and, the lack of quality assurance, monitoring and evaluation. While the study recommended, among other measures, the preparation and implementation of an integrated skills development strategy that covers the entire education and training system from early childhood through on the job training, it drew particular attention to the TVET sector. It recommended prioritizing the improvement of current TVET services so that it becomes both more attractive for young people and relevant for employers. It also pointed out that the TVET sector needs to become more diversified and engage actively with employers to make it truly demand-driven.

While Dundar et al.'s (2014) study investigated the prevalence of skills shortages in the economy as a whole, and made general recommendations to address the weaknesses in the overall education and training system, the present study aims to focus on the skills gap in four key industrial sectors that have been identified by employers and policy-makers as potential growth sectors. In particular, the Ministry of Finance and Planning has identified the four sectors as priority sectors based on employment growth forecasts. The sectors are: the information and communication technology industry (ICT), the tourism and hospitality industry, construction and light engineering services.

The present study is part of the National Skills Sector Development Programme 2014-2020 (SSDP) that has been developed to improve the quality and relevance of skills training provision in Sri Lanka. The programme involves several ministries but will be led by the Ministry of Youth Affairs and Skills Development (MYASD). The SSDP requires quality data on skills needs and forecasts to support planning and implementation efforts, in order to develop a training system produces

industry relevant skills. The programme also intends establishing a purchasing model to purchase training services from private sector and public sector training providers, in order to improve the quality of, and increase the numbers trained, in priority sectors in Sri Lanka. Accordingly, the present paper uses already available secondary data in the form of survey data, administrative data and published reports, to assess the training gaps in these four sectors. It will inform a more rigorous assessment using primary survey data from a representative sample of firms in the four sectors that will follow the present analysis.

This study is organized as follows. In the next subsection we set out the relevant policy back ground and thereafter describe the data and methodology used for this review. We end the chapter with a detailed look at economic growth and labour market trends to contextualize the analysis. Chapter two uses labour force survey data and data from industry sources to present detailed profiles of the four sectors in terms of both actual and potential employment. Chapter three assesses training needs in the four sectors using information from a variety of training plans and policy documents. Chapter four collates available information on the sources and supply of training in the four sectors and assesses highlights prevailing skills gaps. Chapter five summarizes the findings and draws the implications for policy.

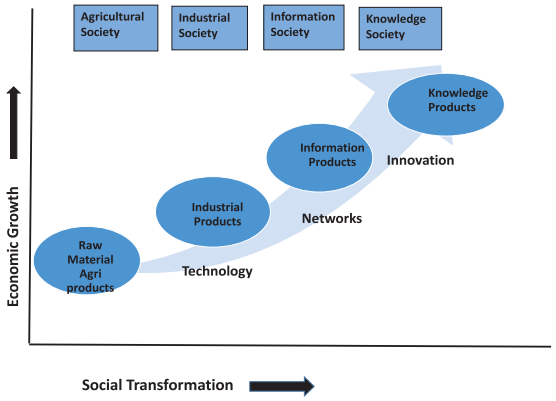
1.3 Policy background

Sri Lanka is currently experiencing high economic growth rates and looks set to achieve the long-term goal of its per capita income reaching US $ 4000 by 2015. When presenting its most recent budget, the government also declared its intention to accelerate economic growth in order that per capita income in the country exceeds US$ 7,500 by 2020. Policy makers expect that by that time, advanced industrial exports will raise in excess of US$ 20 billion in foreign exchange, and that Sri Lanka will have a high ranking in the Doing Business Index, the Human Resource Development Index and the Infrastructure Development Index (Budget Speech 2015).

It is clear that Sri Lanka's policy makers hope to achieve these development objectives by encouraging a development process whereby economic growth, through the structural transformation of the country's production sectors towards knowledge-intensive goods and services, will usher in social transformation. This is evident in Figure 1.3, reproduced from the government's flagship policy document on skills development, the Skill Sector Development Programme (SSDP) (NPD, 2014). According to the figure, policy-makers expect a high rate of economic growth to catalyse a social transformation and modernization process that will involve moving gradually from a largely agricultural society, to an industrial society, and from thence onwards to an informational society. In the final stage, Sri Lanka's economy is envisaged as one that specializes in knowledge products. The economy has already progressed quite markedly along this trajectory, particularly since economic liberalization in 1977. Jobs have become progressively more skill-intensive due to a transition from a largely rural agrarian society to amore mixed economy.

When presenting its Budget for 2015, the government stated its ambitions of maintaining a youth employment rate of 95 per cent of maximizing utilization of the knowledge and skills of the workforce in economic production to reach an overall investment rate of 40 per cent of GDP. In particular, the Budget for 2015 envisages the economy reaching an advanced stage of industrialization through production structures oriented towards highly skilled engineering and value added industrial exports, expected to exceed $20 billion by 2020. However, in several policy documents, the government has recognized that the existing skills education system is unable to meet current labour market demand and thereby support the trajectory of development expected, and has committed to developing skills as a strategy to enhance productivity and competitiveness.

Figure 1.3: Societal transformation through economic growth and structural change, 2009/10 – 2014/15



Source: NPD, 2014. p.197.

For example, the Budget Speech of 2015 recognizes human resources development as a priority item in its 'five hub' centric economic growth strategy for 2015-2020. In fact, in this growth strategy, the government hopes to create a knowledge hub in Sri Lanka to drive growth as well as to provide the skilled workers required for the development of the other four economic hubs. The government's development agenda, the *Mahinda Chintana* also noted that the demand for skilled labour will increase continuously over the next few decades due to the changing structure of the national economy and technological development (NPD 2013, p.128). It further stated that the knowledge economy strategies it hopes to implement will create a significant demand for all skill categories including professionals, middle level technicians, associate professionals and managers (NPD 2013, p.128). The migration of technical and skilled workers overseas for employment is also expected to increase remittances in excess of US$15 billion in 2020 (Budget Speech 2015). The government's long-term policy document, the *Mahinda Chintana* (2010) also recognizes the role that skills development programmes need to play in developing small and medium enterprises and strengthening forward linkages between them and large enterprises (NPD, 2013 p.128). It expects the country to become one of the high performers in human resources in the Asia Pacific Region by 2020 (Budget Speech 2015).

However, it is also apparent that policy makers are looking to key strategic sectors to lead the process of industrial transformation. For example, in the National Human Resources and Employment Policy (NHREP, 2012, p.12), the government proposes a sector-focused approach, aiming at faster growth of sectors that have higher potential for productive employment. While stating that Sri Lanka will formulate industrial policies aimed at moving out of heavy dependence on labour-intensive industry to capital and knowledge intensive industry, the government proposes using suitable trade, fiscal and other incentives, as well as policy interventions at sub-national as well as sectoral, and sub-sectoral levels, to achieve its objectives (NHREP, 2012, p.22).

The government's investment policy also recognizes the critical role played by skills development in employment growth. The Public Investment Programme for 2014-2016 has identified 20 different thrust areas including education, skills development, industries and tourism.[1] With respect to skills development, the key areas for strategic investment include enhancing access, improving the quality of training, making skills education more relevant to the market demand, and increasing private participation. In the area of industry, strategic directions include promotion of industries with export potential, revitalizing industries that have import capacity and development of small and medium enterprises (SMEs).

1 The other sectors include Social Protection, Regional Development, Agriculture, Irrigation, Animal Husbandry, Water Supply, Climate Forestry and Wild Life, Health, Sports, Power and Energy, Plantation, Roads and Highways, Ports and Aviation, Transport, Urban Development, and Housing.

Meanwhile, the Skill Sector Development Programme (NPD, 2014), addresses the issue of skills most explicitly, stating the government's mission to promote the TVET sector to create a society where every Sri Lankan, without exception, will have employable skills by 2020. The SSDP also recognizes the need for skills training programmes to be demand-driven, as it says that,

> "Course offerings in the training centres will be aligned to industrial needs through a system of planning and training allocation based on credible and robust labour market information system. In addition, compulsory on-the-job training and enhanced opportunities for entrepreneurship shall be provided" (NPD, 2014. P.1-2).

The SSDP explicitly states that the TVET Plan would concentrate on five main areas to improve supportive policies, systems and structures in order that the sector is able to meet the demand for labour coming from both domestic and overseas markets. The main areas are: a) improving supportive policies, systems and structures related to the TVET sector; b) improving the quality of skills development programmes; c) improving the relevance of skills development training system to address the industry needs; d) increasing the participation rate in TVET by expanding access; and, e) improving recognition of vocational education and training.

Several key policy documents refer explicitly to the four sectors covered in the present study. For example, in the SSDP, the government also singles out the four key sectors for special mention as follows:

> "The Skills Development Plan will support the national vision of making every Sri Lankan skilled to enable full employment. It will meet the full requirement of skills for domestic industries, particularly in construction, tourism, light engineering and ICT and bring down the unemployment rate from 4% to 2.5% by 2016. The skilling and the higher employment rate particular amongst women, rural and disabled population will help expand the benefit of economic growth across the different sections of the population." (NPD, 2014, p.2).

Meanwhile, NHREP covers ICT and tourism (NHREP 2012). The Public Investment Programme of the government for 2014-2016 recognizes the tourism sector as needing to move in strategic directions to attract high end tourists, diversify tourism products and eco-tourism, as well as promote new markets (NPD 2013). In its Budget Speech for 2015, the government stated that it expects foreign exchange earnings from ICT and the tourism industries to reach US$ 5 billion each in 2022.

The long-term investment policy of the government, particularly with respect to skills development, is to promote private sector participation through direct and indirect incentives. For example, the NHREP stated that 'adequate incentives will be provided to the private sector for initiatives in skills development in the tourism sector' (NHREP, 2012, p.23). Similarly, with respect to ICT sector it stated that the government will introduce a new tax regime to generate high growth and investment in the ICT and BPO sectors (NHREP, 2012.p.23). It also states that "considering the fact that ICT sector is knowledge-intensive as opposed to being capital intensive, investment types allowed for tax incentives need to include intellectual capital and proprietary technologie's (NHREP, 2012, p.24).

Nevertheless, while these policy documents provide sector specific details about strategies, action plans, target investments, sources of funding, project outputs, expected benefits, etc., none of them deals with specific programmes to address the skills gaps in different industry sectors. It is the aim of the present review to contribute towards the process of developing specially targeted

skills development programmes to meet skills gaps in these sectors by first identifying those gaps, and identifying the shortfalls in training programmes geared towards these sectors.

1.4 Data and methodology

This study adopts the standard approach to the classification of diverse skills that employers demand, and which is elaborated in the literature (for example, World Bank 2010). These diverse skills can be classified as follows, and each set is required for the acquisition of further skills. First, basic cognitive skills such as literacy and numeracy are usually acquired in primary schools. Second, job-specific skills are usually acquired in TVET, higher education or through apprenticeships and on-the-job-training (OJT). Third, soft skills are based on emotional intelligence and denote the cluster of personality traits, dependability, being conscientious, communication, language, personal habits, friendliness, and optimism that characterize relationships with other people. They are acquired at any point, often by interactions with family members, peers, or colleagues and are particularly important in organizations which deal face to face with customers. However, while we adopt this conceptualization of skills, due to the lack of available data we are unable to present much information about the prevalence of cognitive and soft skills among workers in the four sectors. This gap in knowledge needs to be addressed by the establishments-based skills gap survey that is imminent. For the present review, we use the usual proxies of educational attainment and occupations to denote skills.

Since this study is essentially a desk review, it draws on published and unpublished academic and policy documents and administrative reports, as well as published and unpublished secondary sources for data and statistics. Economic growth data for Sri Lanka is mainly drawn from statistics published in Annual Reports of the Central Bank of Sri Lanka, and on its website. Macro-level statistics related to employment are sourced from the reports of the Labour Force Surveys (LFS) published by the Department of Census and Statistics. The LFS surveys are based on a two-stage stratified random sample of households. The primary sample unit is the Grama Niladhari division, the smallest geographically based administrative unit in the country, while the secondary sample unit is the household. Stratification of the sample is carried out according to sector of residence, urban, rural and estates and the survey is representative of the population up to the level of the district.

More detailed, sub-sectoral level employment figures disaggregated by age, gender and region were also estimated from the micro-level unit data from the LFS surveys of 2004 and 2012. LFS 2012 is the most recent survey data set that is available for analysis and the start point of 2004 was selected because that was the first year that the Department of Census and Statistics began using ISIC Revision 3 to code the four-digit-level subsector of employment. This made LFS 2004 the earliest survey data set in the series that could be compared with LFS 2012 for information about the industrial sector of employment. While LFS 2012 covered all districts in the country, LFS 2004 covered all districts other than Mullaitivu and Killinochchi in Northern Province. Estimations of workers in each industrial subsector by four-digit subcategory of occupation are based on ISCO Revision 88. Since this paper aims to inform policy makers looking to design strategies to enhance market-oriented skills, we present employment numbers rather than proportions in most of the tables. We rely on figures to present employment shares for snapshot views of relative employment strengths according to characteristics such as gender, industrial sector, and occupation.

There are some serious limitations associated with using household data to estimate employment figures by industry and occupation at the level of four digits. It should be recalled that household

sample data is derived from a sample frame based on a census of the population, and not on a census of industries. Therefore, while the data is representative of the population of households up to the level of the district, it cannot be regarded as representative of the structure of employment in industrial sectors in the economy. However, the LF surveys are the only source of sample survey data that contain employment-related information about all the industrial sectors in the country, as well as about the occupations of the employed workforce. In contrast, while the Annual Survey of Industries and the Annual Survey of Construction Industries are based on sample frames representative of the relevant industrial sectors, these two surveys do not cover all the industrial sectors in the economy. For example, neither of these two surveys contains information about employment levels in the tourism and hospitality sector. At the same time, the two surveys do not contain any information about the occupations of workers employed in these two sectors. Therefore, while we use the LFS data as it contains the only sample-based, detailed information on industries and occupations, the fact that this information is not representative of industrial sectors makes it inappropriate to draw conclusions about changes in employment in terms of 4-digit level industrial categories and occupations. Individuals working in some sub-categories of industries and occupations may simply not have been in the randomly selected households sampled in either one of the two survey years or even both. These limitations of the data must be kept in mind when interpreting some of the numbers presented in this review.

Assigning workers in the four-digit industrial subsectors classified according to ISIC Revision 3 to the four key industrial subsectors, which is the focus of this review, involved making some arbitrary assessments in all four sectors other than construction. We were also constrained by the international industry classification codes that the Department of Census and Statistics used to assign subsector of employment in the LFS data sets. So, for example, defining the construction sector for our purpose proved quite straightforward because the sector is fairly exclusively defined by the relevant ISIC Revision 3 codes 4510 to 4550. These subsectors include site preparation, building of complete constructions or parts thereof; civil engineering, building installation; building completion and renting of construction or demolition equipment with operator. In contrast, deciding what sort of activities constituted light engineering was difficult because ISIC Revision 3 does not have a subsector called light engineering. The issue of defining this sector was therefore discussed extensively with members of the project's Advisory Committee and it was decided that almost all manufacturing activities belonging to the three-digit subsector range of 271 to 293, 311 to 351, 359, 371 to 372 were to be included in this category. In addition, activities with the three-digit codes, 502 and 504 relating to the maintenance and repair of motor vehicles and motorcycles were included. The tourism sector was defined to include three–digit subsectors 551 and 552 denoting hotels and restaurants as well as the four digit subsector 6304 which includes activities of travel agencies and tour operators and tourist assistance activities not elsewhere specified. Finally, the ICT sector was defined to include all activities in its own two digit category, 'computer and related activities', as well as the 'manufacture of office, accounting and computing machinery' (three-digit category 300) and 'renting of office machinery and equipment including computers (the four-digit classification code 7123). A detailed list of the relevant codes and activities is set out in Table 1 of the Appendix.

It should be noted, however, that this classification of activities suffers from obvious limitations. First, it does not include ancillary activities related to the sector. For example, our classification does not include the trade and transportation of vegetables and other products allied to the hospitality sector as we are unable to say, using the LFS data, what part of the wholesale trade of agricultural raw materials, live animals, food, beverages and tobacco is to do with the supply of inputs into the hotels and tourism trade. Secondly, in the case of ICT, the classification that we use relate only to the direct producers of ICT, whereas employment in ICT activities in the ICT-using sector,

ranging from government departments to private sector business and research establishments, is not covered. In fact, the ICT user sector is estimated by the industry itself, as being much larger. For example, it is estimated that direct ICT accounts for 41 per cent of total employment whereas the non-ICT sector accounts for 46 per cent of employment, with the government and BPO sectors contributing 8 per cent and 5 per cent respectively (ICTA 2014).

Given the limitations of the available survey data for the purpose of the present study, we have also drawn on more detailed data compiled by the industries themselves in our sector review, for the ICT, construction and the tourism sectors. Industry-sourced data was not available for the light engineering sector as it is quite amorphous and is not exclusively and centrally represented, either in terms of associations of business entities or ministries or statutory authorities. There are considerable limitations involved in this data as well, not least the difficulties associated with reconciling employment totals estimated by industry sources, with the LFS data. Limitations relating to this data will be highlighted in greater detail in the relevant sections.

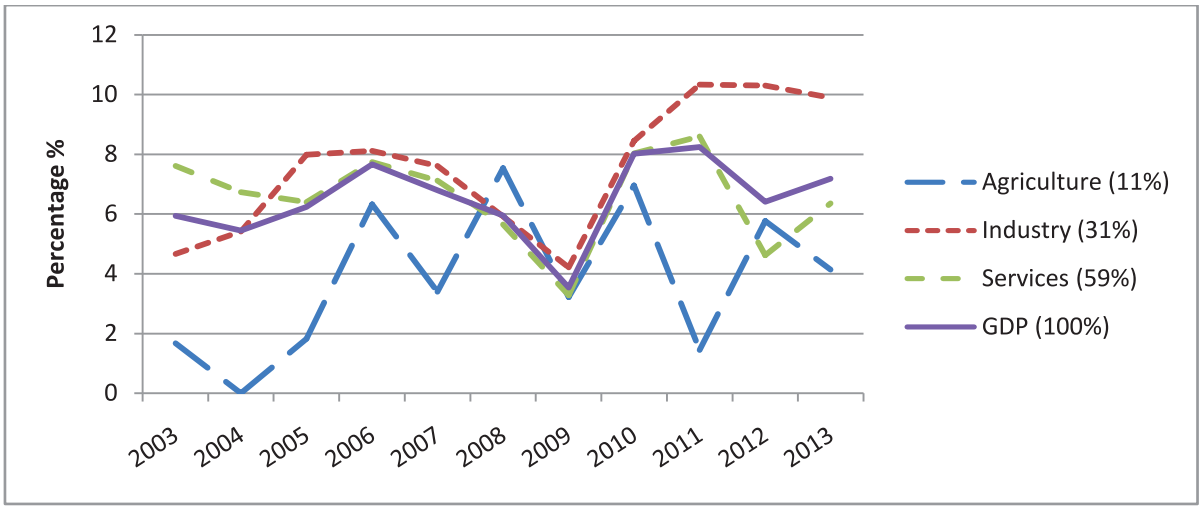
1.5 Economic growth and employment in Sri Lanka, 2004-2012

Sri Lanka has enjoyed 6.5 per cent average annual growth since 2004. With the end of the armed conflict in 2009, annual growth has averaged at 7.5 per cent per annum. The manufacturing sector has powered much of this growth, followed by the services sector, intensifying the structural shift in production which began with liberalization in 1977. The share of agriculture in GDP has declined from 30.7 per cent in 1977 to 11 per cent in 2013. Industry's share accounted for 31 per cent in 2013, and the services' share rose from 40.6 per cent in 1977 to 59 per cent in 2013 (Figure 1.4).

The structural shift in employment has taken place far more slowly. In 2012, 29 per cent of all employed Sri Lankans were working in the agriculture and fisheries sector and this sector also had the highest rate of employment growth at 16 per cent (Figure 1.5). In contrast, employment in manufacturing grew by 13 per cent, trade by 11 per cent, public and private services by 10 per cent and construction by 7 per cent. Employment in high value-added and skill-intensive sectors such as finance and real estate, renting and business activities accounted for less than 4 per cent of total employment in 2012 and grew by a mere 2 per cent.

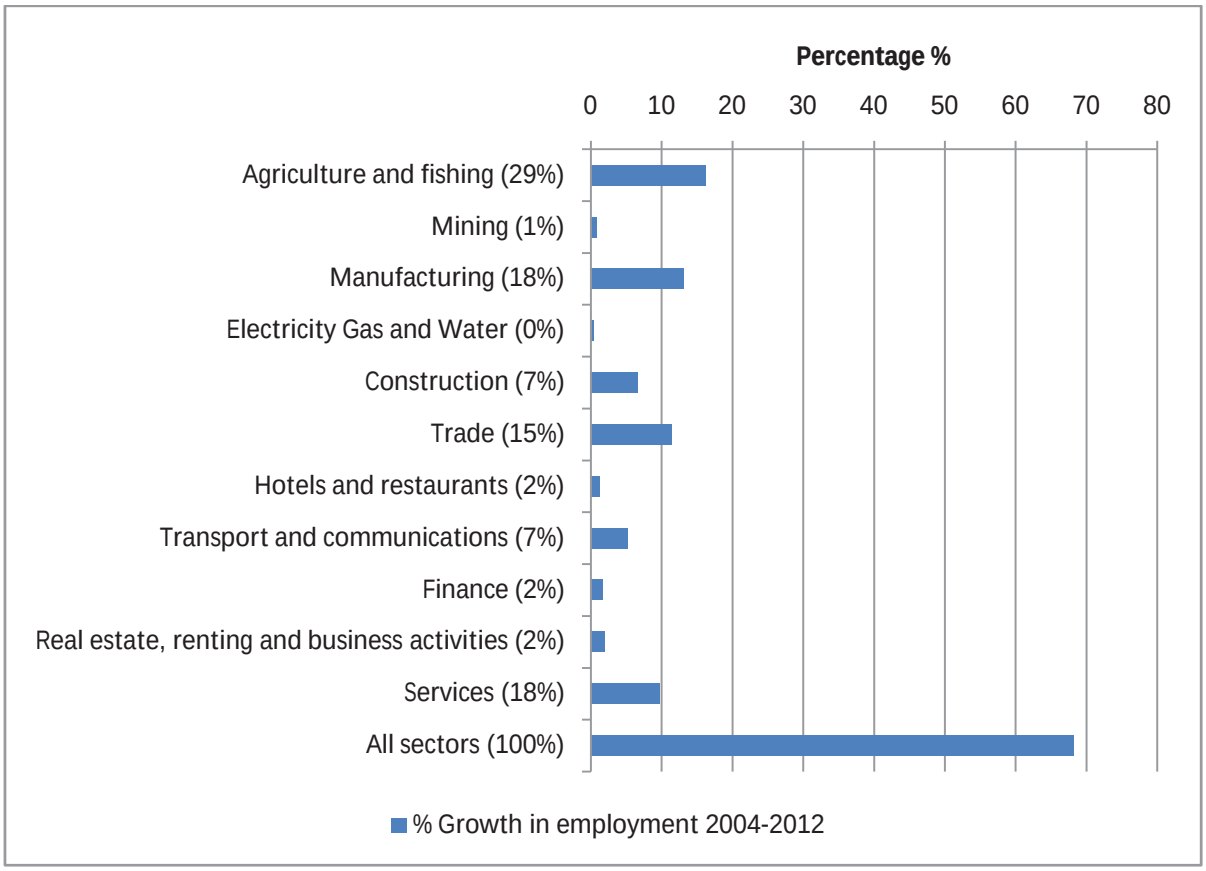
Figure 1.6 sets out the contribution to GDP and employment by major industrial sector. Note that the primary sectors' contribution to employment is far in excess of its share in GDP.

Figure 1.4: Value added growth by major industrial sector, 2002-2011



Source: GDP data from the Central Bank of Sri Lanka, http://www.cbsl.gov.lk/htm/english/08_stat/s_2.html, accessed 19 September 2014.

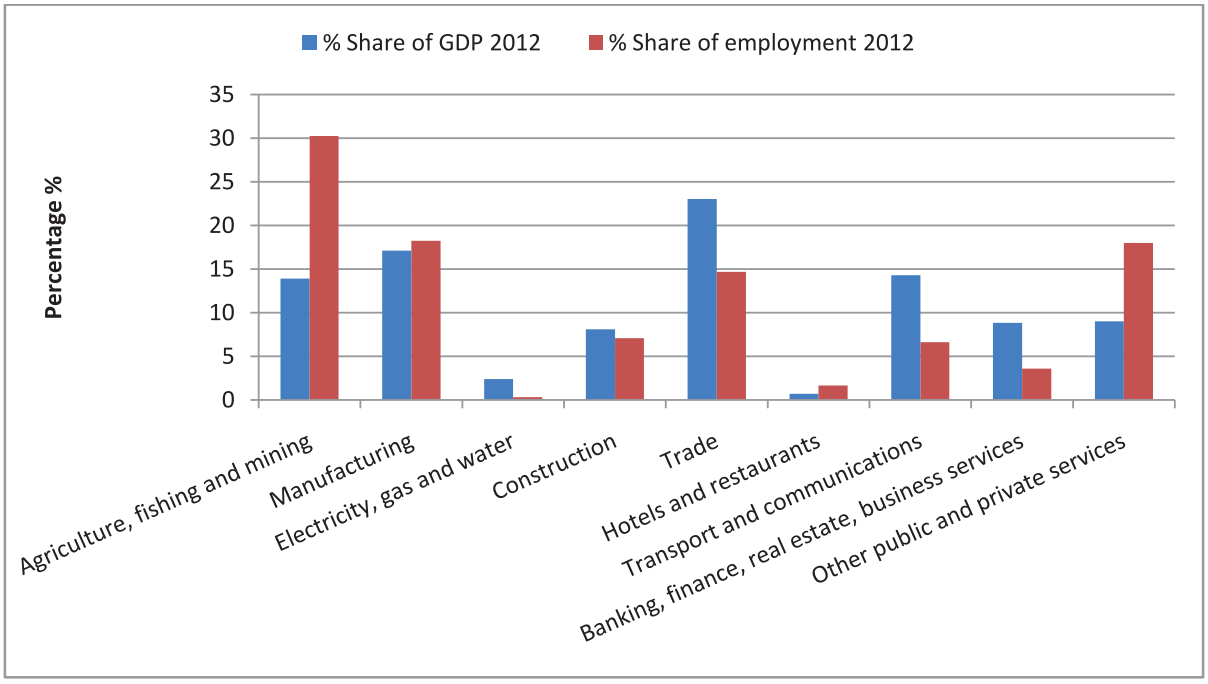
Figure 1.5: Growth in employment by industrial sector, 2004-2012



Source: Estimated with data from the Department of Census and Statistics' Labour Force Surveys, 2004 and 2012. Sample weights used.

Notes: Figures in parantheses denote share of each industrial sector in total employment in 2013.

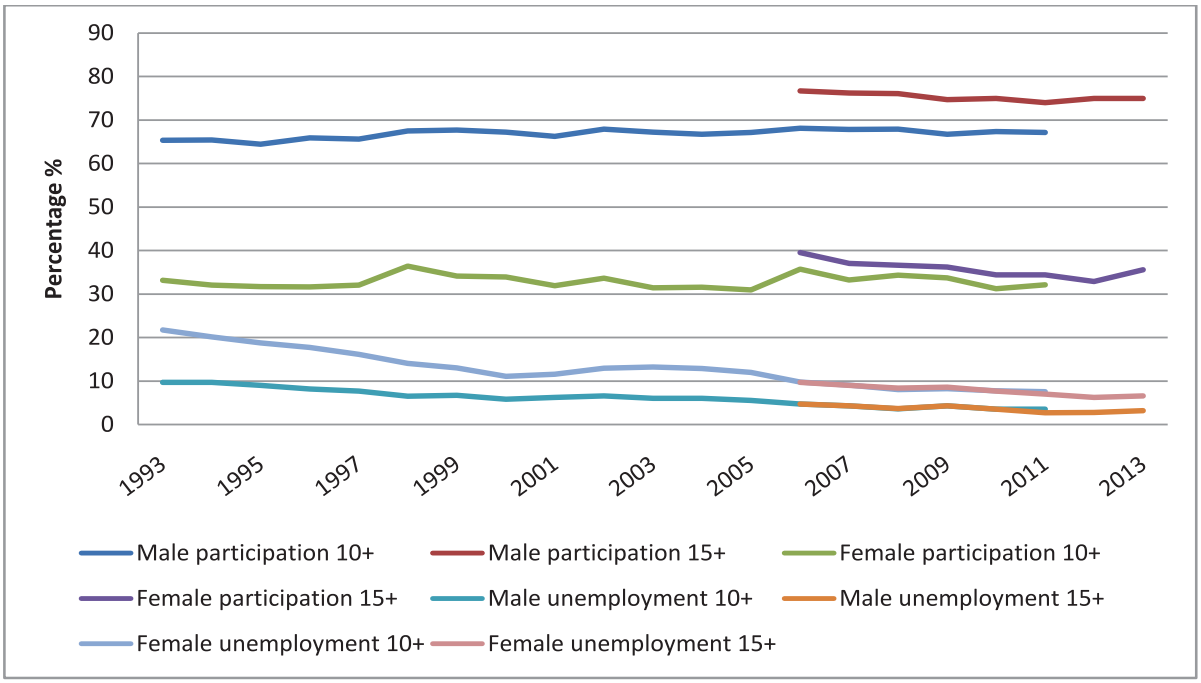
Figure 1.6: Sectoral contribution to GDP and total employment, 2012



Source: GDP data from the Central Bank of Sri Lanka, http://www.cbsl.gov.lk/htm/english/08_stat/s_2.html, accessed 19 September 2014. Employment data estimated from the Department of Census and Statistics' Labour Force Surveys, 2004 and 2012. Sample weights used.

Sri Lanka is nearing the end of its demographic window and the growth of its working age population is expected to decelerate from an estimated 13.3 million in 2011 to 13.9 million in 2026 (Dundar et al. 2014). After this, the working age population will decline absolutely. Labour force participation has already declined from 50.3 per cent to 47.2 per cent between 2000 and 2012 as male participation tapers off (Department of Census and Statistics 2014), and female participation continues to be one of the lowest in the region (Figure 1.7) With more working-age adults leaving to work abroad, the country's labour market has tightened further. These factors could have contributed to the decline in unemployment rates over the years. In fact, unemployment currently stands at 3.2 for men and 6.6 for women 15 years and more (Figure 1.7).

Figure 1.7: Labour force participation and unemployment, Sri Lankan men and women, 1993-2013



Source: Data for population greater than 10 years of age are from Department of Census and Statistics (2013), Sri Lanka Labour Force Survey, Annual Report 2012. Data for population greater than 15 years of age are from Department of Census and Statistics (2014), Sri Lanka Labour Force Survey, Annual Report 2013.
Note: Data for 2005, 2011, 2012 and 2013 includes all districts. Data for previous years either excluded both Northern and Eastern Provinces, Northern Province only, or some districts of Northern Province. See Department of Census and Statistics (2014) for details.

As Dundar et al. (2014) point out, the low unemployment rate masks several problems such as very high unemployment rates among youth (20 per cent for the 15-24 age cohort); high levels of unemployment among educated youth (25 per cent of young adults aged 15-29 with university education are unemployed); and, high rates of underemployment among women (22 per cent) and rural labour force participants (21 per cent). Meanwhile, about two-thirds of Sri Lankan workers are informally employed (Department of Census and Statistics 2014).

While the *Mahinda Chintana* envisages sustained economic growth through the transformation of Sri Lanka into a maritime, aviation, commercial, energy and knowledge hub (NPD 2014), these development goals can be achieved only if the country can draw on a highly skilled workforce. In fact, as policy makers look to the manufacturing and services sectors to continue to drive economic growth and account for increasing shares in the composition of Sri Lanka's GDP, Sri Lanka needs to invest in building job-specific technical and vocational skills to increase competitiveness. Thus, the availability of specially trained machine operators, technicians, craftspeople, sales personnel, professionals and managers will determine the rate at which Sri Lanka's economy transitions to an efficiency-driven economy. Most importantly, upgrading skills and increasing productivity are fundamental to reducing poverty, raising living standards, and generating savings to fund social protection for the present generation of Sri Lankans (Ministry of Labour Relations and Manpower *et al.* 2009; Institute of Policy Studies 2012).

2

REVIEW OF THE FOUR SECTORS

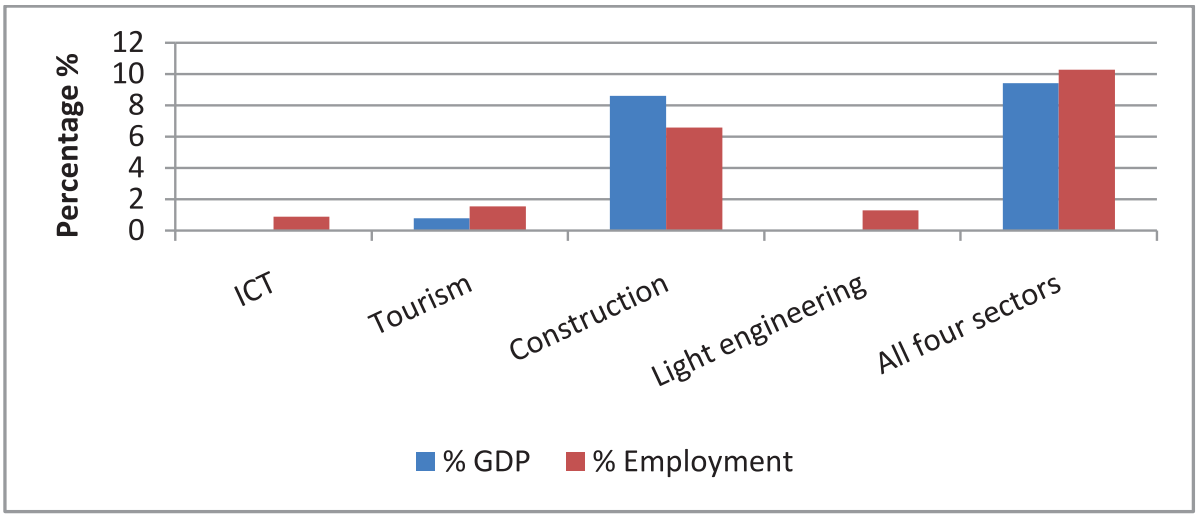
Since Sri Lanka is a small open economy transiting from being factor-driven, to being efficiency-driven, the four sectors under review can play a key role in the country's structural transformation. However, the relative competitiveness and growth of all four sectors will hinge on the availability of a highly-skilled workforce, than on the supply of unskilled labour. This chapter introduces the four key sectors in terms of their contribution to GDP and total employment. It then goes on to describe the nature and structure of employment and skills in the four sectors using first, labour force survey data, and second, information from industry sources.

2.1 Overview of the four sectors based on labour force survey data

Contribution to GDP and employment

The relative importance of these sectors in GDP and total employment is evident in Figure 2.1 which is based on data compiled from several sources. In the first place, the four sectors together accounted for about 9 per cent of GDP in 2013. The construction sector alone accounted for 91 per cent of this contribution (8.6 per cent of GDP) and plays an important role in creating the conditions for growth in other sectors. The ICT and the tourism sectors, though small in terms of their share of total output, are important sources of foreign exchange earnings. For example, the economy earned US $1.7 billion from tourism in 2013 and earnings form ICT are expected to reach $ 1 billion in 2015 (CBSL, 2013). The light engineering services sector, too, is critical for the growth and expansion of primary, secondary and tertiary economic activities with which it is allied. Note in particular that it has the highest employment elasticity among all four sectors at 3.19, followed by the ICT sector at 2.66 (Table 2.1).

Figure 2.1: Contribution of the four sectors to GDP and employment, 2013



Source: CBSL (2014), DCS (2014) and ICTA (2014).

Table 2.1: Employment elasticity in the four sectors, 2013

	GDP	Employment %	Employment Elasticity
ICT	0.014	0.89	2.66
Tourism	0.8	1.55	0.73
Construction	8.6	6.57	0.69
Light engineering	0.003	1.28	3.19
Total	9.41	10.29	

Source: CBSL (2014), DCS (2014) and ICTA (2014)

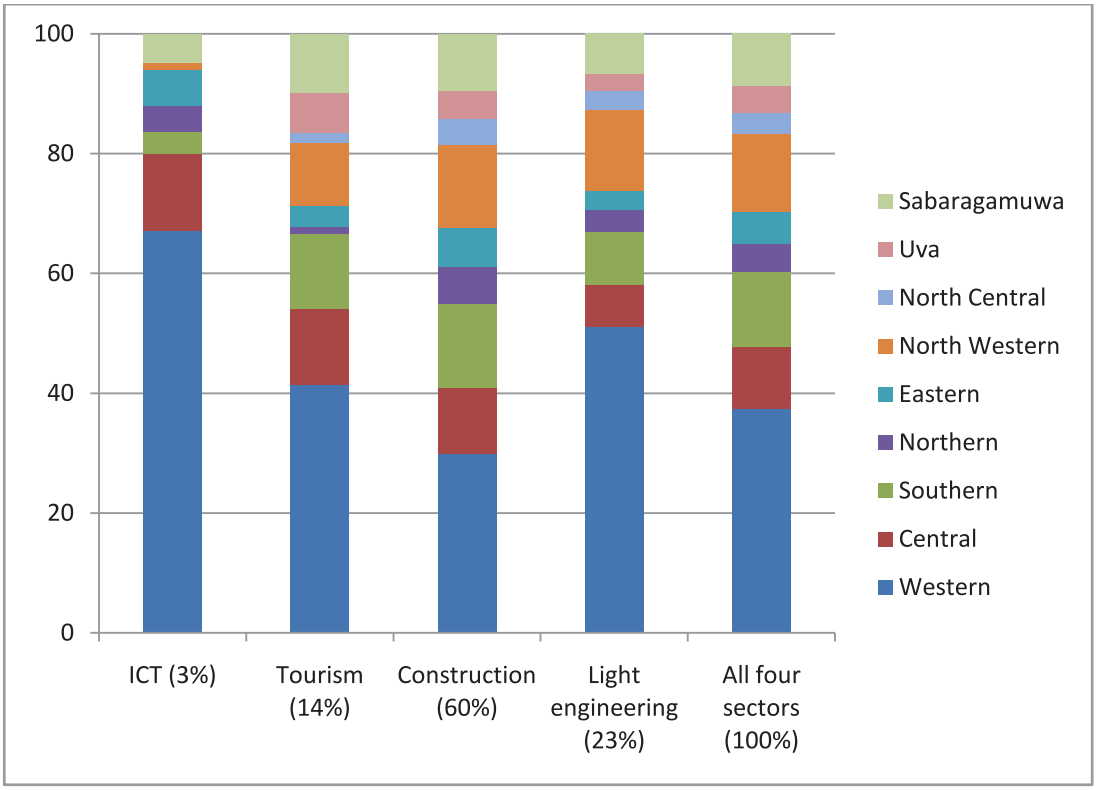
The four sectors are even more important in terms of their contribution to employment. In 2012, 8.1 million Sri Lankans, or half the country's population aged 15 years and more, were employed (Department of Census and Statistics 2013). Of this number, a little less than a million were employed in our four sectors of interest. A total of 557,180 were employed in construction; 208,673 in light engineering; 132,510 in the tourism and hospitality sector; and, 27,222 in the ICT sector. Table 2.2 details the distribution of employment in each sector by gender, in each of the nine provinces. Figure 2.2 shows how employment in all four sectors is concentrated in Western Province, and to a lesser extent, the south western quarter of the island, in North Western, Central, Southern and Sabaragamuwa Provinces. The Northern and Eastern Provinces are relatively well represented in employment in construction, due to reconstruction efforts after the war. North Central Province's shares in all four sectors are miniscule, probably due to the predominance of agriculture in the region, and Uva has a poor showing across the board. While Western Province dominates employment in the four sectors, the rural sector predominates in all four other than the ICT sector, which is essentially an urban-based industry. The estate sector has very minor representation in all four industries, likely because economic activity in these areas is dominated by plantation agriculture (Figure 2.3).

Table 2.2: Employment in the four key sectors by province and gender, 2012

Province	ICT		Tourism		Construction		Light engineering	
	Men	Women	Men	Women	Men	Women	Men	Women
Western	12893	5376	40263	14703	161404	4995	95692	10659
Central	1617	1863	13185	3476	58072	2978	13713	1241
Southern	703	323	13498	3149	76587	2137	16897	1635
Northern	387	764	760	812	33279	860	7647	0
Eastern	1675	0	3248	1292	36014	281	5610	884
North Western	0	316	9671	4325	76083	1087	26640	1376
North Central	0	0	1345	761	23537	1228	6864	0
Uva	0	0	6482	2569	25806	341	5533	302
Sabaragamuwa	1304	0	8946	4027	52255	235	13663	317
Sri Lanka (by industrial sector and gender)	18,580	8,642	97,396	35,114	543,038	14,142	192,258	16,414
Sri Lanka (by industrial sector)	27,222		132,510		557,1850		208,673	

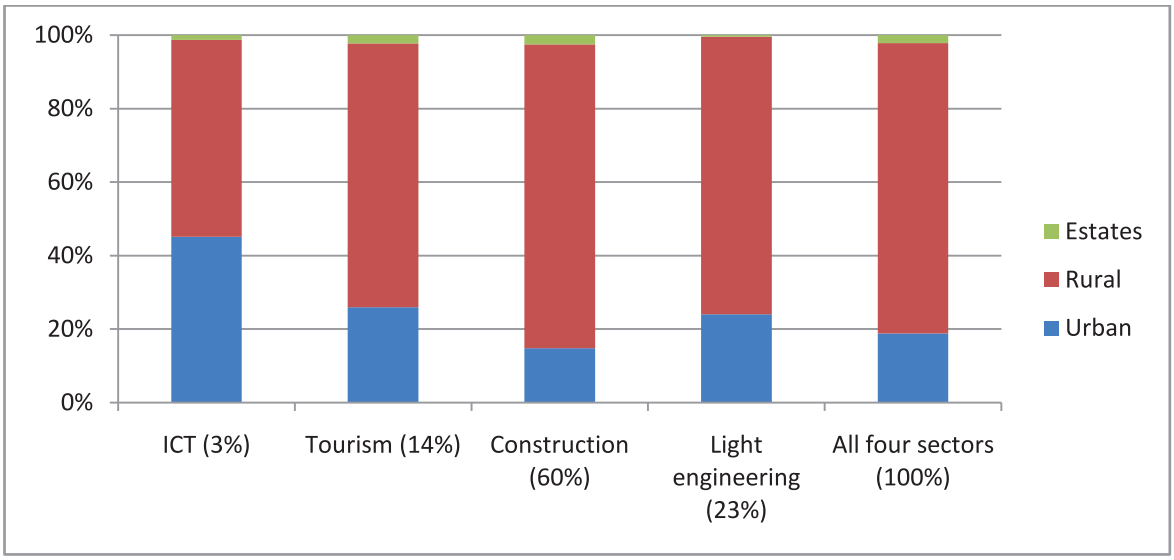
Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

Figure 2.2: Distribution of employment in four key industrial sectors by province,2012



Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.
Note: Numbers in parantheses denote the share of total employment in the four sectors that each sector accounts for.

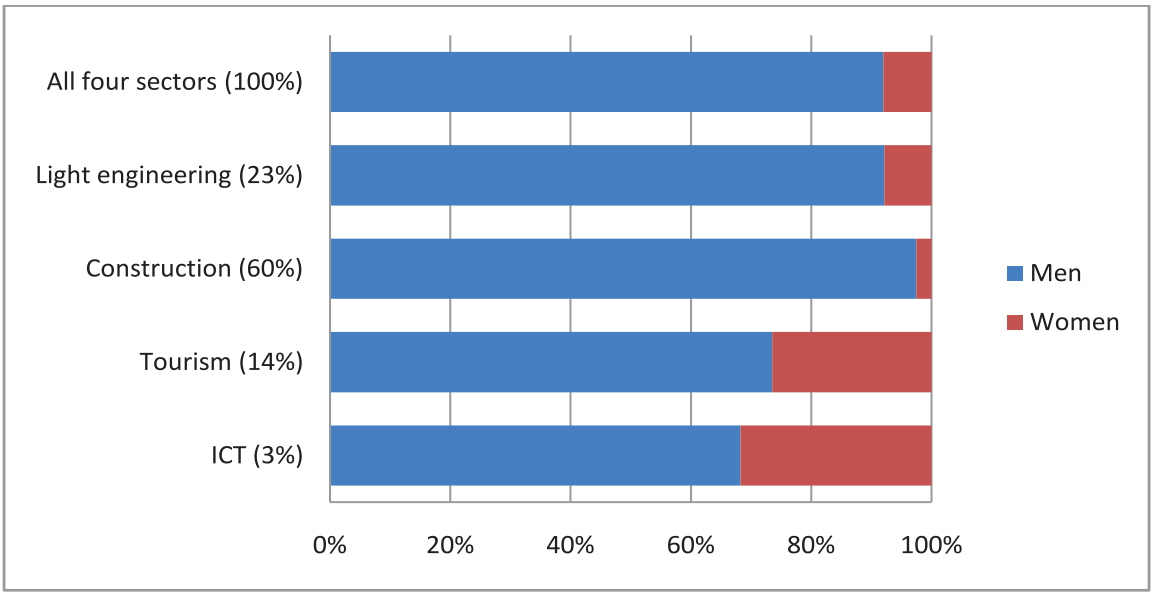
Figure 2.3: Distribution of employment in four key industrial sectors by residential sector, 2012



Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.
Note: Numbers in parantheses denote the share of total employment in the four sectors that each sector accounts for.

While women make up roughly a third of Sri Lanka's employed labour force, they account for an even smaller share of the workforce in the four industrial sectors under review. Even in the ICT sector, women account for just 32 per cent and in tourism they account for 28 per cent. In construction they account for a mere 3 per cent of the workforce while 8 per cent of all employed in light engineering are women (Figure 2.4). The ICT sector is also dominated by a youthful workforce. This is apparent in Figure 2.5 where it can be seen that at least 75 per cent of workers are less than 34 years of age and roughly 30 per cent of workers are less than 24 years of age. Thus, while the ICT sector appears to provide relatively more job opportunities for women and young people, the sector itself is small which means that it would need to expand substantially if it is to make a sizeable impact on unemployment and underemployment levels, given, of course, an available supply of workers with the necessary skills. In the other three sectors, 80 per cent of the workforce is less than 50 years of age, with the middle age cohort of 35 to 50 years making up at least 35 per cent of the workforce.

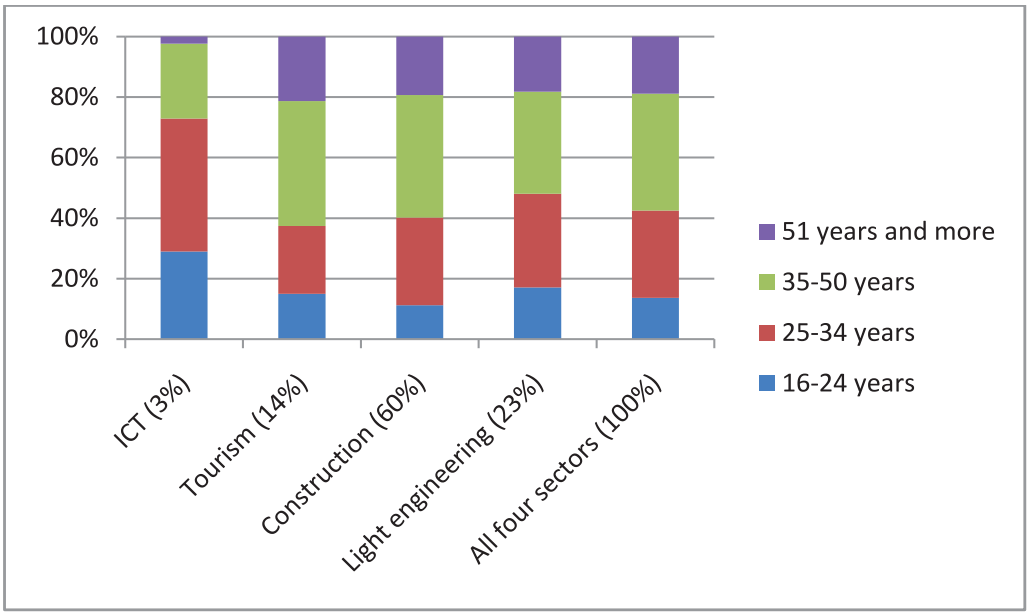
Figure 2.4: Share of employment in four key industrial sectors by gender, 2012



Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

Note: Numbers in parantheses denote the share of total employment in the four sectors that each sector accounts for.

Figure 2.5: Share of employment in four key industrial sectors by age category, 2012



Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

Note: Numbers in parantheses denote the share of total employment in the four sectors that each sector accounts for.

Distribution of skills in the workforce employed in the four sectors

Table 2.3 sets out employment figures by occupation and gender. Figure 2.6 illustrates the relative distribution of skills in the four sectors using occupation as a proxy indicator. It can be seen that higher-skilled workers in the managerial, professional and technician categories predominate in the ICT sector, even though the sector itself accounts for only 3 per cent of total employment in the four sectors. In contrast, low skilled workers such as production workers and workers in elementary occupations predominate in construction and light engineering. In construction accounting for 60 per cent of total employment in the four sectors, and in light engineering, which accounts for 23 per cent, production workers account for 68 per cent and 74 per cent respectively. This suggests that without an upgrading of technologies requiring greater skills in the two sectors, the majority of workers will continue to earn relatively low wages. In fact, a further tightening of the labour market in these two sectors, as is bound to happen with the demographic changes currently underway, the two industries will need to become more capital intensive, and unskilled workers will need to upgrade their skills accordingly. In contrast, in the tourism sector, service workers account for 53 per cent of total employment and the prevalence of soft skills among them are likely to be critical for the success of the industry.

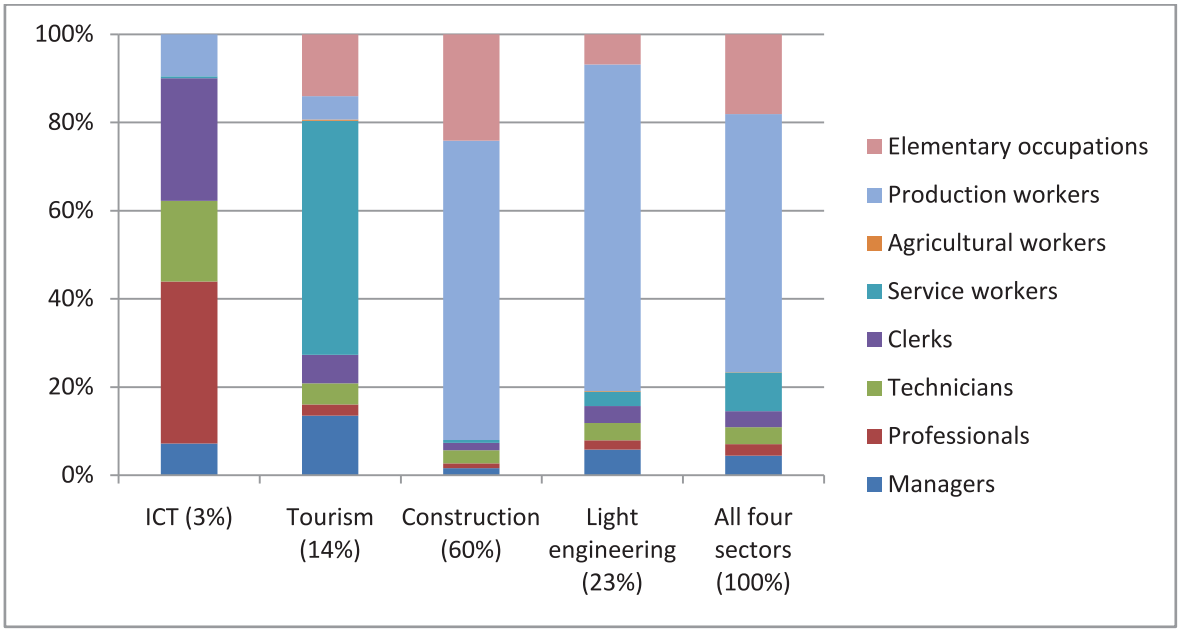
Table 2.3: Employment in the four key sectors by occupation and gender, 2012

Occupation	ICT		Tourism		Construction		Light engineering	
	Men	Women	Men	Women	Men	Women	Men	Women
Managers	1556	392	12335	5556	8769	0	10898	1262
Professionals	8579	1429	2434	965	5544	1734	2826	1598
Technicians	1738	3257	5073	1293	15527	970	6300	1782
Clerks	4557	3004	4497	4067	5540	3642	3890	4104
Service workers	60	60	52321	17981	3199	684	5756	1161
Agricultural workers	0	0	407	0	0	0	345	0
Production workers	2091	500	6038	972	373789	3609	150204	4293
Elementary occupations	0	0	14291	4281	130671	3504	12040	2214
Sri Lanka (by industrial sector and gender)	18,580	8,642	97,396	35,114	543,038	14,142	192,258	16,414

Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

Educational attainment is yet another proxy indicator of skills and Figure 2.7 shows the distribution of workers with different levels of education among the four sectors. In the skill-intensive ICT sector, workers with at least a first degree account for 46 per cent, or nearly half the workforce. Workers with A' Levels make up 19 per cent of the workforce, and those with O' Levels 24 per cent. Workers with secondary education predominate in the other three sectors, most particularly in construction and light engineering, accounting for 77 per cent and 62 per cent of each sector's workforce. In contrast, a little more than half of the workforce in the tourism sector is made up of secondary-educated workers. The predominance of secondary educated workers in the four sectors, making up two thirds of all workers in the sector is cause for concern. Further expansion of these industries will provide more job opportunities for workers with similar levels of skills without an appreciable increase in their wages. Expansion needs to be accompanied by an upgrading of technologies and skills in these industries if wages and living standards are to rise, and facilities for the production of upgraded skills need to be made available.

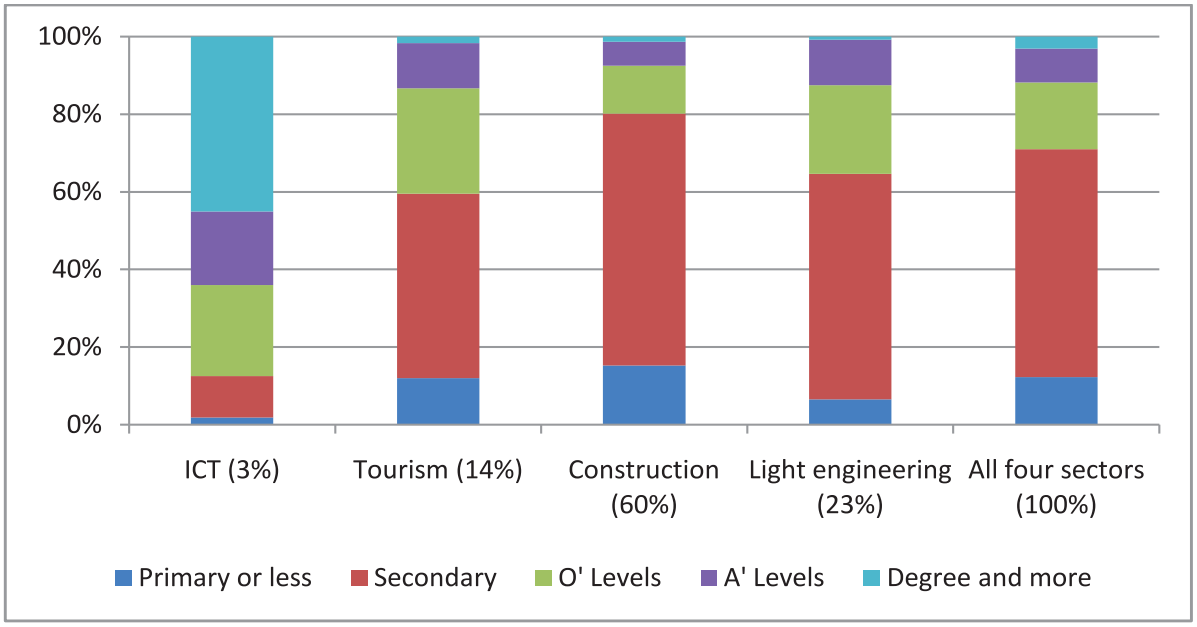
Figure 2.6: Distribution of employment in four key industrial sectors by occupation, 2012



Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

Note: Numbers in parantheses denote the share of total employment in the four sectors that each sector accounts for.

Figure 2.7: Distribution of employment in four key industrial sectors by highest level of education attained, 2012



Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Household level sample weights used.

Note: Numbers in parantheses denote the share of total employment in the four sector that each sector accounts for.

However, the majority of workers appear not to have availed themselves of opportunities to upgrade their technical and vocational skills. We use data from LFS 2004 to get some idea about the prevalence of TVET training among the workforce in the four sectors because this data is not available in LFS 2012 (the relevant question was dropped from the schedules of LFS 2006-2012 but reintroduced in 2013). Table 2.4 sets out the numbers of men and women employed in the four sectors who had received formal and informal TVET training in 2004.

In 2004, more than half the workforce in the ICT sector or 56 per cent had undergone technical training, proportionately more women (59 per cent) than men (55 per cent) had received formal training. In the sector, no woman had undergone informal training but 5 per cent of men had. In contrast, a fifth of the formally trained male workforce was in light engineering and a fourth of the formally trained female workforce in the four sectors was also in the sector. Interestingly, 33 per cent of formally trained women were in construction. Since women accounted for less than 2 per cent of the sector's workforce in 2004, these women likely belonged to the managerial, professional or technician categories anyway and had been trained accordingly. A similar phenomenon is apparent in light engineering where 24 per cent of formally TVET trained women in the four sectors are to be found. But other than in the small ICT sector, the overwhelming majority of men and women working in the sector (at least 78 per cent) have not undergone any TVET training, formal or otherwise (Figure 2.8).

Many studies have identified the lack of English language proficiency as constraining employers from both upgrading and expanding their businesses (for example, see Dundar et al. 2014). Some evidence of the lack of English language skills in the four sectors of interest can be drawn from LFS 2012. In 2012, half the number of workers in the managerial, professional and technician categories was literate in English (in ICT 76 per cent), but only 16 per cent of all workers in the four sectors were as proficient (but in ICT 73 per cent of all workers were literate in English) (Figure 2.9). Table 2.5 which gives the proportion of English literate workers by occupation in each sector shows that only 61 per cent of technicians in light engineering were literate in English, suggesting that 39 per cent of them would not be able to read even an operating manual relating to an imported piece of equipment. This is likely to be a serious constraint on the rapid transfer of technology and upgrading of the production process in this sector. Surprisingly, only 19 per cent of service workers in the tourism sector were literate in English.

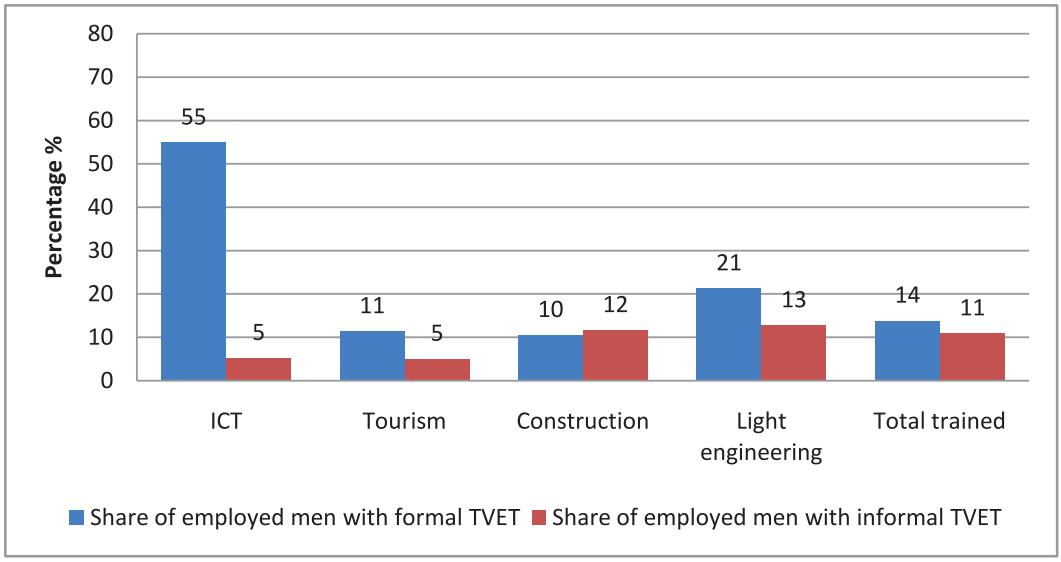
Table 2.4: Share of workers with formal and informal TVET training in four key industrial sectors, 2004

Industrial sector	Formal TVET		Informal TVET		Total employed		Share of all workers with technical training (%)
	Men	Women	Men	Women	Men	Women	
ICT	2798	1523	264		5102	2591	56
Tourism	6366	833	2801		56119	13378	10
Construction	25035	2382	27708	1073	239046	7140	11
Light engineering	20511	2005	12282	601	96646	8242	21
Total TVET trained	54,710	6,744	43,055	1,674	396,914	31,352	14

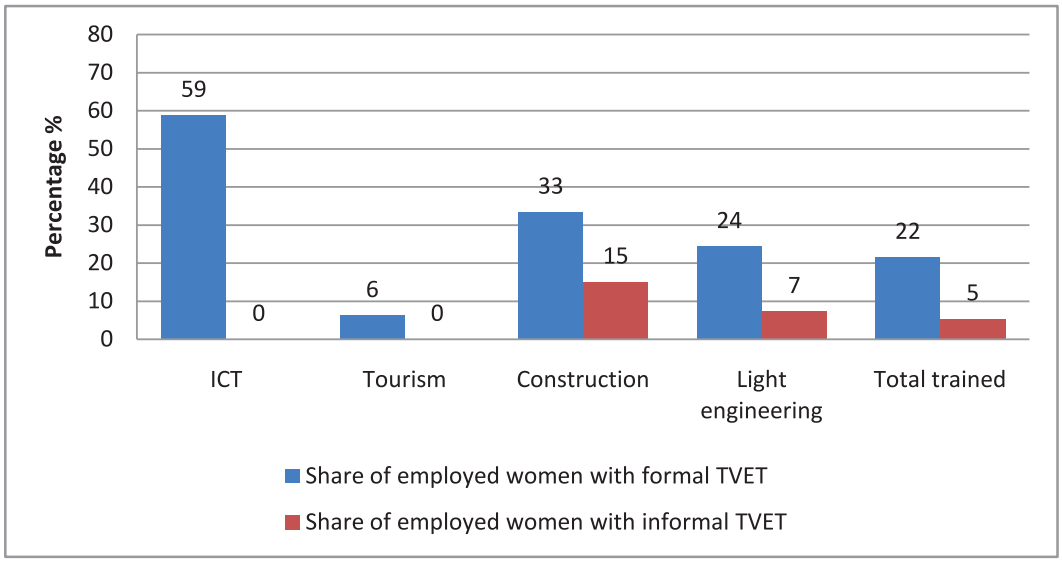
Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2004. Sample weights used.
Note: Data for 2004 excludes Mullaitivu and Killinochchi districts in Northern Province. Information about TVET training for LFS 2012 is only available for unemployed individuals, not for the labour force as a whole.

Figure 2.8: Distribution of technically trained employed persons in the four key industrial sectors by training sector and gender, 2012

Men

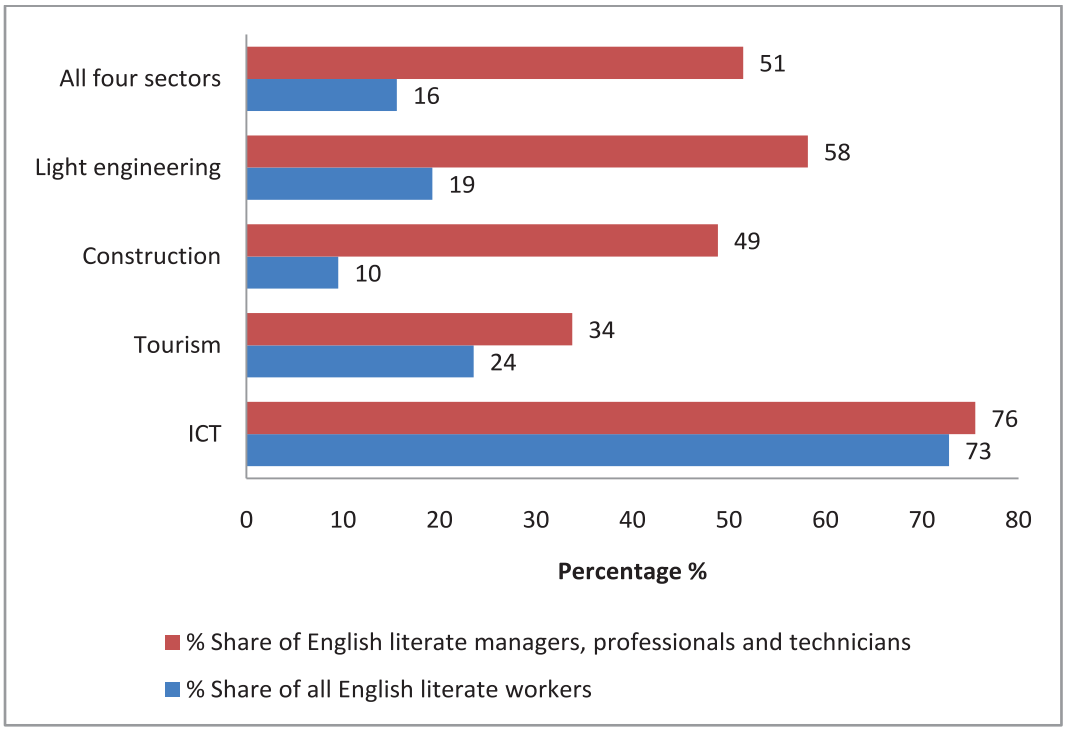


Women



Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2004. Sample weights used.
Note: Data for 2004 excludes Mullaitivu and Killinochchi districts in Northern Province.

Figure 2.9: Share of workers literate in English in the four key industrial sectors, 2012



Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

Table 2.5: Share of English literate workers by occupation in four key industrial sectors, 2012 (%)

Occupation	ICT	Tourism	Construction	Light engineering	All four sectors (row %)
Managers	100	26	51	53	43
Professionals	81	68	63	67	72
Technicians	56	37	43	61	48
Clerks	76	66	63	51	64
Service workers	100	19	16	27	20
Agricultural workers	0	0	0	0	0
Production workers	44	16	7	12	9
Elementary occupations		8	4	6	5
All English literate workers in sector (column %)	73	24	10	19	16
Total number of workers literate in English in sector	19,817	31,200	53,103	40,229	144,350
Total number of workers in sector	27,222	132,510	557,180	208,673	925,585

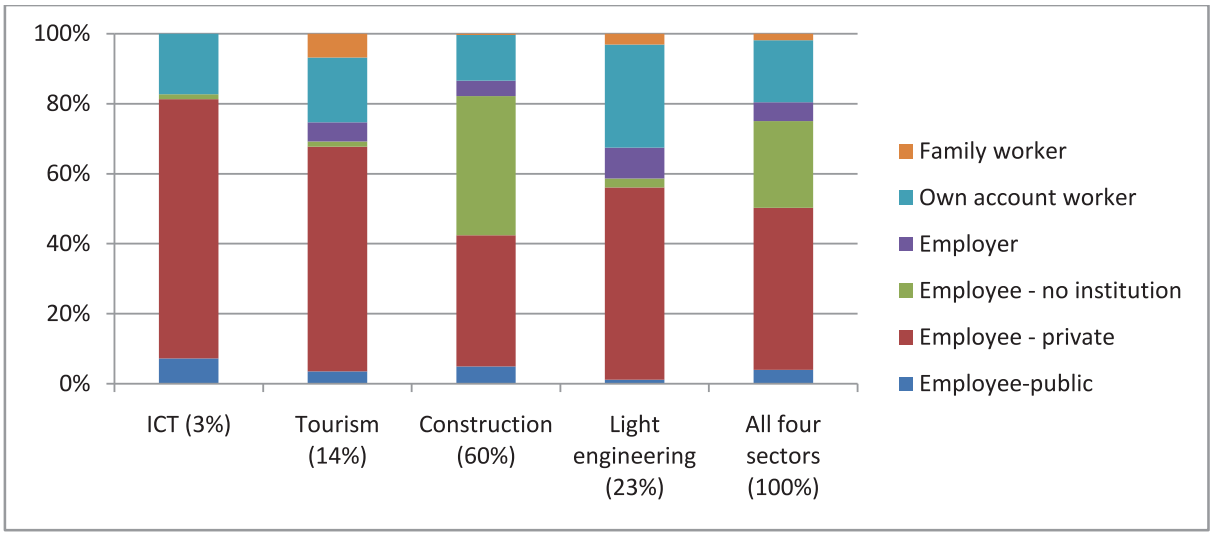
Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

Organizational structure and nature of employment

In this section we look at the organizational structure of each of the industries, and the nature of employment in them. This information is likely to help design and target skills development programmes and thereby increase their outreach and success.

The data reveals that roughly half the number of workers employed in the key industries either works on their own, or as employees without any institution. This is especially true of construction. This evidence of informality is likely to pose challenges to policy makers seeking to enhance skills among this group of workers because finding and reaching them is likely to be difficult as they are likely to be unorganized and atomic in their operations. Moreover, such workers are very unlikely to be able to contribute to their own training. Figure 2.10 sets out the composition of the workforce in each industry in terms of job status and sector. This figure is based on the employment figures presented in Table 2.6. It can be seen that employees make up the bulk of employment in all four sectors, but within this category, the major share is employed in privately owned institutions, particularly in ICT (74 per cent) and tourism (64 per cent). Public employees account for a relatively minor share, taking up no more than 7 per cent of total employment in the sector with the largest share of public employees, ICT. Employees who do not belong to any institution make up the major share in construction (40 per cent), and the share of self-employed or own-account workers account is largest in light engineering, 29 per cent. Employers account for only 5 per cent of total employment in the four sectors, and their relative share is highest in the light engineering sector.

Figure 2.10: Job status and sector in the four key industrial sectors, 2012



Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.
Note: Numbers in parantheses denote the share of total employment in the four sector that each sector accounts for.

Table 2.6: Job status and sector in the four key industrial sectors, 2012

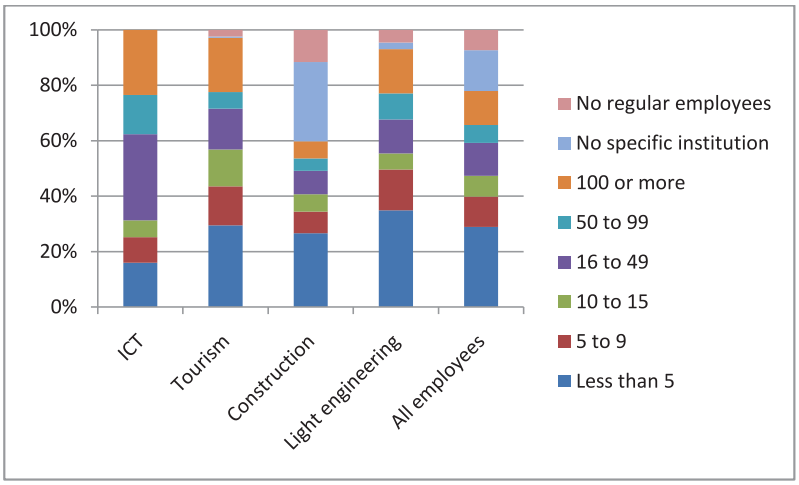
Job status	ICT	Tourism	Construction	Light engineering	All four sectors
Employee-public	1977	4721	27581	2426	36705
Employee - private	20159	85060	208807	114516	428543
Employee - no institution	378	1908	221688	5497	229470
Employer	0	7312	24272	18308	49891
Own account worker	4708	24568	72848	61477	163601
Family worker	0	8942	1984	6449	17374
Total	27,222	132,510	557,180	208,673	925,585

Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

The size of institution, defined by total workforce, to which employees belong, also have implications for the design and outreach of skills development programmes. Small establishments are unlikely to be able to devote sufficient resources for any training other than OJT, whereas large firms are more likely to be able to do so. Therefore, skills development programmes will need to be designed accordingly. Challenges related to availability of resources for training and targeting, can be deduced from the data presented in Figure 2.11, which shows that half the number of employees in the four key sectors is employed in small and medium establishments, and about a third in micro enterprises. The ICT sector has the largest proportion of employees in medium enterprises (16-49 per cent). It also has the largest share of employees in large establishments of more than 100 workers (23 per cent), followed by the tourism sector (20 per cent). In light engineering, 35 per cent of employees are in firms employing less than 5 persons, in tourism 29 per cent, and in construction, 27 per cent. Note that in construction, 29 per cent of employees do not belong to any specific institution, while 27 per cent is employed in establishments with less than 5 employees. Together, these two shares account for slightly more than half the number of employees in the sector, and a quarter of the number of employees in all four sectors (Table 2.7).

The employment situation of the overwhelming majority of employees in the four sectors is also precarious and insecure. Figure 2.12 shows that only 22 per cent of employees are permanent, that 35 per cent are temporary, and 33 per cent have not permanent employers. The share of employees with permanent tenure is highest in ICT at 79 per cent, and lowest in construction, at 11 per cent. Nearly half the number of workers in construction has no permanent employer (Table 2.8).

Figure 2.11: Distribution of employees by firm size, in the four key industrial sectors, 2012



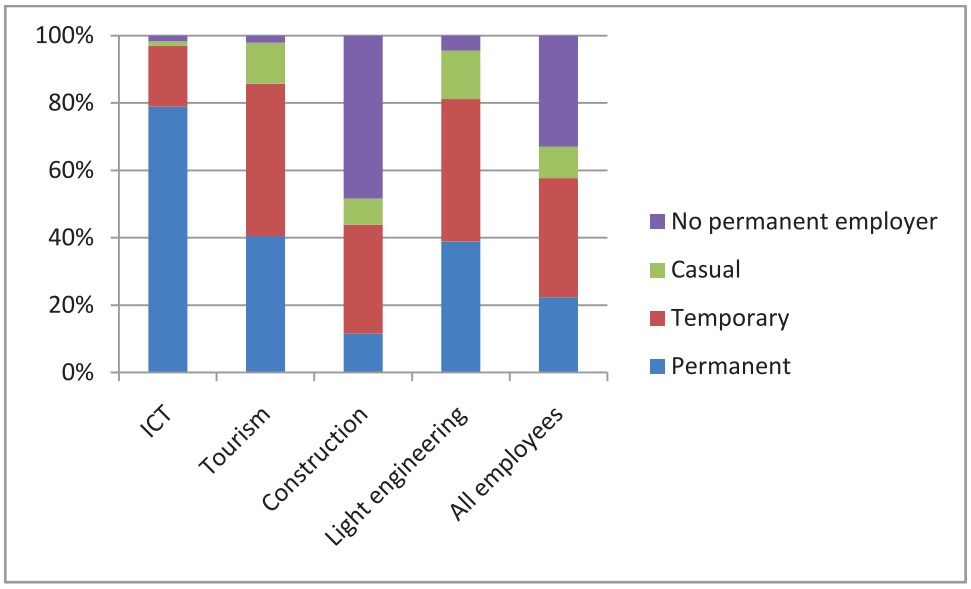
Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

Table 2.7: Employees by firm size in the four key industrial sectors, 2012

	ICT	Hospitality	Construction	Light engineering	All employees
Less than 5	3221	25031	55537	39938	123726
5 to 9	1863	11976	16281	16866	46986
10 to 15	1216	11311	13137	6644	32309
16 to 49	6278	12578	17662	14057	50574
50 to 99	2857	5095	9277	10767	27995
100 or more	4725	16682	12868	18293	52568
No specific institution	0	379	59816	2735	62930
No regular employees	0	2008	24230	5216	31454
Total	20,159	85,060	208,807	114,516	428,543

Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

Figure 2.12: Tenure status of employees in the four key industrial sectors, 2012



Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

Table 2.8: Tenure status of employees in the four key industrial sectors, 2012

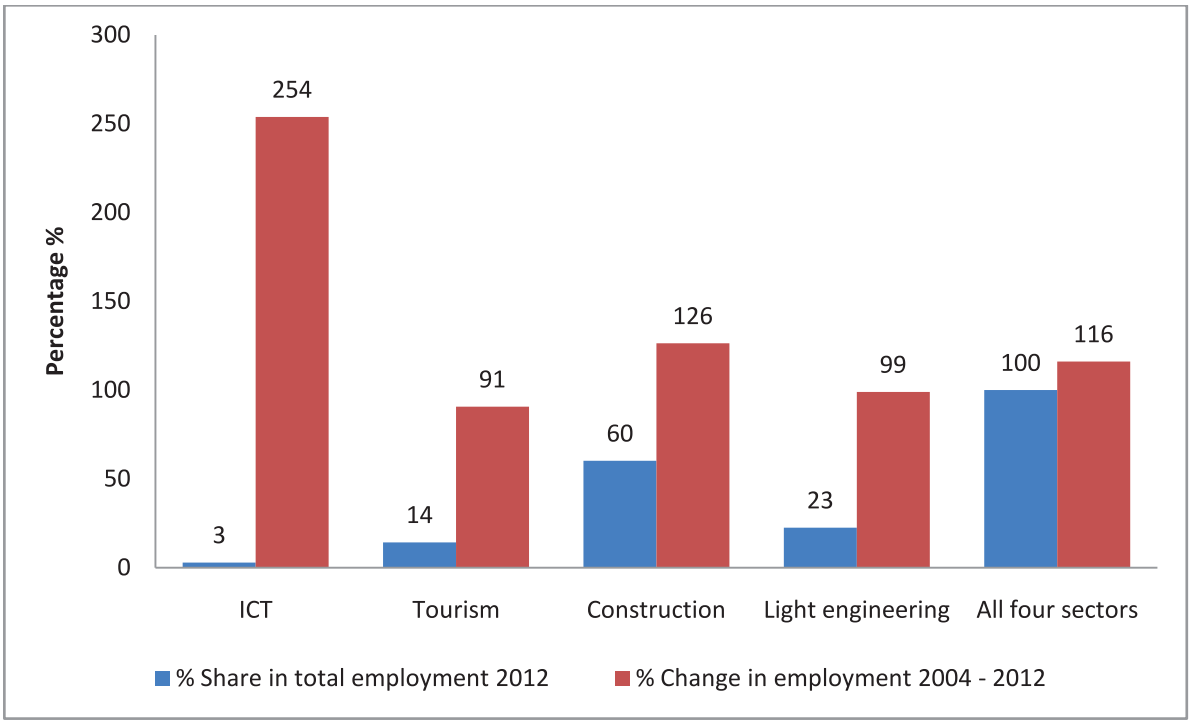
	ICT	Hospitality	Construction	Light engineering	All employees
Permanent	17753	37121	52529	47546	154949
Temporary	4067	41534	148707	51878	246186
Casual	316	11126	35153	17518	64113
No permanent employer	378	1908	221688	5497	229470
Total	22514	91689	458076	122439	694718

Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2012. Sample weights used.

Employment change in the four key sectors, 2004-2012

While employment in the four sectors grew by 116 per cent during the period 2004 to 2012, three fifths of this expansion derives from the growth of construction (Figure 2.13 and Table 2.9). Accounting for 60 per cent of total employment in the four sectors in 2012, employment in the sector grew by 126 per cent during the reference period. However, women accounted for only 2 per cent of this expansion. The expansion in construction and tourism in particular, is likely to have been driven by positive changes in the investment climate which followed the end of the war in 2009.

Figure 2.13: Change in employment in four key industrial sectors, 2004-2012



Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2004 and 2012.Sample weights used.

Note: Data for 2004 excludes Mullaitivu and Killinochchi districts in Northern Province.

Table 2.9: Employment growth in the four key sectors by gender, 2004-2012

Gender	Industry	Total employment in 2012	Change in employment 2004 - 2012	% Share of total employment in the four sectors	% Change in employment 2004 - 2012
Men	ICT	18580	13478	2.01	264
	Tourism	97396	41277	10.52	74
	Construction	543038	303992	58.67	127
	Light engineering	192258	95612	20.77	99
Women	ICT	8642	6051	0.93	234
	Tourism	35114	21736	3.79	162
	Construction	14142	7001	1.53	98
	Light engineering	16414	8172	1.77	99
Men and women	All four sectors	925,585	497,319	100.00	116

Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2004 and 2012.Sample weights used.

Note: Data for 2004 excludes Mullaitivu and Killinochchi districts in Northern Province.

Employment in tourism expanded by 91 per cent during this period, and women's employment in the sector grew faster at 162 per cent, compared with the rate of men's employment growth in the sector which was 74 per cent. In terms of absolute numbers, however, women accounted for a little less than a third of total employment expansion in the sector. The fastest rate of employment growth, however, occurred in the ICT sector, with twice as many men finding new opportunities in the sector as women. Although jobs for men and women grew at the same rate in light engineering, women accounted for only 8 per cent of new jobs in the sector.

Table 2.10: Employment growth in the four key sectors by residential sector, 2004-2012

Industry	Sector	Total employment in 2012	Change in total employment 2004-2012	% Share of total employment in the four sectors,2012	% Change in total employment 2004 - 2012
ICT (3%)	Urban	12280	10042	1.33	449
	Rural	14588	9132	1.58	167
	Estates	354	354	0.04	
Tourism (14%)	Urban	34720	22661	3.75	188
	Rural	94853	44317	10.25	88
	Estates	2937	-3964	0.32	-57
Construction (60%)	Urban	83920	51832	9.07	162
	Rural	459608	254695	49.66	124
	Estates	13652	4466	1.47	49
Light Engineering (23%)	Urban	53710	34521	5.80	180
	Rural	153147	69331	16.55	83
	Estates	1816	-69	0.20	-4
All four industries (100%)		925,585	497,319	100.00	116

Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2004 and 2012.Sample weights used.

Note: Data for 2004 excludes Mullaitivu and Killinochchi districts in Northern Province. Numbers in parentheses in first column denote share of total employment in the four sectors.

It can be seen from Table 2.10 that much of urban employment in all four sectors grew the fastest, even though the rural sector, being where most Sri Lankans live, accounted for the largest expansion in terms of absolute numbers in all industrial sectors other than in ICT. This is especially true of construction, partly driven by post-war reconstruction and other infrastructure projects by the public sector. Expansion of jobs in ICT has been highest in urban areas with the rural sector in close pursuit. But whether urban or rural, Western Province has dominated employment growth in all four sectors (Table 2.11). For example, the construction sector in Western Province has accounted for the biggest share of employment growth in the four sectors across the county. While the province has the largest share of the total population of the country, to begin with, the availability of infrastructure, proximity to export and domestic markets have clearly enabled agglomeration forces to concentrate economic activities and employment in this region.

Given the focus of the present analysis on skills, we turn next to the growth of jobs in the four sectors between 2004 and 2012 in terms of the usual proxies for skills, educational attainment and occupation. Table 2.12 shows that most of the jobs created in the four sectors during the reference period were for secondary educated workers and to a lesser extent those with O'Level qualifications. This was because construction workers accounted for the largest share of employment in the four sectors, and secondary educated workers in construction accounted for nearly 40 per cent of total employment in all four sectors in 2012, denoting a 134 per cent increase in employment levels of this category of workers in the sector during the reference period. Secondary educated workers also predominated in the light engineering sector and jobs for such workers grew by nearly 100 per cent over the period. Although jobs for GCE O/L qualified workers grew fastest in ICT, O' Level qualified workers accounted for only a very small proportion of total employment in the four sectors in 2012. But O'Level qualified workers in construction and light engineering made up roughly 13 per cent of the total workers in the four sectors. Employment of university graduates accounted for the smallest share of employment in the four sectors in 2012, particularly in light engineering and tourism, but job opportunities for this category of workers grew fastest in the ICT sector, closely followed by jobs for graduates in the tourism sector.

In Table 2.13 we set out growth in employment by occupation in the four key sectors during the period 2004 to 2012. What workers in each occupation in each sector accounted for, in total employment in the four sectors, is also set out. Again what is apparent is the predominance of lower skilled workers in all four sectors. High growth rates among these categories of workers, in addition to their large base, has made sure that their dominance in the employment structure has continued, notwithstanding the exceptionally high rates of job creation in the higher skilled occupation categories in the ICT sector, which, however, remains miniscule in terms of its contribution to total employment in the four sectors. Employment figures by four-digit occupation categories for 2004 and 2012 for each of the key industrial sectors are available in four extensive tables in the Appendix.

Table 2.11: Employment growth in the four key sectors by province, 2004-2012

Industry	Province	Total employment in 2012	Change in total employment 2004-2012	% Share of total employment in the four sectors, 2012	% Change in total employment 2004 - 2012
ICT (3%)	Western	18269	13295	1.97	267
	Central	3480	3034	0.38	680
	Southern	1026	585	0.11	133
	Northern	1151	872	0.12	312
	Eastern	1675	1556	0.18	1307
	North Western	316	47	0.03	18
	North Central	0	-53	0.00	-100
	Uva	0	-368	0.00	-100
	Sabaragamuwa	1304	562	0.14	76
Tourism (14%)	Western	54967	32695	5.94	147
	Central	16660	6692	1.80	67
	Southern	16646	4519	1.80	37
	Northern	1572	555	0.17	55
	Eastern	4541	1730	0.49	62
	North Western	13996	6733	1.51	93
	North Central	2106	1612	0.23	326
	Uva	9051	5839	0.98	182
	Sabaragamuwa	12972	2639	1.40	26
Construction (60%)	Western	166399	87130	17.98	110
	Central	61050	36106	6.60	145
	Southern	78724	39762	8.51	102
	Northern	34139	25669	3.69	303
	Eastern	36295	23251	3.92	178
	North Western	77170	40639	8.34	111
	North Central	24765	12664	2.68	105
	Uva	26147	15705	2.82	150
	Sabaragamuwa	52490	30067	5.67	134
Light engineering (23%)	Western	106351	50619	11.49	91
	Central	14954	6266	1.62	72
	Southern	18531	9662	2.00	109
	Northern	7647	3705	0.83	94
	Eastern	6494	3980	0.70	158
	North Western	28017	14098	3.03	101
	North Central	6864	3258	0.74	90
	Uva	5835	3272	0.63	128
	Sabaragamuwa	13980	8924	1.51	176
All four industries (100%)		925,585	497,319	100.00	116

Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2004 and 2012. Sample weights used.

Note: Data for 2004 excludes Mullaitivu and Killinochchi districts in Northern Province.

Table 2.12: Employment growth in the four key sectors by highest education level attained, 2004-2012

Industry	Highest level of education attained	Total employment in 2012	Change in total employment 2004-2012	% Share of total employment in the four sectors,2012	% Change in total employment 2004 - 2012
ICT (3 %)	Primary	0	0		
	Secondary	1887	632	0.20	50
	GCE O/L	8437	7399	0.91	712
	GCE A/L	9569	5625	1.03	143
	Degree and above	7329	5873	0.79	403
Tourism (14%)	Primary	15847	4732	1.71	43
	Secondary	63061	28216	6.81	81
	GCE O/L	35957	23213	3.88	182
	GCE A/L	15445	5119	1.67	50
	Degree and above	2201	1734	0.24	372
Construction (60%)	Primary	85097	41730	9.19	96
	Secondary	361616	207261	39.07	134
	GCE O/L	68520	35816	7.40	110
	GCE A/L	34670	21493	3.75	163
	Degree and above	7277	4693	0.79	182
Light engineering (23%)	Primary	13571	5663	1.47	72
	Secondary	121391	59006	13.12	95
	GCE O/L	47527	24889	5.13	110
	GCE A/L	24581	13700	2.66	126
	Degree and above	1602	526	0.17	49
All four sectors (100%)		925,584	497,319	100.00	116

Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2004 and 2012. Sample weights used.
Note: Data for 2004 excludes Mullaitivu and Killinochchi districts in Northern Province. Numbers in parentheses in first column denote share of total employment in the four sectors.

Table 2.13: Employment growth in the four key sectors by occupation, 2004-2012

Industry	Occupation	Total employment in 2012	Change in total employment 2004-2012	% Share of total employment in the four sectors, 2012	% Change in total employment 2004 - 2012
ICT (3%)	Managers	1948	1363	0.21	233
	Professionals	10008	6895	1.08	221
	Technicians	4995	4618	0.54	1227
	Clerks	7561	5355	0.82	243
	Service workers	119	119	0.01	
	Agricultural workers	0			
	Production workers	2591	1803	0.28	229
	Elementary occupations	0	-625		-100
Tourism (14%)	Managers	17891	4414	1.93	33
	Professionals	3399	2228	0.37	190
	Technicians	6365	3589	0.69	129
	Clerks	8564	2870	0.93	50
	Service workers	70303	41067	7.60	140
	Agricultural workers	407	175	0.04	75
	Production workers	7010	3326	0.76	90
	Elementary occupations	18572	6277	2.01	51
Construction (60%)	Managers	8769	2727	0.95	45
	Professionals	7278	2062	0.79	40
	Technicians	16496	8749	1.78	113
	Clerks	9182	5739	0.99	167
	Service workers	3883	3215	0.42	481
	Agricultural workers	0	-119	0.00	-100
	Production workers	377397	228531	40.77	154
	Elementary occupations	134176	60089	14.50	81
Light engineering (23%)	Managers	12160	1313	1.31	12
	Professionals	4423	3557	0.48	411
	Technicians	8081	4769	0.87	144
	Clerks	7993	4620	0.86	137
	Service workers	6917	4785	0.75	224
	Agricultural workers	345	345	0.04	
	Production workers	154498	77003	16.69	99
	Elementary occupations	14255	7451	1.54	110
All four industries (100%)		925,585	498,312	100.00	117

Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2004 and 2012. Sample weights used.
Note: Data for 2004 excludes Mullaitivu and Killinochchi districts in Northern Province. Figures for total numbers employed and total change in employment are marginally different from figures in previous tables because of missing values in some sample characteristics.

However, a caveat is in order. The list of occupations in the detailed tables in the Appendix is far more extensive for 2012 than for 2004. This could be due to three reasons. First, expansion in employment in each sector between the two years could have been driven by a diversification of activities, and hence occupational categories, as operations became more complex and technology-driven. Second, enumerators administering the survey in 2012 may have been more experienced than in 2004, and able to identify and classify occupations more precisely. Third, since this data is drawn from a household survey and not from a survey of industries it cannot be representative of the structure of employment in industries at such a detailed level of disaggregation. It is possible that all three of these factors may have resulted in the particular configuration of occupations we find in 2012, and we need to keep this in mind if we are to estimate rates of growth in employment of 4-digit level occupation categories using the information presented in the tables. Nevertheless, it is hoped that the detailed information provided will help policy makers to assess the supply of skills in the four sectors and design skills development strategies to meet demand for them in the future.

2.2 Sector profiles based on industry data

Due to limitations with the survey data described in preceding sections, this section draws on information produced by the industries themselves to both triangulate the findings based on survey data, as well as present other sector-specific details relevant for the present review.

ICT Sector

Data sourced from the LFS sample surveys show that the ICT workforce has grown exponentially in recent years. Industry sources record that much of this growth has taken place after the end of the conflict in 2009. Post-conflict developments in the domestic market and gradual recovery of the global economy are possible underlying factors. According to industry sources, the total workforce in ICT industry grew from 50,159 to 75,107 between 2010 and 2013, signifying a growth rate of 16.5 per annum. Note that this estimate is considerably larger than that derived from the analysis of LFS data and reported in preceding sections. The sector is expected to continue this growth momentum over the next ten years.

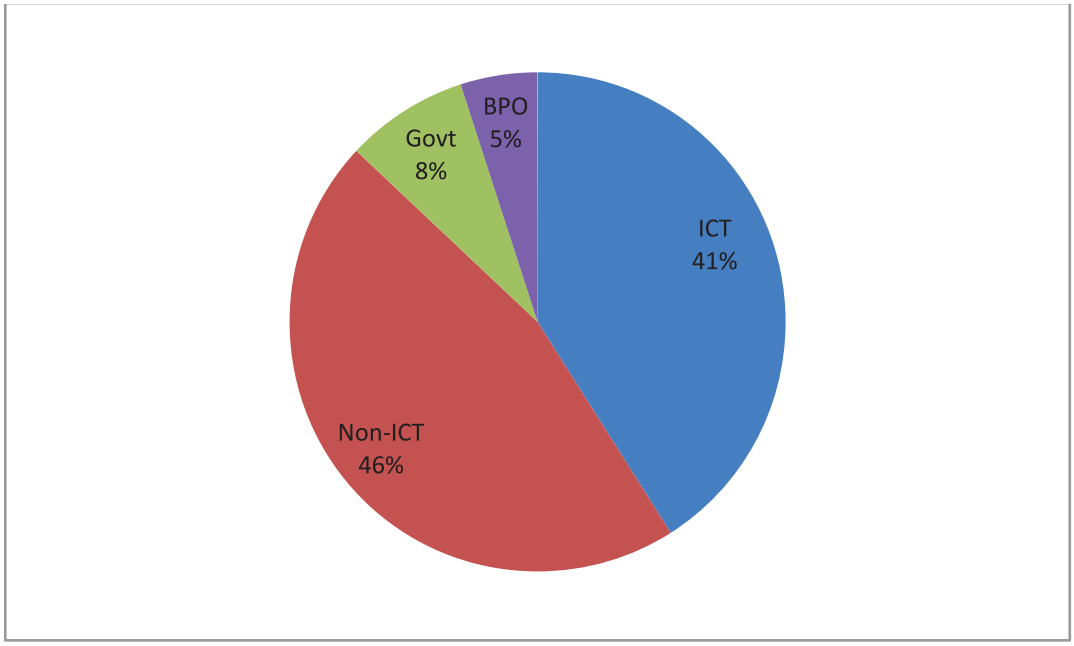
The ICT sector itself is made up of several sub-categories: ICT or the production of ICT related output as primary output, Non-ICT – that is, business entities which use ICT for supplying non-ICT goods and services to their customers or clients, the Government and the BPO sub sector. Table 2.14 sets out the structure of employment within the ICT sector for the years 2003, 2009 and 2014, and presents the growth rate in employment between 2009 and 2014, that is after the end of the conflict. Figure 2.14 shows the share of employment in ICT by each subsector. The non-ICT sector accounted for the largest share of employment (46 per cent) in 2014, with the ICT sector in close pursuit. The government and BPO sectors accounted for 8 per cent and 5 per cent respectively, together accounting for only 13 per cent of employment in the entire ICT sector. However, it can be seen that employment growth was fastest in the government sector, at 38 per cent per annum, driven, no doubt by the e-governance initiative which deploys ICT to transform the government's administrative processes and databases. The BPO sector has also grown rapidly, at 23 per cent per annum.

Table 2.14: Employment in ICT subsectors, 2003-2014

ICT Sub-category	2003	2009	2014	Share of employment in 2014 (%)	Growth p.a. % (2009-2014)
ICT	7625	17827	33918	41	18.05
Non-ICT	6449	20912	37921	46	16.27
Government	1512	2405	6990	8	38.13
BPO		1677	4024	5	27.99
Total	15586	42821	82853	100	18.70

Source: ICTA (2014).
Note: ICT = persons engaged in producing ICT related output as primary output; Non -ICT = business entities.

Figure 2.14: Structure of employment within the ICT sector, 2014

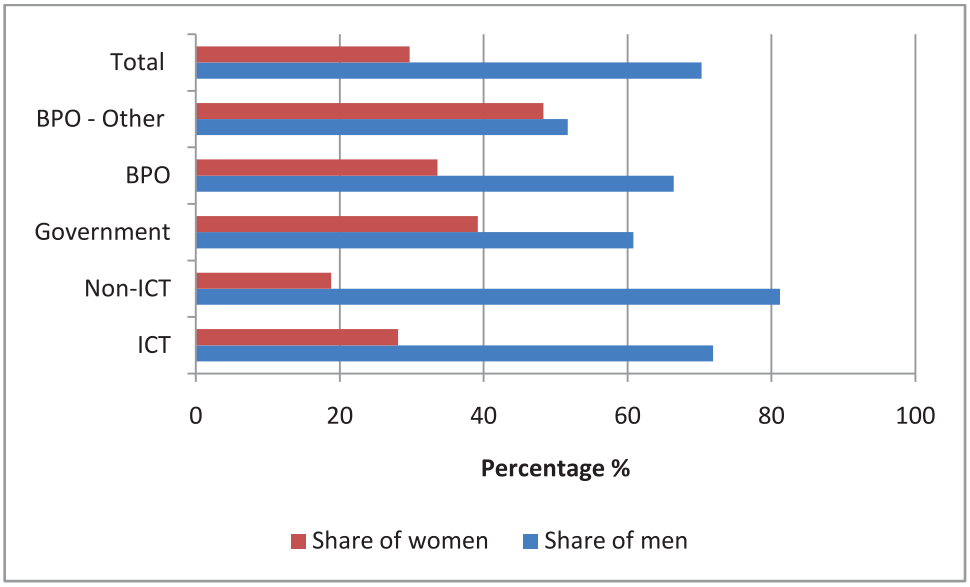


Source: ICTA (2014).
Note: ICT = persons engaged in producing ICT related output as primary output; Non -ICT = business entities.

Although the ICT industry is heavily concentrated in urban areas and in Western Province, the industry has the potential to disperse regionally and spearhead more balanced regional economic growth. This is because neither its input nor output markets are dependent on physical location. Access to electricity, telecommunication networks and the supply of appropriately skilled workers is all that is required. Perhaps recognizing this, several policy initiatives of the government have sought the regional dispersion of the industry, for example, the establishment of ICT parks in peripheral locations, including Hambantota. Some of the BPO service providers are also located in predominantly agricultural districts such as Anuradhapura, located at a considerable distance from the metropolitan hub of Colombo. As for the large non-ICT sector, they too are dispersed island-wide, depending on the location of their parent business.

The ICT sector also has the potential to provide more opportunities for women and so reduce gender gaps in employment. Figure 2.15 shows the relative shares of women and men in each subsector. Industry-based data shows that the female workforce in ICT has grown by a third from 21 per cent in 2012 to 30 per cent between in 2013 and in relative terms, government and BPO sub-sectors have contributed significantly towards improving the gender balance in the industry. However, many such ICT-related sub-sectors, including call centres, require employees to work night shifts, and since Sri Lanka's Shop and Office Employees' Act contains restrictions on the employment of women at night, Sri Lankan women are often unable to avail themselves of job opportunities in the sector. Lack of secure transport to and from work at night is another constraining factor.

Figure 2.15: Gender composition of the ICT workforce based on industry data, 2014



Source: ICTA (2014).

Note: ICT = persons engaged in producing ICT related output as primary output; Non -ICT = business entities.

Tourism

In terms of its contribution to GDP, the sector accounted for Rs 25.7 Mn in 2002 prices or 0.78 per cent of total GDP in 2013. It has emerged as the fastest growing sector with an average annual economic growth rate of 25 to 30 per cent over the last three years. Since the hotel and tourism sector like most service sub-sector engages in labour-intensive activities, a doubling or tripling of tourist numbers will generate commensurate growth in employment. The resulting employment growth can be expected to take place both directly in the hotels sector, as well as in sectors such as tours and travels, hospitality, food and beverages and entertainment.

Estimations based on data from the LFS of 2012 reported in earlier sections of this paper showed that the sector employed 132,510 individuals in 2012, accounting for a little less than 2 per cent of total employment in the country. However, as noted earlier, these estimations do not include many other jobs that derive from the sector. LFS data also may include employment related to the domestic tourism and restaurant sector. In contrast, data from the Sri Lanka Tourism Development Authority (SLTDA), reported below in Table 2.15, appears to underestimate the total number employed in the industry, setting total employment in the sector at 67,862. This data may not include those sections of the tourism and hotels sector which caters to domestic tourists. Nevertheless,

the SLTDA data is useful in setting out the relative importance of sub-categories in this sector, particularly those catering to tourists from overseas.

Accordingly, hotels and restaurant account for nearly two thirds of establishments in the sector and 70 of total employment. Next most important, both in terms of establishment size and employment, is the Travel Agents and Tour Operators, which account for 27 per cent of the total number of establishments but only 9 per cent of total employment.

Table 2.15: Structure of the tourism industry 2012

Sub-categories	No. of establishments	Share of total number of establishments%	Employment	Share of total employment %
Hotels and Restaurants	1306	65.6	47761	70.4
Travel Agents and Tour Operators	533	26.8	6409	9.4
Airlines	29	1.5	5630	8.3
Agencies Providing Recreational Facilities	48	2.4	552	0.8
Tourist shops	52	2.6	1012	1.5
Guides		0.0	3896	5.7
National Tourist Organizations	4	0.2	410	0.6
State Sector	18	0.9	2192	3.2
Total	1990	100.0	67862	100.0

Source: SLTDA (2013)

Construction

The construction sector has recorded one of the highest growth rates relative to other sub-sectors of the economy, particularly in the post-war period.

The construction sector itself is comprised of seven major sub-sectors: building, highway, bridge, water supply and drainage dredging and reclamation and other construction. According to data sourced from the Department of Census and Statistics' Annual Survey of Construction Industries, the sector employed a total of 67,371 individuals (Table 2.16). This is considerably lower than the figure obtained from the Department of Census and Statistics' Annual Labour Force Survey for 2010. The household-based survey estimated a figure of around 500,000 (Department of Census and Statistics 2011). Nevertheless, the data from the Annual Survey of Construction Industries gives some idea about the relative shares in value added and employment of the seven sub-sectors of the construction sector. This information cannot be obtained from the LFS surveys. The data on subsectors, presented in Table 2.16, shows that of these seven sub sectors, building and highways are the largest, both in terms of value addition and employment. For example, in 2010, the most recent year for which sub-sectoral data is available, building accounted for nearly 60 per cent of total value addition by the sector and 65 per cent of total employment in the sector. The highways sector came second, accounting for 20 per cent of total value added and 21 per cent of total employment. This sector is almost exclusive to government. Thus, these two sub-sectors together accounted 79 per cent of value added in construction industry, and 86 per cent of total employment in construction. In fact, the high growth performance of the construction sector also derives from large public sector investments in transport and regional infrastructure development projects such as *Gama Naguma* and *Maga Naguma*. The dominance of the public sector within the construction industry is apparent in that the state sector accounted for about 74 per cent of value of work done in 2010, as against 59 per cent in 2004 (DCS 2005 and 2011).

Table 2.16: Structure of the construction industry, 2010

Construction sub-sectors	Value Added Rs.Mn	Share of total value added (%)	Employment	Share of total employment (%)
Buildings	18191	59	43904	65
Highways	6261	20	14061	21
Bridge	1377	5	2730	4
Water Supply & Drainage	3510	12	3043	4
Irrigation and Land Drainage	355	1	2260	3
Dredging & Reclamation	17	_	153	_
Other	1050	3	1220	2
Total	30182	100	67371	100

Source: DCS (2010), Annual Survey of Construction Industries.
Note: Total employment in the construction sector according to the LFS data is at least 3.5 times higher than this as noted in preceding sections.

Building construction is the main contributor to the high growth performance of the construction sector. The building sub-sector is driven mainly by heavy investments by the private sector, particularly in the hotel and housing sub-sectors. Within building construction, other building (27 per cent), office building (25 per cent), factories (16 per cent) and housing units (10 per cent) account for 78 per cent of total employment in building subsector. Within highways, rehabilitation, new work and repair and maintenance sectors account for 43, 35 and 22 per cent of total employment, respectively.

If the size distribution of establishments in the sector were defined in terms of the value of work done, then medium scale establishments would be those accounting for between 1 and 50 million rupees of value of work done, and the medium scale would include firms accounting for more than 50 million rupees of value of work done. Accordingly, medium scale establishments employed 66 per cent, or two thirds of total employment in construction, based on data from the Annual Survey of Construction Industries. Large scale firms, on the other hand, accounted for 26 per cent of total employment. However, as highlighted in estimates based on LFS data presented in chapter 2 of this paper, unskilled workers dominate the industry, accounting for 56 per cent of total employed. In contrast, 37 per cent of total employment belongs to skilled employee categories, while professional and technical categories account for 2.6 and 4.1per cent of total employment, respectively.

Light engineering services

The engineering services sub-sector is defined to include seven subsectors in manufacturing e.g. manufacture of basic metals; metal products; machinery and equipment (n.e.c); radio, TV and communication equipment & apparatus; medical, precision and optical instruments and semi-trailers; other transport equipment; and other manufacturing. There are about 2000 firms engaged in the manufacture of engineering products, processed components, household equipment, simple structures using metal and repair of equipment and machinery (Table 2.17).

Of the seven sub-sectors, manufacture of other manufacturing (n.e.c) (43 per cent) accounts for the highest share of employment while manufacture of fabricated metal products and basic iron and steel and casting metals n.e.c sub-sectors share 25 and 12 per cent of total employment. In terms of value added, other manufacturing (45 per cent), basic steel and casting metals (18 per cent) and fabricated metal products (15 per cent) sub-sectors shared 78 per cent of total value added.

An analysis of engineering services sub-sector reveals heavy concentration of engineering service establishments in Western (68 per cent), Central (14 per cent) and North-Western (9 per cent) provinces. Another important characteristic of this industry sector is dominance of small scale establishments (with less than 50 employees) with a relative share of 91 per cent of engineering establishments. This industry is highly labour-intensive and employs simple technologies.

Table 2.17: Structure of the engineering services sector, 2011

3-digit code	Sub-categories	Employment numbers		Value added, Rs.Million	
		2011	2004	2011	2004
271	Manufacture Of basic iron & steel	1319	4609.0	2560	3487
273	Casting metals	2375	1776.0	3209	12332
281	Manufacture Of structural metal products	2423	1431.0	2306	633
289	Manufacture Of fabricated metal products	2660	3151.0	1512	1339
291	Manufacture of general purpose machinery	475	1676.0	822	742
292	Manufacture of special purpose machinery	432	591.0	177	231
293	Manufacture of domestic appliance n.e.c	710	269.0	1495	52
300	Manufacture of office, computing & accounting machinery	1872	4531.0	1134	1838
311	Manufacture of electronic motors, generators &transformers	1837	2975.0	3677	985
312	Manufacture of electricity distribution & control apparatus	2097	1738.0	2403	1007
313	Manufacture of insulated wire cables	1027	604.0	1845	270
314	Manufacture of accumulators, primary cells, & primary batteries	251	459.0	715	631
315	Manufacture of electric lamps, and lightening equipment	183	1438.0	59	526
321	Manufacture of electronic valves, tubes & other	1306	172.0	1941	39
341	Manufacture of motor vehicles	403	434.0	601	122
342	Manufacture of bodies, for motor vehicles, Manufacture of trailers & semi-trailers	411	1711.0	109	139
351	Building & repairing of ships and boats	3902	757.0	6810	277
359	Manufacture of transport equipment n.e.c	1245	1058.0	930	430
	Total	36183	53225	41346	33970

Source: DCS, 2012

The relative magnitude of the engineering services sub-sector is apparent from the following figures. First, it accounted for 5 per cent of total value added in the manufacturing sector. Second, it accounted for 5.6 per cent of employment, and accounted for 4 per cent of gross additions to fixed assets.[2] The employment structure by type of skills reveals that unskilled and skilled employees account for 22.6 and 55.6 per cent of total employees.

2 Based on 2011 data

2.3 Employment growth potential of the four sectors

The employment potential of an economy or specific sector is a function of several factors including its growth potential, skill development policy, institutional support systems, private sector participation, investment policy, rate of factor substitution, incentive structures such as salaries and wages, export orientation and attractiveness to foreign direct investment at national and sectoral level. As noted earlier on in this chapter, the four sectors reviewed in the present study have very high employment intensities and future development strategies of the government can help ensure the continuity of high growth performance of the four sectors. The employment potential of the two manufacturing sectors- construction and light engineering- depends on both product and factor market conditions in the domestic market particularly with respect to private sector participation in investment, factor substitution, and institutional support for skills development. However, the growth of construction sector over the past 3 years has been mainly due to heavy public sector investments and this may continue to dominate growth over the next few years due to projected investments in infrastructure development by the government. Many of these investments are to be funded by the government or the donor community.[3] The employment growth potential of the two sub-sectors belonging to the service sector (ICT and tourism) is a function of demand for foreign markets. Similarly, employment growth potential of tourism would depend on demand from foreign markets.

The paucity of sector specific information related to the factors found in the international theoretical and empirical literature to drive growth in these industries preclude a rigorous assessment of the growth potential of employment in the four sectors. The paucity of sector-specific information about the demand from foreign markets alone is evident from Table 2.18, Table 2.19 and Table 2.20.

Table 2.18: Employment potential in foreign markets - construction

Job Category	2 year average of the number of vacancies
Electrician - General	550
Mason - General	560
Fitter - Plumber / Pipe	350
Welder - General	320
Carpenter -Joiner	13
Fixer - Steel	250
Painter - General	150
Mason - Tile Fixer	85
Painter - Spray	25
Carpenter -Furniture	50
Bar bender	55

Source: TVEC (2014)

3 For details see NPD (2014) pp.382-386

Table 2.19: Employment potential in foreign markets – engineering services

Job Category	2 year average of the number of vacancies
Mechanic - General	280
Electrician - Auto	70
Fabricator	60
Fitter - General	50

Source: TVEC (2014)

Table 2.20: Employment potential in foreign markets – tourism industry

Job Category	2 year average of the number of vacancies
Waiter - General	500
Cook - General	280
Steward - Hotel	90
Chef	120
Baker	65
House Keeper	210
Room Boy	80
Laundryman	55
Waitress	15
Ironer	5

Source: TVEC (2014)

Subject to the above limitations, we propose to estimate employment potential of the four sectors by occupation category. However, the estimates are rather crude due to lack of information on conditioning factors and the problems associated with the quantification of some of the key determinants. A tentative estimate prepared for the next four years is given below in Table 2.21and it can be further improved with some additional data.

Table 2.21: Employment potential of the four sectors (2015-2018)

Sector	2014	2015	2016	2017	2018
ICT	83451	92888	103600	115803	115803
Tourism	83408	83408	93018	93018	104100
Construction[1]	89331	89331	89331	89331	89331
Engineering Services[2]	43578	46086	48811	51772	54992

Note:
[1] Construction: Includes only construction industry survey data. LFS based data gives more accurate estimates.
[2] Engineering Services: Includes only manufacturing sector based sub-sectors

3

TRAINING NEEDS IN THE FOUR SECTORS

3.1 Introduction

This chapter reviews the available data and planning documents on the demand for skills in the four sectors in order to assess sector-specific training needs. The main sources of information for this exercise are the Vocational Education and Training (VET) Plans that have already been developed for the four sectors. While several government policy documents also refer to the problem of skills shortages and the inadequacy of training facilities (for example, see NPD, 2014; p.197), the key policy document is the Skills Sector Development Programme (SSDP). Meanwhile, the Labour Market Information (LMI) unit of the TVEC monitors newspaper advertisements of job vacancies, and its bulletins are a useful source of data related to labour demand. Therefore we draw on all these documents to assess training needs in the four sectors.

However, some caveats are in order. First, the occupation-related definitions of skills that TVET training providers use in their planning documents are different from the ISCOs used to code occupations for labour force data which we used in the analysis in Chapter 2. It is very difficult to reconcile the two systems of classification. Therefore, in what follows, we use the definitions used by the VET sector in their assessments of occupations and training needs in the four sectors. Secondly, many of these documents and plans, even for each sector, have been developed independently of each other. Therefore, different documents produce different estimates of training needs even in the one sector. Finally, the different policy documents pertaining to the different sectors are of variable quality. By far the best developed is the ICT sector's VET plan with which we begin the review of individual sectors below.

We begin this chapter with an assessment of the magnitude of the training needs problem. We use two sources of data for this assessment. First, we look at the regional supply of labour, by analysing the distribution of Sri Lanka's population among the 25 districts. We also assess labour migration rates, identifying the districts receiving the largest inflows of internal migrants and their reasons for migration. Secondly, using data related to the educational attainment and technical training received by school leavers who enter the labour market each year, we assess the training needs of new labour market entrants. We then narrow the focus of the investigation to the training needs of the four key sectors under review, first by drawing from the sector-specific VET Plans, and secondly, from LMI data compiled by the TVEC. Section 3.5 evaluates the information presented in terms of an appropriate conceptual framework. Section 3.6 summarizes and concludes this chapter.

3.1 District-level demographics

Table 3.1 shows the district-wise disaggregation of Sri Lanka's population based on data from the Population Census of 2012. Colombo district continues to be the most populous district of the

country with a population of 2,323,826 or 11.4 per cent of the total population. The neighbouring district of Gampaha accounts for slightly less 11.3 per cent of population. Some of the population density of Gampaha district could be attributed to worker in-migration to the export processing zones in Katunayake and Biyagama located in the Gampaha district, and the development of Gampaha as a residential area close to Colombo.

Table 3.1: District level demographics and labour mobility

District	% Share of total population 2012	Average annual growth rate (%)			Migration By District %	Migration by purpose - Employment %
		1981-2001	1981-2012	2001-2012		
Sri Lanka	100	1.16	1.00	0.71	100.0	20.2
Colombo	11.4	1.43	1.05	0.35	15.6	43.6
Gampaha	11.3	2.01	1.67	1.02	16.0	30.8
Kalutara	6.0	1.26	1.25	1.23	5.9	13.8
Kandy	6.7	1.04	0.91	0.65	5.5	14.4
Matale	2.4	1.07	1.01	0.88	2.5	13.3
Nuwara Eliya	3.5	0.91	0.61	0.05	2.2	14.7
Galle	5.2	1.01	0.88	0.63	3.0	16.3
Matara	4.0	0.83	0.75	0.59	2.3	9.7
Hambantota	2.9	1.09	1.12	1.17	2.4	12.7
Jaffna	2.9	n.a	-0.74	n.a	2.8	4.0
Mannar	0.5	n.a	-0.20	n.a	1.0	7.0
Vavuniya	0.8	n.a	1.97	n.a	2.2	9.2
Mullaitivu	0.4	n.a	0.71	n.a	2.1	3.8
Killinochchi	0.5	n.a	0.70	n.a	2.8	2.0
Batticaloa	2.6	n.a	1.50	n.a	0.7	27.2
Ampara	3.2	2.14	1.68	0.81	2.4	12.3
Trincomalee	1.8	_	1.31	_	1.9	14.5
Kurunegala	7.9	0.96	0.95	0.93	5.8	12.9
Puttalam	3.7	1.86	1.45	0.66	3.8	14.2
Anuradhapura	4.2	1.25	1.28	1.33	4.2	12.4
Polonnaruwa	1.0	1.71	1.50	1.11	3.1	8.8
Badulla	4.0	1.11	0.86	0.39	2.8	15.2
Monaragala	2.2	1.89	1.64	1.15	2.6	18.8
Ratnapura	5.3	1.30	1.06	0.59	3.3	18.4
Kegalle	4.1	0.71	0.68	0.61	3.0	10.2

Source: Department of Census and Statistics (2014a), based on 2012 Population Census.

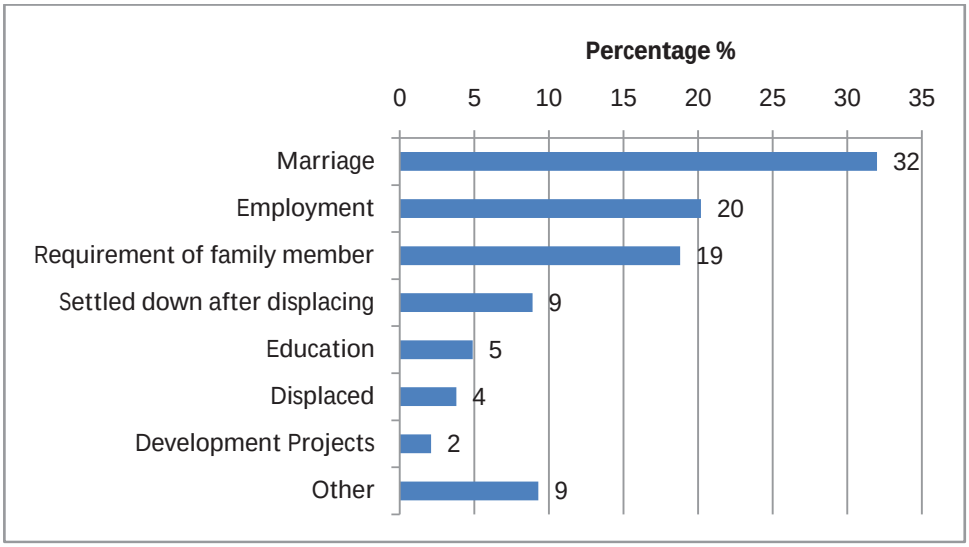
Note: Migration data should be treated as provisional as it is based on 5% sample.

As observed in previous Censuses, large populations have been recorded from Kurunegala, Kandy, Kalutara, Ratnapura and Galle, accounting for about 31.1 per cent of total population. The districts of the Northern Province (e.g. Mullaitivu, Mannar, Killinochchi and Vavuniya) record the lowest populations among the districts in Sri Lanka.

In terms of population growth, the highest annual growth rate has been reported from Anuradhapura district (1.33 per cent), followed by Kalutara (1.23 per cent), Hambantota (1.17 per cent), Moneragala (1.15 per cent), Polonnaruwa (1.11 per cent), Gampaha (1.02 per cent) and Kurunegala (0.93 per cent) districts. Of these districts, the high growth in Gampaha and Kalutara could be attributed to their proximity to Colombo, which is the metropolitan administrative and business hub of the island. As noted in earlier Censuses, people may be migrating from other parts of the island to live in these two districts. Significantly low population growth rates are reported in Nuwara-Eliya (0.5 per cent) and Badulla (0.39 per cent), during the intercensal period of 2001 and 2012. These two districts have high concentrations of upcountry tea plantations, and the low growth rates may be due to continued outmigration to other districts. This could be partly attributed to lack of employment and income generating opportunities in these two districts.

Table 3.1 also shows the share of migration by district and the share of migration for employment. This includes both internal and out-migration and key contributors appear to be Colombo and Kalutara with over 16 per cent, followed by Kalutara (5.9 per cent), Kurunegala (5.8 per cent) and Kandy (5.5 per cent) districts. The analysis on migration by purpose reveals marriage as the main objective (32 per cent), followed by employment (20.4 per cent), settlement following displacement (8.9 per cent), and education (5.4 per cent) (see Figure 3.1).

Figure 3.1: Reasons for migration, 2012



Source: DCS 2014b.

The highest proportion of in-migration for employment is reported in Colombo, Gampaha and Batticaloa districts. Working age cohorts dominate the migrant population, with most migrants falling into the age categories of 25-29, 30-34, and 35-39 years. Women in all age groups are more migratory than males, probably because marriage is the main objective of migration.

Data on net migration rates classified by district shows that the two districts of Colombo and Gampaha in the Western Province have been the most popular migration destinations between 1981 and 1994 (Perera and Ukwatta, 2000), and this trend is likely to have intensified in the years that have followed. These two districts contained the largest resident population, comprising one fourth of the total population in Sri Lanka in 2001,[4] and significant net in-migration has been

4 This cannot be updated due to lack of data.

observed between 1981 and 1994.[5] In fact, the rate of net migration for Colombo and Gampaha districts has more than doubled between 1981 and 2012 (Table 3.2).

Table 3.2: Net migration rates by district 1981 and 2012

District	1981	2012
Colombo	28.4	67.1
Gampaha	74.0	190.2
Kalutara	-32.4	56.6
Kandy	-138.4	-95.4
Matale	-41.6	-48.8
NuwaraEliya	-37.1	-144.2
Galle	-111.7	-102.5
Matara	-161.2	-198.7
Hambantota	-4.6	-50.0
Jaffna	-53.4	24.0
Mannar	150.9	-36.1
Vavuniya	263.5	-697.7
Mullaitivu	318.8	143.9
Batticaloa	-4.8	-44.3
Ampara	101.0	40.0
Trincomalee	141.1	65.8
Kurunegala	-18.6	-20.6
Puttalam	67.6	52.2
Anuradhapura	160.8	54.7
Polonnaruwa	371.6	142.5
Badulla	-49.6	-109.2
Monaragala	221.9	58.2
Ratnapura	14.6	-44.2
Kegalle	-121.6	-100.1

Source: DCS (2014b)

Districts such as Polonnaruwa, Moneragala, and Anuradhapura continue to be positive net-migrant districts. Interestingly, Kalutara and Jaffna districts have emerged as positive net-migrant districts as against negative net-migrant status in 1981. Of the population temporarily living abroad (more than 6 months) 59 per cent were males and 41 per cent were females in 2012. More than a third of the population who were temporarily living abroad was from Western Province. In terms of educational attainment, more than two thirds of the population living in abroad was from households whose heads were educated only up to the GCE O/L. The census of 2012 also revealed that 85 per cent of the total population living abroad has gone abroad for employment and that 60 per cent of them were males. Only about 7 per cent of the total population living abroad has gone abroad for education and of them, 64 per cent were males.

5 This is also based on the earlier findings by Perera and Ukwatta, (2000).

3.2 Training needs of new entrants to the labour market

Each year, about 180,000 Sri Lankan students leave the general education system after completing their O/L and A/L examinations. A large proportion of these students, around 152,000, enter the labour force without following any proper skills development programme (NPD, 2010, pp.128-29). This group of young people is the main constituency to which specific training and skills development programmes need to be targeted.

Table 3.3 shows that about 116,000 students leave school education system and go through skills development programmes offered by public and private service providers, while about 152,000 join the labour market without any training.

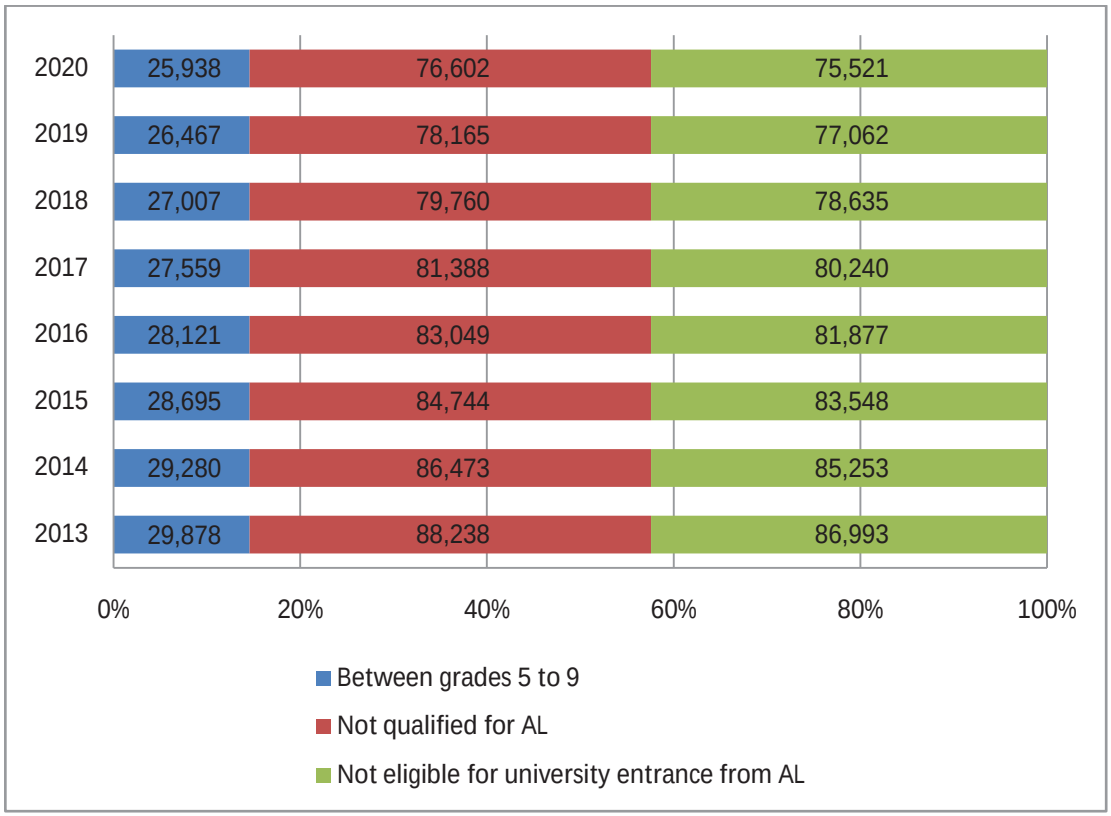
Table 3.3: Skills training needs

Training needs	Number
1. Number of school children who enter formal education system annually (Including private sector schools)	360,000
2. Number of school children who enter state and foreign universities/higher education institutes per annum	34,000
3. Number of school children who require skill training per annum	326,000
4. Number of youth trained by Public Sector owned skills education institutes	116,000
5. Number of youth trained by Private Sector/PPP skills education institutes	58,000
Skills Development Gap	152,000

Source: NPD, 2014

As shown in Figure 3.2 about 15 per cent of school leavers have dropped out of general education between Grade 5 and Grade 9 while of the remainder, 43 and 42 per cent are with GCE O/L and A/L qualifications respectively. An analysis of unemployment by type of training reveals that about 66.5 per cent of the unemployed are without any training while the rest (35.5 per cent) are with vocational training (Figure 3.3). There also appears to be evidence of an increase in this share from 2006 onwards.

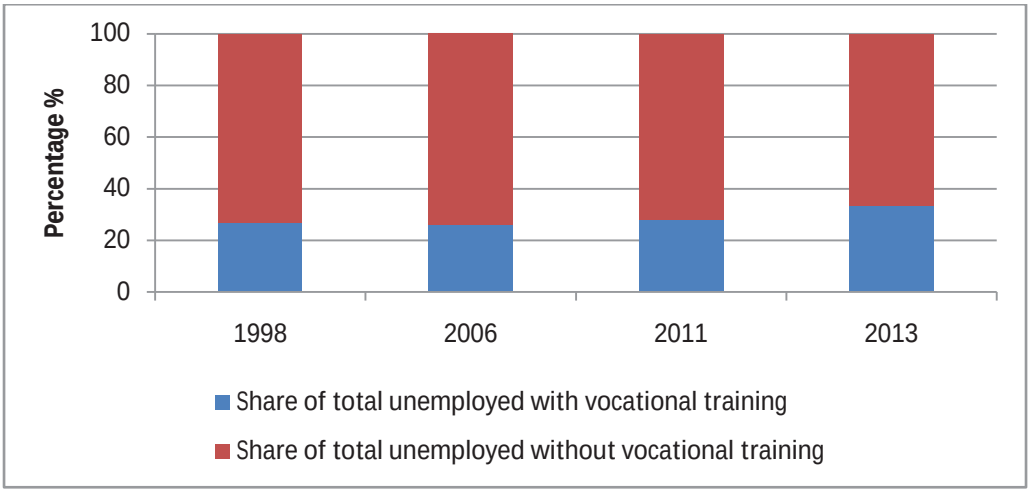
Figure 3.2: Projected number of school dropouts, 2013-2020



Source: Ministry of Education for 2013, and authors' estimates for subsequent years.

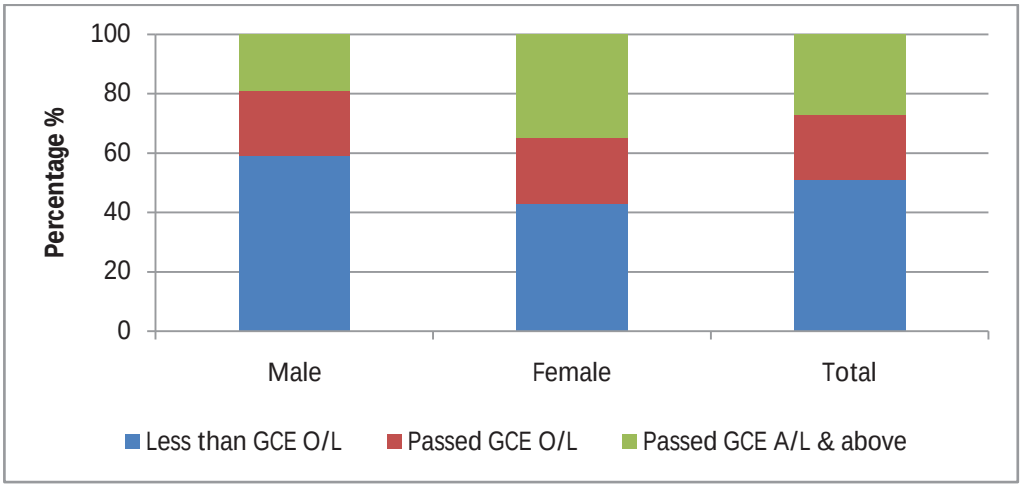
Of the unemployed without vocational training about 51 per cent have secondary education but without GCE O/L qualifications. This means that about 130,000 school leavers require skill development programmes covering cognitive, non-cognitive and technical skills (Figure 3.4). Another 56,000 are with GCE O/L qualifications and they too require similar coverage of training. The group of unemployed with GCE A/L and above needs more training on non-cognitive skills and job specific technical skills. The unemployed with vocational training (about 129,000) also seem to lack non-cognitive and job specific training.

Figure 3.3: Share of total unemployed with and without vocational training, 1998-2013



Source: TVEC LMI Bulletin 2011

Figure 3.4: Educational status of unemployed without TVET training, 2013



Source: TVEC LMI Bulletin 2011

3.3 Training needs in the four sectors identified in the VET Plans

ICT

The ICT sector has grown rapidly since the end of the conflict as we have seen in the previous chapter, and is set to grow exponentially over the next 5 years. The ICT VET Plan (2010) anticipates this and notes that the additional workforce required would consist primarily of graduates and diploma holders. The skill categories demanded by the ICT industry include the following: Data Base Administration and Development; Digital Media Animation; Business Analysis and Systems Integration; Systems and Network Administration; Programming and Software Engineering; Project and Programme Management; Testing and Quality Assurance; Sales and Marketing; Technical Support; Technical Writing; Web Development; MIS/IT Management; and, Solutions and Technical Architecture. At present, the areas of software development, quality assurance and technical support employ the largest proportion (63 per cent) of individuals working in the sector.

The ICT VET Plan offers a comprehensive coverage of ICT industry structure, growth patterns, and policy support. Most importantly, it provides a comprehensive assessment of both the demand and supply of ICT skills. In addition to setting out the occupational structure of the industry, the ICT VET Plan reviews and assesses existing job classifications and their respective job titles, identifies generic job titles and classifies them according to the NVQ system. This review is based on a careful evaluation of 500 job titles found in the sector. By aligning NVQ levels with job titles, the VET plan maps ICT occupations with demand and thereby provides a careful training-needs analysis by job categories and identifies the training needs that are most urgent. Accordingly, Systems and Network Administration, Programming and Software Engineering, Technical Support and Web Development were identified as job categories which require training most urgently. The job categories which require specialized training covered Audio/Video Editor, Graphics Animator, Systems Administer/Operator, Programmer, Tester, Maintenance Technician, Data Processing Assistant, and IT Technical Assistant. However, the data bases used for ICT VET Plan, however, need to be up-dated with recent industry statistics.

Recent survey evidence suggests that employers demand not only numbers but also quality, measured in terms of skills possessed by employees. The National ICT Workforce Survey (2014)

presents a profile of skills in demand by four types of employers (Annex 4.1) and deals with core skills, soft skills and technical skills demanded by type of employers in the industry. Core skills demanded by the ICT employers include project management, network implementation, systems/ application testing, technical writing, customer service, hardware engineering and maintenance, sales and marketing, data base design, and administration and network design. The most demanded soft skills include proficiency in English, professional ethics, interpersonal skills and communication and presentation skills. The technical skills in greatest demand are router configuration, SQL Server, C#, and Java.

Tourism

The hospitality sector is the core service industry that forms the backbone of the tourism sector. Policy makers envisage that capacity in the hospitality sector will need to expand by 20,000 rooms by 2016, which will require the hiring of 150,000 hotel workers. The government has already stated that action will be taken to address the current skill shortage at operational and clerical (front office, guest relations logistics, etc.) levels in the sector in order to exploit the employment potential in the hotels and tourism sector (NHREP, p.22). Although the sector has thus been clearly marked as requiring attention in the government's human resources development plan, the VET Plan for the tourism sector does not provide a comprehensive assessment of training needs. It only provides sub-occupational categories of direct employment opportunities of the sector covering eleven sub-sectors: food production; tourism–travel agency; tourism-tour operator; tour guides and allied services; hotel - food and beverage; hotel-general management executive cadre; hotel- human resources; hotel- front office; hotel-entertainment and allied; housekeeping, guest houses and supplementary accommodation (TVET, 2010 P. 67-68). Thus, the occupational categories covered under each sub-sector are comprehensive but do not provide details on training needs. Even the job analysis by key layers in the tourism sector (e.g. Front line, Supervisory, Management, Executive, and Entrepreneurial), offers a descriptive coverage of job functions and does not identify training needs of the sector. The broad training needs identified by relevant VET Plan are summarized in Table 3.4and it can be seen that the descriptions of core skills and technical skills required for each job are fairly broad.

Table 3.4: Skill requirements of the tourism sector, 2013-2017

Job Category	Core Skills	Staff Skills	Technical Skills
Front line Jobs		Interpersonal skills Service attitude	Language skills
Supervisory Jobs	General business knowledge	Supervisory skills	Specialty skills i.e. baking, cooking etc.
Management Jobs	Knowledge and skills in finance, marketing, economics etc.	Communication skills	
Executive Jobs		Problem solving leadership communication	
Entrepreneurial		Innovative thinking Decision making	

Source: TVEC (2010) P. 69-71

Construction

The construction sector has been rapidly expanding registering growth an average of 15 per cent between 2010 and 2012. Much of this is driven by public sector to infrastructure development projects including roads, ports, airports, housing and social service institutions. The additional annual requirement of craftspeople in this sector alone is estimated at 15,000 (NPD, 2014).

Engineering Services Sector

The engineering services sector refers to a growing group of enterprises involved in the processing of metal with the use of arc or gas welding and lathe work to produce an array of goods ranging from simple metal structures to machinery and equipment and their parts. Enterprises devoted to repair and maintenance services for manufacturing and service sector establishments are also included. Thus, the sector involves activities involved in production (metal and light engineering) as well in repair and maintenance. The metal and light engineering industry is expected to grow along with its drivers: the construction industry; the agricultural machinery industry as agriculture becomes mechanized; the transport sector as well as the household goods sector.

The main occupations in the metal and light engineering industry are machinists, foundry men, welders, sheet metal workers, fitters and painters/finishers. Over the years, the industry has moved slowly from the traditional labour-intensive technology to adopting a more capital-intensive, equipment-based technology. The industry is projected to require around 5000 additional workers per year (NPD, 2010). These projections suggest an increase in skill requirements from 17,768 to 19,852 persons between 2013 and 2017, indicating a growth rate of 2.9 per cent per annum. The VET Plan for the light engineering industry, however, uses the estimates for managerial, technical, and craft related grades given in *Mahinda Chinthana* (2010). In contrast, the report by TVEC on *Human Resources and Skill Requirements of Light Engineering* (TVEC, 2012a) does not provide any details on training needs of the sector and only uses data on the construction industry published by the Department of Census and Statistics to draw its conclusions (see Table 3.5).

Table 3.5: Annual training needs of construction personnel in engineering services, 2013-2017

Category	2013	2014	2015	2016	2017
Managerial & Technical grades	3743	3826	3909	3992	4075
Craft related grades	14025	14463	1490	15339	15777
Total	17768	18289	18810	19331	19852

Source: PWC (2014a).

3.4 Market demand for occupation-based training in the four industries

Total demand for skills in the four sectors derives from both domestic and foreign segments of the labour market. Information about domestic demand is based on information published by the Labour Market Information (LMI) unit for the TVEC which covers newspaper advertisements and the Government Gazette. Information about the foreign segment of demand is also based on the same data sources, but includes, in addition, information from the Sri Lanka Bureau of Foreign

Employment (SLBFE). It should be noted, however, that these data sets indicate market demand by occupation and captures only the jobs advertised in newspapers and other government sources. Hence, the analysis captures only part of the demand as it does not cover job vacancies advertised through other media. These limitations apart, the total number of jobs advertised in 2013 stood at 107,698, of which 57 per cent were in the informal sector. In terms of occupational groups, the highest demand was reported by technicians and associate professional (20 per cent), elementary occupations (15 per cent), service workers (15 per cent), craft and related workers (13 per cent), clerks (11 per cent), professionals (10.5 per cent) and plant and machine operators (9.5 per cent). In terms of industry sectors, hotels and restaurants (15.5 per cent), reported the highest proportion of advertisements relative to other sectors. Most of these advertisements appear to be for new entrants to the job market as they do not specify work experience. The majority of them do not specify gender.

The domestic and foreign market demand for workers in the ICT, tourism and construction industries by occupation are set out in Table 3.6.

Table 3.6: Domestic and foreign demand for workers in the ICT, tourism and construction sectors: ranking of jobs, 2013

Sector	Occupation	Domestic Market	Foreign Market
ICT	Graphic Designer	1	n. a.
	Web page Designer	2	n. a.
	Type Setter / Computer	3	n. a.
	Computer Operator	4	n. a.
	Engineer Software	9	n. a.
	Hardware Technician	10	n. a.
Tourism	Cook	1	7
	Waiter	2	5
	Stewards	3	10
	Room Boy	4	n.a.
	Cashier	6	n.a
	Chef	7	9
	Kitchen Assistant	9	n.a
Construction	Mason	1	3
	Labourer - Construction	2	n.a.
	Carpenter	4	2
	Technical Officer	5	n.a.
	Surveyor – Quantity	6	n.a.
	Painter – Building	7	6
	Supervisor –Site	9	n.a.
	Tile Setter	10	n.a.

Source: TVEC (2014).

The numbers in the tables suggest that foreign demand is limited to a few occupation categories while domestic demand covers a wide range of occupations. This could be due to status of development and competitive conditions in domestic and foreign markets. In overall terms, however, there appears to be demand for workers in a broad range of occupations for the tourism sector in both foreign and domestic markets. The coverage of occupations in engineering services is limited to a few sectors both in domestic and foreign markets e.g. welder, mechanic, electrician, fabricator, tinker and fitter-general.

The demand for skills in any sub-sector can be examined in terms of sub-sector specific growth and market demand by occupational categories. However, the application of sub-sector specific growth rate for engineering services is problematic as it cut across several sub-sectors in manufacturing. Thus, the overall growth performance of key sub-sectors has been used as a proxy for estimating the demand for skills in engineering services sector. These key sub-sectors are as follows: a) other manufacturing; b) basic iron and steel casting and casting metals; c) fabricated metal; and, d) machinery and equipment not classified elsewhere. These four sectors account for about 86 per cent of the value added in engineering services. Like the majority of workers in the construction industry, many current employees in this sector have received little formal training and do not have certificates of training (NPD, 2014). Therefore, interventions involving recognition of prior learning (RPL) and upgrading of skills with special modules will be an important mechanism through which to help advance the skills within the industry.

3.5 A conceptual framework: The missing element in Sri Lanka's traditional approach to skills development

In the preceding sections of this chapter, we presented an assessment of the demand for training in Sri Lanka based on the available data. However, this assessment does not provide a comprehensive evaluation of the set of skills demanded by the four industries. This is because we have been constrained by the availability of data on skills, and by the way in which producers of that data have conceived of skills requirements and collected the data, approaching the task of providing training mostly in terms of imparting technical skills.

In contrast, skills training in a global economic environment where economic advancement involves adopting knowledge-intensive production methods and structures requires a far more sophisticated and comprehensive conceptual approach. Theoretically, skills mismatch results from the combination of a surplus of one type of skills and a deficit of another, determined by both demand and supply side factors of the labour market. On the demand side, global competition has given rise to high-value added export-oriented manufacturing and service sectors which have in turn generated high levels of demand for job-specific skills, particularly for cognitive and non-cognitive skills. The existing body of empirical evidence on the availability of skills in Sri Lanka suggests critical shortages of both types of skills: behavioral and academic, English-language and computing, all of which are essential for professional jobs in the services sector. On the supply side, key constraints include poor quality of secondary and tertiary education, poor quality of local training. Low wage levels, poor education management and teacher training, inadequate employment counselling and job search services, inadequate cognitive development and creative and emotional development.

The World Bank's Skills Towards Employment and Productivity (STEP) Framework, for example, sets out three broad categories of worker skills necessary for the production of goods and services in the modern world: cognitive skills, non-cognitive skills (soft skills) and technical skills. The first, cognitive skills refer to individual's ability to understand complex ideas, to adapt effectively to the environment, to learn from experience and to engage in logical reasoning. The second, non-cognitive skills include soft skills, personality traits and behavioral skills. They are also defined as the 'ability to understand domains that are not directly associated with intelligence'. The related literature focuses on numerous dimensions of non-cognitive skills, of which the 'Big Five' are: personality traits (extraversion, conscientiousness, openness, emotional stability and agreeableness); long-term perseverance, decision-making skills, team work and presentation skills. The third group, technical skills refer to specialized skills that are relevant for performing job specific tasks. Technical skills are

particularly important for productivity. In operational terms, technical skills refers to technology use, mechanical use, machinery use, English language, ability to work autonomously, and manual labour skills.[6]

Applying this framework to Sri Lanka, as do Dundar et al. (2014), reveals more pronounced skill mismatches among firms that are international, innovative and in tourism. Their evidence also revealed substantial gaps in technical skills while gaps in cognitive and soft skills were relatively smaller. Several skills have been identified as lacking, but particularly prevalent are skills relating to computer literacy, communication, and English language skills. The evidence indicates that for South Asia, it is 'soft skills' such as English language and communications that will enhance the competitiveness of workers in key sectors such as ICT, healthcare, tourism, and media industries.[7] In particular, lack of English skills is cited as a major constraint in many contexts across the region (ADB,2013). Many studies have clearly demonstrated an acute need for skills development in South Asia, and that people with higher literacy, numeracy, and English language skills, are more likely to gain employment and earn higher wages (Erling, 2014). Azam, Chin and Prakash (2010) use Indian data to provide rigorous empirical evidence that suggests that speaking a little English increases wages by 13 per cent, while speaking English fluently increases wages by 34 per cent. The existing body of evidence, however, does not in any way suggest that the use of local languages hinder or impede economic development.

From the above account it is clear that the existing body of evidence on training needs of the four sectors covered in the present study provides only partial information and requires more in-depth studies based on primary data. Except for the VET Plan for the ICT sector, the reports on the other three sectors present very little information on training needs, and most of the other data provided is now outdated. These reports, especially on light engineering and construction, do not even identify key occupation categories belonging to each sector, let alone cover the skill profiles preferred by employers.

International experience suggests that emigration is another driver of the demand for skills, with as overseas demand interacts with domestic demand. Most emigrating Sri Lankans are unskilled workers such as housemaids (64 per cent), and skilled workers account for 28 per cent. While overseas employment will probably also continue to be an important driver of demand for skills, policy documents of the government highlight the need to promote the migration of skilled rather than unskilled workers (NHREP 2012, p.32). It also proposes to facilitate the diversification and enhancement of the skills of prospective migrant workers. There is a strong need for skills development in job specific and generic skills, including the capacity to work independently and communicate effectively, practical knowledge of the job, problem solving and leadership for managers and professionals while teamwork, time management, and better grounding in theory are needed for skilled production and sales staff. Higher-level skills applicable to the service sector include training in business and finance, and advanced academic and behavioral skills particularly applicable to the sector, such as excellent literacy and client-orientation skills, and communication and foreign language skills.

6 For more details see Dundar et al (2014) and references cited there in.

7 For more details see Erling (2014) and references cited there in.

While the government envisages an expansion in tourism, ICT and high-value-added export-oriented sectors in its policy statements, as reviewed in the first chapter, all of them require advanced technical skills. The ability to acquire such advanced skills will depend very much on the successful acquisition of more basic skills. Supporting the provision and enhancement of skills in Sri Lanka is particularly important in the manufacturing and export sectors as intermediate and higher-level technical skills related to some technologically advanced fields are needed to help manufacturing firms adapt to technological innovations, face international competition, and improve productivity and competitiveness. The manufacturing sector also has the capacity to support both the agriculture and services sectors by establishing backward and forward linkages as economic theory tells us. Therefore, skills training in the manufacturing sector must receive special attention in any skills development strategy.

3.6 Summary conclusions

In this chapter we attempted to analyse demand for training by drawing on information from three sources: a) VET Plans, b) labour market demand for occupation specific skills; and, c) data about new entrants to the labour market. The evidence suggests that except for the VET plan for the ICT sector, the plans for the other sectors do not provide sufficient details about the demand for skills. Some of the VET Plans do not even provide basic information on the demand for different occupations covering domestic and foreign markets. The analysis on new entrants to the labour market drew attention to three critical features: a) that about 174,000 students leaving the school education system each year go through skills development programmes offered by public and private service providers; b) that about 152,000 join the labour market without any training whatsoever; and that, c) of the unemployed without vocational training, 51 per cent do not have even GCE O/L qualifications.

More recent work on the demand for skills deal with three different types of skills demanded by employers, cognitive, soft and technical skills. Cognitive skills refer to the ability to conceptualize while technical skills refer to job-specific technical skills. Soft skills refer to leadership, team orientation, coordination etc. The evidence suggests that Sri Lanka needs to approach the provision of skills using the conceptual approach based on imparting cognitive, technical and non-technical skills in order to address existing skills gaps comprehensively. The evidence also points to English language and computer use as important technical skills that are in acute shortage. These skills are critical to enhance the competitiveness of the ICT, tourism and light engineering sectors. While employers currently underestimate the need for foreign language skills, the latest research suggests that English language skills are critical for development in the long-term and must be developed as a matter of urgency.

The demand for skills in Sri Lanka has been growing as the importance of the services sector in the economy expands. But openness to new technology, exposure to international competition, and the longer-term pressures to diversify the country's economic and productive structure, may result in a further accentuation of some of these patterns of demand. These forces have also created a new demand for skills in the manufacturing sector, which needs to be re-launched as the engine of growth.

4

THE SUPPLY OF TRAINING

4.1 Introduction

In most advanced economies, education and training systems create skills demanded by the economic sectors that are research and development (R & D) and export-oriented. Rapidly growing, emerging economies also require flexible systems of skills development to meet the changing requirements of rapidly transforming labour markets.

In this chapter we analyse the supply of TVET in Sri Lanka, paying particular attention to the long-term development needs of the four sectors on which the present study is focused. The assessment is structured into three main sections: Section 4.2 provides an overview of service providers in the skills development sector relevant to our key industries, while section 4.3 reviews the assessments of services provision contained in relevant VET Plans and other planning documents. Section 4.4 pulls it all together in terms of a skills gap analysis of the four sectors. The chapter draws on multiple sources of information such as VET Plans, unpublished research reports, sector-specific skills surveys and published research material for its analysis. However, we begin with some overall comments on the supply side of training before moving on to specific analyses relating to the ICT, hospitality, construction and light engineering sectors.

There are two key stages at which the training of workers takes place: pre-employment skills development, and on-the-job training (OJT). The first, pre-employment skills development is very important particularly in Sri Lanka where a sizable number of school leavers join the labour market without any training, while a plethora of organizations is engaged in providing TVET even though their quality seems to vary quite significantly. Nevertheless, employers appear reluctant to hire TVET graduates and prefer to provide their own training for the new recruits. The pre-employment training systems of some countries are very good, for example, Singapore's pre-employment training systems and Latin America's Chile Joven programme have been cited as well-functioning systems of pre-employment training that have been adapted to the country`s needs (World Bank 2010, p. 15). But this is not the case across the developing world.

The second stage of skills development, OJT, contributes much to human capital development and tends to occur more frequently in larger, more dynamic and export-oriented firms without the need for any government intervention. This bias often makes for a paradoxical situation, with firms complaining about skill shortages without making efforts to upgrade worker`s skills through OJT. OJT is relatively low in South Asia, Middle East, North Africa. Firms in most countries are reluctant to provide training on the job for fear of losing trained workers to competitors. Lack of access to information on training and the cost of training could be another constraining factor.

In Sri Lanka, skills development is carried out both internally by firms and externally by institutional providers. External providers of skills development services are dedicated institutions

in the public, private, non-governmental (NGO), and international non-governmental (INGO) sectors. Internally, firms train employees through on-the-job-training (OJT), structured in-house training and through foreign training. The public sector is by far the biggest contributor to skills development and consists of a large number of institutions run by different ministries with a wide range of specializations. State involvement in skills development services has a long history and existing databases contain information about enrolment, completion and coverage of study programmes. In addition, some tracer studies that have been conducted more recently contain information about student satisfaction, employability, and the coverage and relevance of skills development programmes offered by public sector service providers. In contrast, databases on private and non-government sector involvement in skills development are poor particularly with respect to enrolment, completion rates and student feedback. In what follows, we draw on the available data sources to examine the provision of skills for the ICT, tourism, construction and light engineering sectors.

4.2 Training service provision in the four key sectors

The most recent labour market survey data[8] on the supply of training services in construction, ICT and THI (see Table 4.1) revealed induction training as the most important source of followed by in-house structured OJT as the second and third most important sources of training (SIPL, 2012a, 2012b, 2012c). The evidence also suggested that 6 per cent of the employers or 10 per cent of employers do not provide any training in the ICT industry.

Earlier work by Riboud et al. (2007) provides corroborative evidence. For example, Riboud et al. (2007) have shown that while enterprises in the four South Asian countries of India, Pakistan, Bangladesh and Sri Lanka rely on both in-house and external training providers, the high incidence of in-house training is in Sri Lanka, where 37 per cent of employer provided in-house training. Sri Lanka was followed by Bangladesh (26 per cent), India (17 per cent), and Pakistan (8 per cent).They also reported that cross-country rankings of the share of workers trained, or training intensity, vary with per capita income and years of schooling of the workforce in the country and noted Sri Lanka as having the highest training intensity, followed by India, Pakistan, and Bangladesh. They also noted that firms in all four countries use a mix of both public and private sources for their external training. But while public sector providers were dominant in Sri Lanka, private training institutes dominate in India and Pakistan. In Bangladesh, training by private sector partner firms dominates.

8 This is based on responses received from employers based on their experience over a period of five years e.g. 2007 to 2011.

Table 4.1: Sources of training utilized (%)

Type of training	ICT	THI	Construction
Induction training	54	47	72
In-House structured training	18	31	12
On-the-job training (OJT)	18	13	12
Through private training centres	1	2	0
Through NGO training centres	0	1	0
Through public training centres	1	0	3
Apprentice training	0	1	1
Send abroad for training	2	1	0
Do not provide any training	6	4	0
Total (%)	100	100	100
Total no of employees covered	9477	16714	7849
Total no of firms covered	187	274	491

Sources: (SIPL, 2012a, 2012b, 2012c)

Export orientation can motivate firms to provide training so that they can produce high-quality products that meet the exacting standards of foreign buyers. Such firms are also under considerable pressure to increase their labour productivity through training in order to be able to compete internationally. The incidence of in-service training is also higher in enterprises that engage in R&D activities, a result that holds true equally across all four South Asian countries. This relationship between training and technology is consistent with studies that suggest that effective use of new technology requires a more skilled and trained workforce. The evidence suggests that Sri Lankan export oriented firms and R&D oriented firms provide more in-house training (37 per cent and 38 per cent respectively), than their counterparts in India, Pakistan and Bangladesh.

National Vocational Qualification (NVQ) system

A skills certification system is one of the key strategies used by policy makers to facilitate and promote the acquisition of job relevant skills. In Sri Lanka skills certification is organized in a national qualifications framework – the NVQ system. As at the end of October 2014, availability of National Competency Standards and Curricula (NVQ Level 1-4) stood at 144 and the number of programmes relating to the ICT, THI, Construction and Engineering Services were 6, 11, 6 and 40 respectively (Appendix Table 8).

The National Vocational Qualification (NVQ) system unifies the myriad and diverse TVET offerings and facilitates the setting of national competency standards in consultation with the industry, using a competency-based approach. It provides for the national certification of learners and workers. This framework has been in existence since 2005 and at present covers 121 occupations at craft level, 21 fields at middle technician level and seven courses of study at degree level. It has also been used to enhance the quality of training provided by the TVET institutions. Its application to the four sectors under study is shown in Table 4.2, and the evidence indicates a relatively high use of the NVQ system in ICT and light engineering services sectors. The application of NVQ

system is very low in the tourism sector and moderate in construction sector. Having recognized these deficiencies, the NPD has already identified ICT, tourism and hospitality, construction, light engineering and manufacturing industries as priority sectors for expanding NVQ certificate levels 1-4 (NPD, 2014, p.70).

Table 4.2: Issue of NVQ Certificates up to 31 December 2012

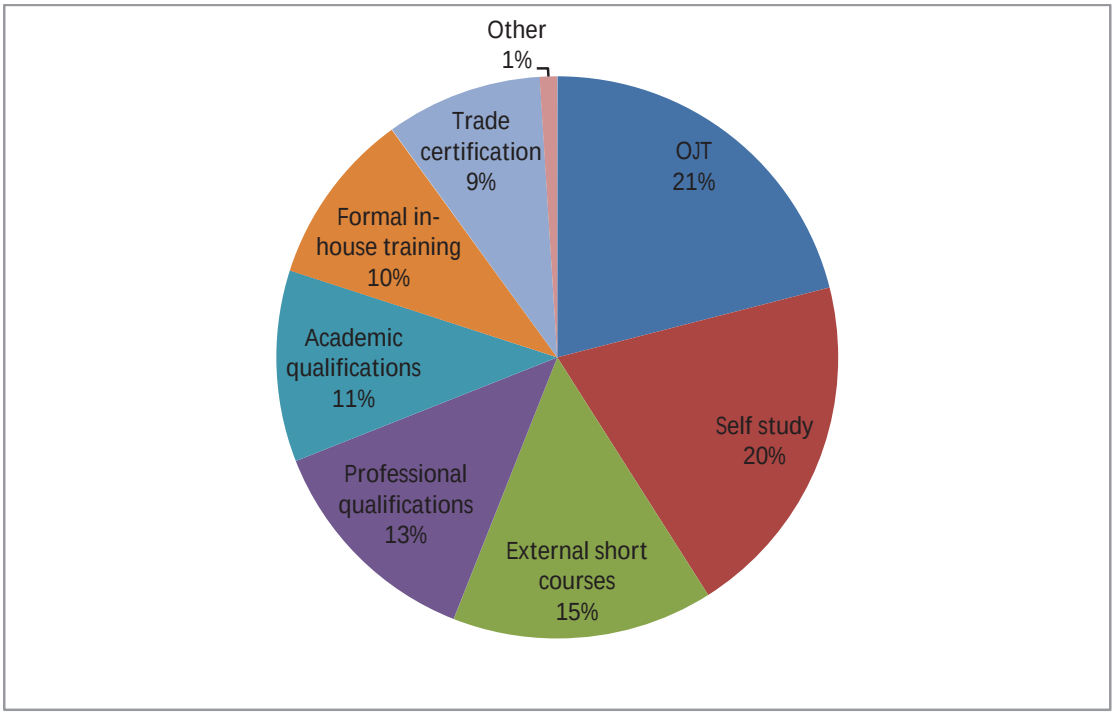
Industry	CBT	RPL	Total	% share
1.Construction	5372	1796	7168	18
2.Hotels & Restaurants	305	98	403	1
3.Engineering Services	11790	1478	13268	33
4. ICT	17525	2313	19838	49
Total	34992	5685	40677	100

Source: TVEC 2014

ICT

The development of skills for the ICT sector is carried out mainly by training providers offering courses leading to academic and professional qualifications. Its structure is ever changing, very complex, and largely unmonitored. The ICT VET plan identifies four broad categories of service providers: a) State universities, b) mid-level organizations with foreign affiliations, c) other mid-level public and private sector organizations, and d) hundreds of other small scale computer training centres belonging to the private sector. These service providers offer a multitude of qualifications and certifications related to ICT. As a result, ICT workers in Sri Lanka have academic qualifications, professional certifications, or other non-standard state training, as well as OJT and in-house training. In relative terms, OJT and self-study accounted for about 41 per cent of training in 2007 (SLICTA, 2007). Similarly, as Figure 4.1 shows, academic qualifications and professional qualifications accounted for 11 and 13 per cent of employees who have undergone some training.

Figure 4.1: Types of training undertaken by employees in ICT sector (%)



Source: SLICTA (2007)

A survey by Skill International (Pvt.) Ltd (SIPL, 2012 b[9]) revealed that public sector service providers in the IT/BPO sector accounted for over 80 per cent of training, representing major contributors such as universities (48 per cent) and public TVET institutes (21 per cent). The shares of the private sector and OJT were 5 and 14 per cent respectively.[10] Another survey conducted by KPMG (2007) revealed the dominance of private service providers in the ICT sector: a) private non-degree awarding (74 per cent), b) private degree awarding (13 per cent), c) government technical colleges (3 per cent), and d) government universities (10 per cent). Of the private sector service providers Lanka BPO Academy offers training on IT, Business, Management, Customer Service, Accounting and Investment related areas. The Lanka BPO Academy is a dedicated training organisation that focuses on IT, Business, Management, Customer Service, Accounting and Investment related areas.

The VET Plan for the ICT sector made an attempt to prepare a comprehensive list of courses offered by service providers by type of ICT programme which they mapped with NVQ levels. This analysis reveals two major findings: a) classification of courses by type of training and NVQ levels, and b) classification of global certifications together with the mapped NVQ levels. The ICT VET plan also reveals that all the ICT training available is limited to three main types: a) Awareness or office applications training, b) Programming language training, and c) general IT programmes at diploma, higher diploma and degree levels. Training courses for specific skills in areas such as multimedia, networking, web authoring, internet programming, data base administration, systems administration, computer security, etc., are not explicitly provided, except through general ICT programmes (TVEC, 2010, p.37).

The Lanka BPO Academy also specializes in training for the outsourcing industry in Sri Lanka. Training is provided in the areas of business process outsourcing (BPO), knowledge process

9 This was based on a sample of 121 covering 4 mail questionnaire responses, 113 telephone inter views, and 4 e-mail responses.

10 The low share of private sector provision could be due to a sample bias.

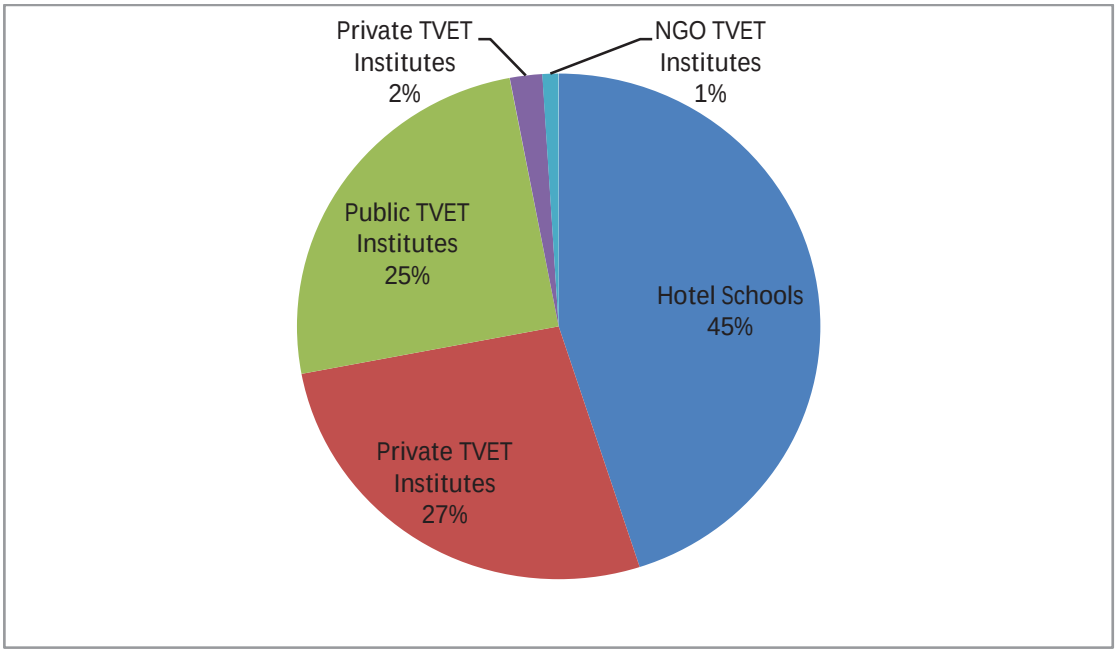
outsourcing (KPO) and information technology outsourcing (ITO). It is the only Sri Lankan partner of BPO Certifications Institute Inc. (BCI), the world's largest body for BPO certifications and credentialing. They are also partnered with other service providers such as the Chartered Institute of Securities and Investments (CISI), City and Guilds, British Computer Society (BCS) and CIMA. The Lanka BPO Academy offers entry level courses, specialist and manager level courses assisting new entrants as well as experienced employees in Sri Lankan companies.

Tourism

The VET Plan for the tourism sector enumerated a total of 36 service providers representing public (12) and private/NGO (24) institutions offering programmes on tourism and hotel management (TVEC, 2012c). It also reported the heavy concentration of training services in Western Province which accounted for more than 50 per cent of training providers and 75 per cent of student enrolment. The average annual enrolment in skills development related to the sector is around 12,000 and the Sri Lanka Institute of Tourism and Hotel Management (SLITHM) is the leading service provider. It has the capacity to train 1,740 craft level and 1,880 certificate level trainees. Its course programmes cover three major categories: a) postgraduate studies, b) diploma courses, and c) certificate courses. In addition about 1000 training places are available for students within the private sector.

Information from the survey conducted by SIPL (2012c)[11] suggests that out of a total intake of 4331 workers in the tourism industry, 45 per cent had been trained by SLITHM and another 25 per cent by public TVET institutes (Figure 4.2). Survey evidence also showed that within public sector TVET institutions, NAITA and VTA account for about 65 and 15 per cent of enrolment in THI related courses (Figure 4.3).

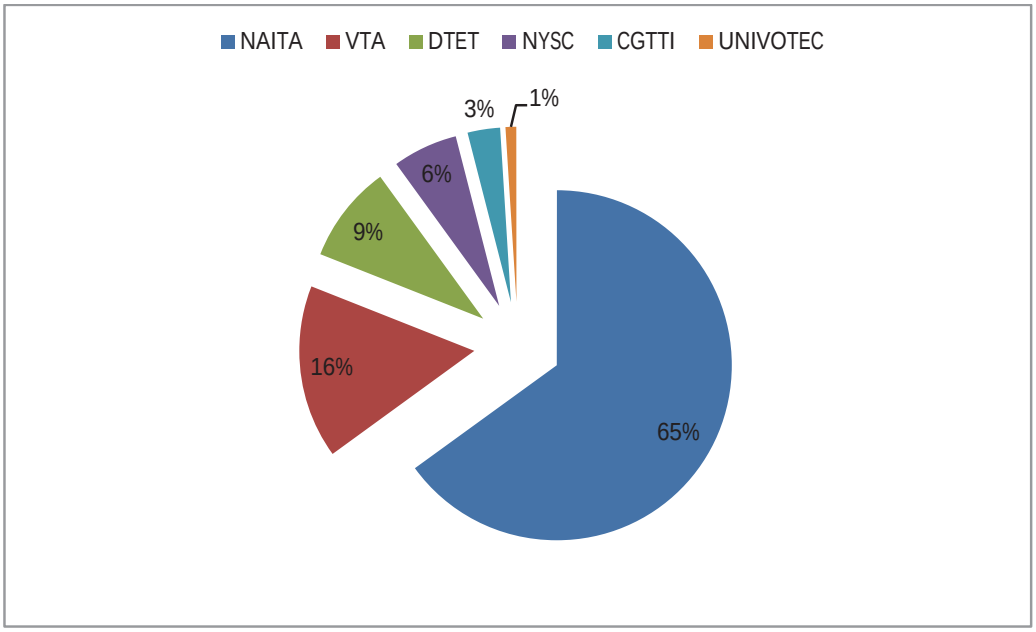
Figure 4.2: Training providers in the tourism sector (%)



Source: SIPL (2012c)

11 This was based a sample of 194 responses representing 5 mail questionnaires, 188 telephone interviews and one e- mail response. It also included a series of focus group interviews.

Figure 4.3: Training providers in the public sector (%)



Source: SIPL (2012c)

Construction

Suppliers of training services to the construction industry include VTA, NAITA, DTET, ICTAD, NYSC as well as private training institutes such as Seneko, Rathna, and Jayalath (Private) Ltd. The Ministry of Construction, Engineering and Common Amenities also conducts its construction machinery operators and construction machinery maintenance courses. Construction-related vocations are the least popular amongst the TVET programs, and despite efforts on the part of these centres to advocate the programme, the classes have never been fully subscribed (NPD, 2014).

There are also a large number of construction workers who have basic skills but do not possess any certificates. These need to be assessed and provided with RPL. Many also require skills upgrading. A pilot programme has been proposed to get construction firms to provide on-site training for workers in government construction projects. The Construction Skills Council is to help develop the necessary framework to train 5000 workers to be covered under this programme.

A recent survey by Skills International (PVT) Ltd (SIPL, 2012a) on the construction industry[12] revealed that a total of 5636 graduates from TVET institutes have been recruited by construction industry employers between 2007 and 2011. Of this number, 50 per cent of recruits were experienced traditional employees, 12 per cent were from public TVET institutions, while 39 per cent were trained in private institutions. Workers in the construction industry holding the position of head mason (baas) had developed their skills in the traditional manner. This involved beginning as a helper and thereafter undergoing apprenticeship training under the very effective supervision of a highly skilled mason. Those who improved their skills in the traditional manner were found to have more confidence. However, they were found not to have sufficient training in bar bending,

12 This was based on a sample of 360 representing 5 mail questionnaires, 353 telephone interviews and two e- mail responses.

spread of reinforcement and slab concreting, and measurements needed for concreting. Slab and vacuum tests, essential in masonry, had not been included in their training. As a result they did not have the capacity to become a head mason or to undertake jobs independently.

Light Engineering and Manufacturing

The VET Plan of the Metal and Light Engineering Sectors has identified the leading service providers for skills development in the sector as public sector TVET institutions such as DTET, NITA, VTA and NITESL. The report, however, does not indicate the presence of private sector service providers for engineering services.[13] The subject coverage of metal and engineering services sector by two leading public TVET institutions is presented in Table 4.3. This information suggests adequate coverage of skills development in the agricultural machinery, plumbing, welding, and aluminum fabrication sub-sectors. It also discloses the under-provision of programmes catering to a wide range of other light engineering sub-sectors, for example, repair and maintenance of machinery and equipment in different subsectors of manufacturing. A field survey is required to do a proper assessment of the programmes offered by the DTET and VTA in terms of total enrolment and graduation or completion rates.

Total TVET output for engineering services appears to be around 18,800 (Table 4.4). However, this does not include engineering services for other sub-sectors in the manufacturing and service sectors.

Table 4.3: Vocational training courses available for the light engineering subsector from DTET and VTA

Course Name	Duration in Months	Course Name	Duration in Months
Certificate in Foundry Practice (Full Time)	6	Aluminium Fabricator	6
Certificate in Tractor Mechanic (Part Time)	12	Brass Foundry Worker/Carver	6
National Certificate in Engineering Craft Practice - Plumber (Full Time)	12	Fabricator (Metal)	12
National Certificate in Engineering Craft Practice - Gas and Arc Welder (Full Time)	12	Farm Equipment Mechanic	6
Certificate in Machining (Full Time)	12	Machinery and Equipment Mechanic	12
Certificate in Farm Machinery (Full Time)	6	Fitter (General)	12
National Certificate in Engineering Craft Practice - Fitter Machinist (Full Time)	24	Machinist (General)	18
National Certificate in Engineering Craft Practice - Fitter Machinist - Lathe (Full Time)	24	Machinist (General)	12
Certificate in Aluminium Fabrication (Full Time)	6	Machinist (Turner)	6
		Welder	12
		Welder	6

Source: TVEC 2014

13 This is an issue which needs to be addressed in Institutional Survey Section of the main study on TVET

Table 4.4: Supply of TVET Services for the light engineering services subsector, 2013

	Programme	Public Sector		Private Sector	
		No enrolled	No completed	No enrolled	No completed
1	Automobile repair and maintenance	8153	5380	351	280
2	Metal and Light Engineering	7184	5536	687	450
3	Electrical, Electronics and Telecommunication	5522	4408	1235	739
4	Refrigeration and air conditioning	1913	1249	557	354
5	Heavy vehicle operations	362	371	_	_

Source: TVEC 2014

4.3 Employers' perceptions about the quality of training carried out by public TVET providers

Recent labour market survey evidence also reveals employers' perceptions of technical and soft skills provided by public sector TVET institutions. The assessment on technical skills included eight different criteria and the assessments were based on a 5 point scale. The high end responses (e.g. agree and strongly agree) covering construction, ICT and tourism sectors indicate moderate ratings for construction and ICT sectors and relatively low ratings for the tourism sector (Table 4.5). In relative terms, the quality of TVET-trained ICT graduates in terms of technical skills seems to be better than those who followed courses relating to construction and tourism sectors. The quality standards of TVET graduates on soft skills were measured fairly comprehensively using 18 criteria and the evidence clearly indicates the relatively low quality of TVET trainees joining the tourism sector. Some of the most critical areas of soft skill development in the tourism sector training include ability to read and write in English, positive work habits, creative and critical thinking, problem solving skills, leadership skills,commitment, and emotional stability (Table 4.6). Overall, the quality of soft skills gained by TVET graduates joining the construction sector appears to be slightly better than that of their counterparts following ICT courses. The poor acquisition of English language skills in ICT training is also clearly noticeable.

An overall assessment of TVET training by employers confirm earlier observation of better quality training received by ICT graduates as against construction and tourism sectors (Table 4.7). It also reveals the high quality of training offered by service providers in job-related theoretical knowledge but inadequate skills development in the area of job-related practical skills, training in handling industry-relevant equipment and tools, and in creating positive attitudes.

Table 4.5: Share of employers' who are satisfied or very satisfied with technical skills provided by public TVET institutes (%)

Criteria	ICT	Tourism	Construction
Ability with calculations and numbers	57	41	57
Technical Knowledge of subject matter	64	36	55
Information & communication (ICT) skills	57	32	52
Job specific skills	59	32	55
Ability and knowledge to use modern technology effectively	55	32	55
Use of operating manuals	64	32	55
Productivity than other workers	55	32	57
Health and safety measures related knowledge	52	32	57

Sources: SIPL (2012a, 2012b, 2012c)

Table 4.6: Share of employers' who are satisfied or very satisfied with soft skills provided by public TVET institutes (%)

Criteria	ICT	Tourism	Construction
Positive work habits	59	36	61
Agreeableness	57	41	61
Prepared to get new experience	52	41	61
Punctuality in attendance	55	41	59
Motivation for learning	56	41	59
Attitudes towards work ethics and norms of private sector	52	41	59
Capacity for career advancement or promotions	57	41	58
Creative and Critical thinking	58	36	58
Problem solving skills	56	36	59
Ability to work independently	52	41	59
Ability to read and write in official language (Sinhala/Tamil)	84	41	61
Ability to read and write in English	43	32	54
Leadership skills	50	36	58
Commitment	59	36	59
Emotional Stability	55	36	58
Discipline	52	41	59
Teamwork skills	61	41	61
Management skills	59	41	61
Innovativeness and ability to adapt	61	41	59

Sources: SIPL (2012a, 2012b, 2012c)

Table 4.7: Share of employers who are satisfied or very satisfied with different aspects of TVET training (%)

Item	ICT	THI	Construction
TVET trained employees have adequate job related knowledge (theoretical)	66	60	67
TVET trained employees have adequate job related skills (practical)	55	50	48
TVET trainees have adequate positive attitudes	48	45	57
TVET trainees have been trained on industry relevant equipment & tools	62	41	53
Overall quality of training delivered by TVET institutions is satisfactory	71	41	55

Sources: SIPL (2012a, 2012b, 2012c)

4.4 Skills deficits

This study employs two main approaches to assess skill gaps in the four industries: a) gaps in relation to employers' (and employees') expectations, and b) supply side analysis. The first approach is based on demand and is often the only way to measure gaps in higher-level skills. The second approach looks at supply and assesses the capacity of service providers and the quality of output (standardized international testing). We also use existing literature on skills gaps published by the government, VET Plans and trade promotion organizations.

Skills mismatch involves both matching the numbers and the quality of graduates for a given industry sector. Using both demand and supply side analytical approaches, the National ICT Workforce Survey (ICTA, 2014), carried out a skills gap analysis and identified mismatch of skills in three categories of skills: core, soft and technical skills (Appendix Table 7). Mismatch was defined to include the existence of less-supplied skills that were in demand, and less-demanded skills in supply. The findings suggest the necessity of aligning the focus of training programmes to cater to the demands made by employers. The study also revealed high, un-met demand from employers for soft skills. In terms of numbers, however, the ICT Workforce Survey provides data only for graduates and the estimates indicate an unfilled gap of 468 graduates. The report also highlights that latent demand for graduates could be even higher due to unrealized potential, especially in the export sector for supplying ICT products and BPO services. It also proposes increasing the capacity of training institutes to produce more graduates as a long-term solution to minimize the skills gap in ICT industry.

Table 4.8: Skills gap analysis in the ICT sector

Competency Gap - Software Design and Engineering	Training Gaps		
	Basic	Intermediate	Expert
Professional Certifications (e.g. PMP, Prince 2, etc.)	n.a	n.a	10%-40%
Business Process Analysis	76%-100%	41%-75%	10%-40%
Industry Standard Software Process Models and Methodologies	76%-100%	76%-100%	41%-75%
Analytical and Problem Solving Skills	76%-100%	41%-75%	41%-75%
Progamming Languages (e.g. JAVA, Net, etc.)	76%-100%	76%-100%	41%-75%
Web based Programming Techniques and Web-enabled analytics Business Process Modeling, Web Services, Open Source Software	76%-100%	41%-75%	10%-40%
Multimedia and Digital Animations (e.g. 3D Studio Max, Macromedia Product Lines, etc.)	76%-100%	41%-75%	10%-40%
Software Quality Assurance Techniques (e.g. ISO 9001, CMMI, etc.)	76%-100%	76%-100%	10%-40%
Knowledge on Quality Assurance Processes (e.g. ITIL, etc.)	76%-100%	10%-40%	10%-40%

Source: KPMG (2007)

The ICT VET Plan also estimates the skills gap in terms of three levels of competencies: basic, intermediate and expert level. It revealed presence of adequate skills at basic level (e.g. 76 per cent - 100 per cent) and a satisfactory level of skills (41 to 75 per cent) at the intermediate level (Table 4.8). The training gap was mainly prevalent at the expert level with a level of competency at 10 to 40 per cent. It also points out the inadequacy of soft skills in the non-technical sector particularly in the areas of business etiquette, high sense of business ethics, and high professional standards. Absence of strategic management and business focus both at basic and expert level was also highlighted in the ICT VET Plan. However, competencies in multi-tasking and time management were found to be satisfactory across all levels. Another interesting observation reported in ICT VET Plan relates to significant gaps in finding people with multi-disciplinary expertise in multiple professions, e.g. Accounting and IT, HR and IT, Law and IT, Marketing and IT. The report summarized trends in ICT training sector as follows:

> "The transitory nature of IT workers increases the need of organizations to provide higher exposure and to bring new people up-to-speed more quickly as well as to avoid the risk of having an IT staff with obsolete knowledge.
>
> a) One of the biggest barriers affecting the ICT industry is retention of people with sufficient experience.
>
> b) Most of the ICT training institutes are catering to the lowest tier of competency triangle due to higher number of audiences within the particular tier; it also indicates the lack of courses and resource personnel to cater to the higher tier of competency triangle.
>
> c) Majority of training courses are not geared towards current operating environments and lack effective objective-driven training.

d) e-Learning increases in popularity – Instructor-led training (ILT) is still the most popular medium for IT training delivery. But technology – based training, fueled by the increasing popularity of e-Learning, is gaining ground.

e) Some of the BPOs lack the strategic focus and there is no benchmark for compensation and benefits, HR policies, performance evaluation, etc.

f) Basic level of ICT skills are required in most IT organizations at entry level. These competencies have to be assessed in the BPO sector such as typing speed, accuracy, voice clarity, fluency, vocabulary, grammar/sentence numerical ability, logical reasoning, message clarity, comprehension, accent understanding, numerical ability, logical reasoning and particularly language skills.

g) BPO sector is faced with great challenges in recruitment process".

(KPMG 2007 pp. 38-39.)

The other three VET Plans do not provide any specific information on the skills gap in their respective sectors. The VET Plan for the tourism sector broadly spells out supply of manpower by type of course programmes (e.g. cookery, front office etc.,) and by level of training (e.g. certificate, diploma, etc). It also states that the sector does not require high skilled training and it needs only semi-skilled and OJT type of training (TVEC, 2012, p.141).

The estimates prepared by the NPD, however, deals with skills gap in terms of numbers. For example, the report states that there are no more than 4,500 places for tourism training as against an annual requirement of 30,000. The industry practice is that most of the chain hotels operate their own training programmes and will continue to train their staff. This implies that the large number of staff that needs to be trained for establishments operating in both high end and low to mid-level can be expected to expand. Thus current number of training places needs to be doubled to help train 10,000 hospitality sector staff annually. The NPD report also indicates plans to promote upscale and high end tourism through proper market segmentation and diversification. The diversified segments would include nature tourism, adventure tourism, agro tourism, culture tourism, community tourism, sports tourism, eco-tourism, indigenous medicine and wellness tourism, etc. Serving these market segments will require skills in different trades, transport workers, cultural artists, sporting and cultural guides, travel agents, etc. (NPD, 2014, p.71).

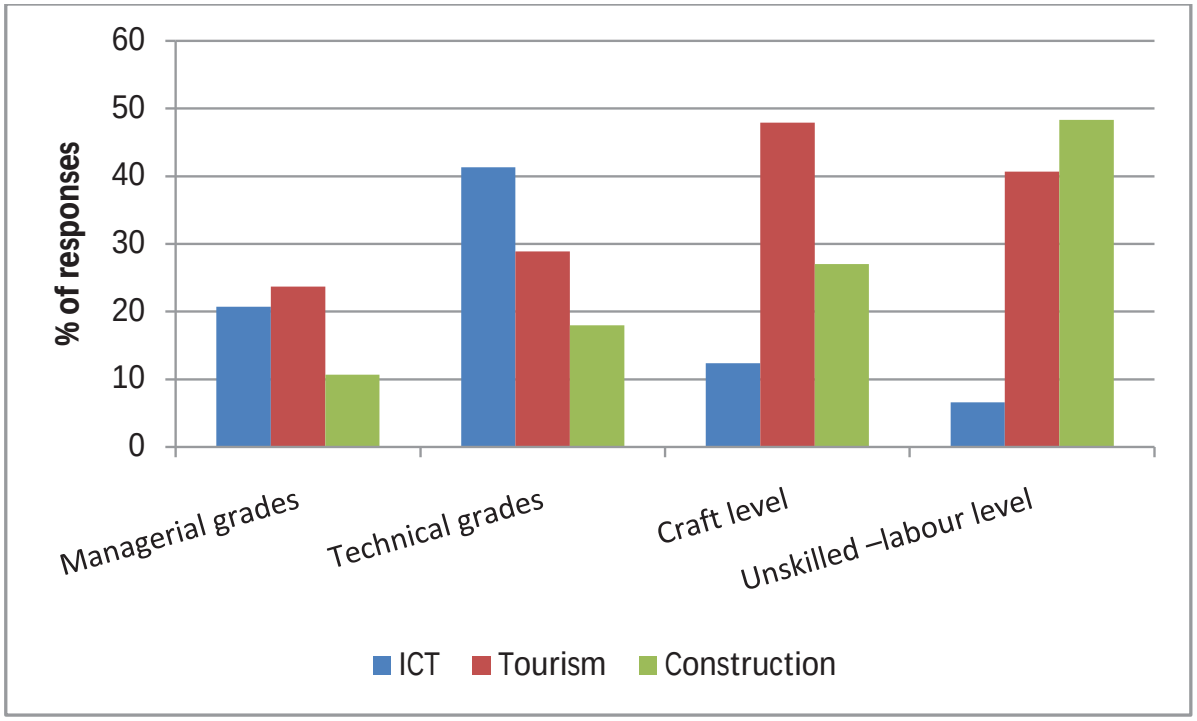
Similarly, the annual requirement of craft workers in the construction sector is estimated at 15,000 (NPD, 2014). This number needs to be compared with the 10,000 and 1,000 who are enrolled in public and private sector training centres respectively, leaving a gap of 4000. This figure does not take into account the demand from foreign markets. The NPD estimates that around 5000 workers per year will be required as the light engineering and manufacturing sectors grow. Here, a skills gap does not seem immediately apparent because while public sector training institutes have an intake of 4,500 per year, the private sector accommodates another 500. However, these estimates do not take into account the demand from foreign markets particularly for workers in the job categories of mechanic, electrician, fabricator, fitter, bar bender, tinker, painter,etc, The NPD also states that

many of the existing employees in construction and engineering services sectors have received little formal training and do not have certification. Thus, the report emphasizes the need for recognizing RPL and upgrading of skills with special modules for these workers (NPD, 2014, p.72).

The existence of a skills gap could be attributed to several reasons. Among them are the following: inadequate supply, low quality of local training, low starting wages, job turnover, and the emigration of skilled workers. Of these factors, low graduate output and low quality of training were discussed at the beginning of this chapter. An analysis of the other important factors is beyond the scope of the present study.

Nevertheless, the existing body of evidence about labour market conditions suggests high rates of labour turnover in the construction, ICT and tourism sectors (Figure 4.4). This evidence is based on responses given by the employers in the three sectors. The findings suggest higher worker turnover in the tourism sector compared with the construction and ICT sectors. In terms of skills categories, the highest turnover is reported among unskilled and craft level workers, particularly in tourism and construction sectors. Relatively high staff turnover among technical grades (41 per cent) is also clearly noticeable.

Figure 4.4: Labour turnover in the last six months in the ICT, tourism and construction sectors (% of responses)



Sources: SIPL (2012a, 2012b, 2012c)

4.5 Summary

In this chapter we have attempted to analyse the supply of training services relating to the four sectors covered in the present study. At the outset, it was observed that skills training in the four sectors are carried out externally by public, private, non-government organizations, and internally through in-house structured, foreign and on-the-job-training. The relative shares of these sources of training vary across the four sectors.

An analysis of the VET Plans relating to these four sectors revealed that only the ICT VET Plan provides detailed information on different categories of training providers, analysis of programmes by type of qualifications, mapping the requirements of the industry with relevant NVQ levels. The VET Plan for tourism sector also provides complete coverage of course programmes by type of service providers, syllabi and targeted occupational groups. However, it is important to note that only the ICT VET Plan, among the four sector specific VET Plans, provides a comprehensive assessment of skill gaps in the industry.

Employers` assessment on quality of training covering both technical and soft skills suggested relatively low levels of satisfaction with public sector training providers in the tourism sector. In contrast, public sector training institutes provided high quality technical skills training for the ICT sector. Employers` assessments of soft skills training received from public sector institutions show training for the construction sector to be better than in the ICT and hospitality sectors. Thus, public sector training providers seem to have performed better in providing job-related theoretical knowledge than in developing soft skills.

A cross-country assessment of training indicates that Sri Lanka provides more in-house training than its South Asian neighbours. The evidence from market surveys also indicates that firms concentrate more on induction training, in-house structured training and OJT rather than relying on outside training providers. The evidence on the skills gap revealed availability of detailed data sets for ICT industry and absence of sufficient information for the other three sectors.

5

CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Introduction

The government's development plan, the *Mahinda Chintana,* envisages sustained economic growth through the structural transformation of Sri Lanka into five hubs (maritime, aviation, commercial, energy, and knowledge hubs). However, if Sri Lanka's economy is to achieve this transformation, its transition to efficiency-driven production structures needs to accelerate and deepen. This in turn would become possible only if the country can draw on a highly skilled workforce that can both manage and power the transformation. In fact, as policy makers rely heavily on manufacturing and services sectors to continue to drive economic growth, Sri Lanka needs to invest in building job-specific technical and vocational skills to increase competitiveness. Thus, the availability of specially trained machine operators, technicians, craftspeople, sales personnel, professionals and managers, will determine the rate at which Sri Lanka's economy transitions to an efficiency-driven economy.

The present study is a desk review of the skills gap in four key industrial sectors that have been identified by employers and policy-makers as potential growth sectors. In particular, the Ministry of Finance and Planning, has identified the four sectors as priority sectors based on employment growth forecasts. The sectors are: the information and communication technology industry (ICT), the tourism and hospitality industry, construction and light engineering. This review drew on published and unpublished academic and policy documents, and administrative reports, as well as published and unpublished secondary sources for data and statistics, to collate as much information as was already available on the skills gap in the four sectors.

In this concluding chapter, we briefly summarize the main findings before going on to draw out their policy implications.

5.2 Summary of findings

Overall review of four sectors

In 2012, 8.1 million Sri Lankans, or half the country's population aged 15 years and more, were employed. Of this number, a little less than a million were employed in our four sectors of interest. A total of 557,180 were employed in construction; 208,673 in light engineering; 132,510 in the tourism and hospitality sector; and, 66,518 in the ICT sector. The key four sectors covered in the present study account for 9 per cent of GDP and 10 per cent of total employment. The assessment on investment projections indicated private-sector driven strategic interventions in the ICT, THI, and light engineering services sectors. It also showed continuity of state dominant investment strategies in the construction sector.

In terms of educational attainment, ICT appears to be the most skill-intensive sector with 46 per cent of workers with at least a first degree. Workers with A' Levels make up 19 per cent of the workforce, and those with O' Levels 24 per cent. Workers with secondary education predominate in the other three sectors, most particularly in construction and light engineering, accounting for 77 per cent and 62 per cent of each sector's workforce. In contrast, a little more than half of the workforce in the tourism sector is made up of secondary-educated workers. The predominance of secondary-educated workers in the four sectors, making up two thirds of all workers in the sector is cause for concern.

In 2004, 56 per cent of the workforce in the ICT sector had undergone technical training, proportionately more women (59 per cent) than men (55 per cent) had received formal training. In the sector, no woman had undergone informal technical training but 5 per cent of men had. Across the other three sectors, the shares of technically trained workers were 10, 11, and 21 per cent in the tourism, construction, and engineering services sectors respectively in 2004. While women make up roughly a third of Sri Lanka's employed labour force, they account for an even smaller share of the workforce in the four industrial sectors under review. Even in the ICT sector, women account for just 32 per cent and in tourism they account for 28 per cent. In construction they account for a mere 3 per cent of the workforce while 8 per cent of all employed in light engineering are women. The ICT sector is also dominated by a youthful workforce.

Many studies have identified the lack of English language proficiency as constraining employers from both upgrading and expanding their businesses. In 2012, half the number of workers in the managerial, professional and technician categories was literate in English, but only 16 per cent of all workers in the four sectors were as proficient. The proportion of English literate workers by occupation in each sector shows that only 61 per cent of technicians in light engineering were literate in English, suggesting that 39 per cent of them would not be able to read even an operating manual relating to an imported piece of equipment. This is likely to be a serious constraint on the rapid transfer of technology and upgrading of the production process in this sector. Surprisingly, only 19 per cent of service workers in the tourism sector were literate in English.

In terms of organizational structure, roughly half the number of workers employed in the key industries either works on their own, or as employees without any institution. This is especially true of construction. This evidence of informality is likely to pose challenges to policy makers seeing to enhance skills among this group of workers because finding and reaching them, is likely to be difficult as they are likely to be unorganized and atomic in their operations. By type of employment, bulk of employment in all four sectors is in the private sector, particularly in ICT (74 per cent) and tourism (64 per cent). Public employees account for a relatively minor share and employees who do not belong to any institution make up the major share in construction (40 per cent).

The evidence by size of institution showed that half the number of employees in the four key sectors is employed in small and medium establishments, and about a third in micro enterprises. The ICT sector has the largest proportion of employees in medium enterprises (16-49). It also has the largest share of employees in large establishments of more than 100 workers (23 per cent), followed by the tourism sector (20 per cent). In light engineering, 35 per cent of employees are in firms employing less than 5 persons, in tourism 29 per cent, and in construction, 27 per cent. Note that in construction, 29 per cent of employees do not belong to any specific institution, while 27 per cent is employed in establishments with less than 5 employees. Together, these two shares account for slightly more than half the number of employees in the sector, and a quarter of the number of employees in all four sectors.

The analysis of sector profiles based on data from industry sources revealed that the ICT sector itself is made up of four major sub-categories: ICT or the production of ICT related output as primary output, Non-ICT - that is, business entities which use ICT for supplying non-ICT goods and services to their customers or clients, the Government and the BPO sub sector. Of these four sectors the first two categories account for about 87 per cent of employment while the latter two records high growth rates (above 27 per cent) between 2009 and 2014. In the tourism sector, hotels and restaurants account for nearly two thirds of establishments in the sector and 70 per cent of total employment. Next most important, both in terms of establishment size and employment, are the Travel Agents and Tour Operators, who account for 27 per cent of the total number of establishments but only 9 per cent of total employment. In the construction sector, building sub-sector accounted for nearly 60 per cent of total value addition by the sector and 65 per cent of total employment in the sector. The highways sector came second, accounting for 20 per cent of total value added and 21 per cent of total employment. This sector is almost exclusive to government. Thus, these two sub-sectors together accounted 79 per cent of value added in the construction industry, and 86 per cent of total employment in construction.

The engineering services sub-sector is defined to include seven subsectors in manufacturing. They are, manufacture of basic metals; metal products; machinery and equipment (n.e.c); radio, TV and communication equipment and apparatus; medical, precision and optical instruments and semi-trailers; other transport equipment; and other manufacturing. There about 2000 firms engaged in manufacture of engineering products, processed components, household equipment, simple structures using metal and repair of equipment and machinery. Of the seven sub-sectors, manufacture of other manufacturing (n.e.c) (43 per cent) accounts highest share of employment while manufacture of fabricated metal products and basic iron and steel and casting metals n.e.c sub-sectors share 25 and 12 per cent of total employment. In terms of value added other manufacturing (45 per cent), basic steel and casting metals (18 per cent) and fabricated metal products (15per cent) sub-sectors shared 78 per cent of total value added.

The demand for training

The demand for TVET training was examined along four dimensions: a) The regional supply of labour, through an analysis of the distribution of Sri Lanka's population and internal migration rates; b) New entrants to the labour market; c) VET Plans; and d) Market demand for occupation specific skills. The information related to new entrants to the labour market pointed to three main findings: a) about 174,000 students leaving school education system each year go through skills development programmes offered by public and private service providers, b) about 152,000 join the labour market without any training, and c) of the unemployed without vocational training, 51 per cent are with below GCE O/L qualifications. Other than for the VET Plan for the ICT sector, the sector-specific VET Plans proved to be a less useful source for the demand for skills as they did not provide sufficient information. For example, some of the VET Plans did not even provide basic information by type of occupation covering both domestic and foreign markets.

Analysis of market demand for occupation-specific skills in the four sectors indicated that the total number of jobs advertised in 2013 stood at 107,698, of which 57 per cent were in the informal sector. In terms of occupational groups, the highest demand was for technicians and associate professional (20 per cent), elementary occupations (15 per cent), service workers (15 per cent), craft and related workers (13 per cent), clerks (11 per cent), professionals (10.5 per cent) and plant and machine operators (9.5 per cent). In terms of industry sectors, hotels and restaurants (15.5 per cent), reported the highest proportion of advertisements relative to other sectors. Most of these advertisements appear to be for new entrants to the job market as they do not specify work

experience. The majority of them do not specify gender. The analysis of foreign market demand suggests that it is limited to a few occupation categories of the four sectors covered in the study e.g. cook,waiter, stewards, chef, mason, carpenter, painter, etc.

Recent work on the skills gap in Sri Lanka has adopted a general rather than a sector-specific approach and has conceptualized the problem in terms of the demand for three different types of skills demanded by the employers, e.g. cognitive, soft and technical skills. Deficits in all three areas were identified. The lack of sufficient workers with English language and computer skills has also been identified. This is of particular relevance in enhancing competitiveness of ICT, tourism and light engineering sectors. The need for foreign language skills is currently underestimated by employers, but the latest findings on English skills suggest that this is an area with long-term implications for development and one that needs special attention.

The supply of training

There are six major sources of TVET services: public, private, non-government organizations, in-house structured, foreign and on-the-job-training. Sri Lanka has been recognized as one of the highest in-house training providers in South Asia (37 per cent) followed by Bangladesh (26 per cent), India (17 per cent), and Pakistan (8 per cent).

The relative magnitude of these sources varies across the four sectors. Induction training, in-house structured, and OJT appear to be the most important sources of training in construction, ICT and hospitality sectors with firms relying less on external training providers. Training from outside sources varied from 3 to 4 per cent between construction, ICT and THI sectors. Six to ten per cent of the employers do not provide any training in the ICT industry.

The ICT VET Plan provides detailed information by different categories of training providers, type of qualifications, and maps them with relevant NVQ levels. It provides by far, the most comprehensive assessment of skills gap, out of all four sectors. The VET Plan for the tourism sector also provides complete coverage of course programmes by type of service providers, syllabi and targeted occupational groups. The VET Plans for the other two sectors are less well-developed. By and large, there is insufficient information in the sector-specific VET Plans other than the one for the ICT sector, to be able to assess skill gaps in those sectors through them.

Employers' assessment of the quality of training covering both technical and soft skills indicated the relatively low quality of public sector service providers in the tourism sector. With respect to technical skills, the quality of ICT training provided by public sector training institutes appeared to be high relative to that provided for the construction and tourism sectors. Employers' assessment of soft skills training received from public sector institutions in construction appear to be more favourable that their assessment of soft skills provided by ICT and tourism training providers. Overall, public sector training providers seem to have performed better in providing job-related theoretical knowledge than in developing soft skills.

In Sri Lanka skills certification is organized in a national qualifications framework – NVQ system. As at the end of October 2014, availability of National Competency Standards and Curricula (NVQ Level 1-4) stood at 144 and number of programmes covering under ICT, THI, Construction and Engineering Services were 6, 11, 6 and 40 respectively. The ICT and light engineering services sectors appear to be using the NVQ system much more than the tourism and construction sectors.

Skills gaps

The recent study on skills in Sri Lanka by Dundar et al. (2014) made some key observations with respect to the availability of skills for growth and competitiveness which are also relevant for the four sectors under review. First, the study found that while individuals with higher education used cognitive skills, only 52 per cent of individuals with primary and secondary education did so. It also found that only 16 per cent of workers could use computers while only 24 per cent were proficient in English. Urban workers were more skilled in these two areas than rural workers. For example, while 28 per cent of the urban population used computers only 8 per cent of rural residents did so. They also found big skills gaps in use of computers and English language skills between high-skilled and low skilled workers. Also the ability to use computers and English Language skills was 44 and 8 per cent between high-skilled and low-skilled workers, respectively. The availability of soft skills was also less than optimal: Dundar et al. (2014) found that while about 77 per cent of workers used team skills only 50 per cent used presentation skills.

Many of these skills gaps are found in the four sectors under review. For example, the present review found that the ICT training gap was mainly prevalent at the expert level with a level of competency at 10 to 40 per cent. The National ICT Workforce Survey (ICTA, 2014) indicates an unfilled gap of 468 graduates, and argues that latent demand for graduates could be even higher due to unrealized potential, especially in the export sector for supplying ICT products and BPO services. Similarly, soft skills were inadequate in the non-technical sector, particularly in the areas of business etiquette, high sense of business ethics, and high professional standards. The National ICT Workforce Survey (ICTA, 2014) carried out a skills gap analysis and reported high, un-met demand from employers for soft skills. ICT VET Plans pointed to the absence of strategic management and business focus, both at basic and expert levels. It also reported significant gaps in finding people with multi-disciplinary expertise in multiple professions, e.g. accounting and ICT, HR and IT, law and IT, marketing and IT.

The government plans to promote upscale and high end tourism through proper market segmentation and diversification. The diversified segments would include nature tourism, adventure tourism, agro tourism, culture tourism, community tourism, sports tourism, eco-tourism, indigenous medicine and wellness tourism. However, this will require skills in different trades, transport workers, cultural artists, sporting and cultural guides, and travel agents. The estimates by the NPD show that there are no more than 4,500 places for tourism training as against an annual requirement of 30,000. A large number staff needs to be trained for establishments operating in both high end and low to mid-level can be expected to expand.

Information from surveys of employers' perceptions about publicly-provided TVET revealed the high quality of training offered by service providers in job related theoretical knowledge. However, public TVET providers did not develop adequate skills in the areas of job-related practical skills, in handling industry-relevant equipment and tools, and in creating positive attitudes.

5.3 Policy implications

This study adopted the standard conceptualization of skills required in the workplace as comprising of cognitive, soft and technical skills. Most of the available data is on technical skills. There is a little information on the availability of soft skills in some sectors. Information on the availability of cognitive skills in the four sectors is non-existent.

However, going by the findings of Dundar et al. (2014), based on surveys of all three types of skills, it is possible to conclude that the availability of cognitive skills among the workforce belonging to the four key sectors must also be in short supply. These inadequacies derive from the type and quality of education provided by the general schools system. Recall that Dundar et al. (2014) found that while individuals with higher education used cognitive skills, only 52 per cent of individuals with primary and secondary education did so. Since cognitive skills are necessary for the acquisition of other types of skills, it is possible that those with higher education had acquired the necessary cognitive skills which enabled them to move on to higher levels of education, while the others did not. However, whether these individuals acquired the necessary cognitive skills in better schools, or whether they acquired them from their parents who were well-educated, or whether they acquired the skills from both these sources, is unclear. The school education system is also failing to impart several urgently needed technical skills such as the ability to write and communicate clearly in even the mother tongue, let alone in English. Therefore, as a first step, the general education system needs to be overhauled in such a way that it shifts out of the business of imparting facts and moves into building the skills necessary to process and analyze facts, make connections and see the big picture, and then communicate the analysis clearly and succinctly through presentations and report writing.

While the general education system needs urgent reform, TVET providers, too, need to focus more on equipping the individuals they train with the soft skills demanded by the market. Thus, action-oriented reform is urgently needed in the sector, and the present emphasis on imparting technical skills should be broadened to include the inculcation of soft skills.

The majority of training courses particularly in tourism, construction and the light engineering sectors are not geared towards current operating environments and lack effective objective-driven training. The number of NVQ (Level 1-4) programmes also needs to be increased for the ICT, tourism and construction sectors.

Although the ICT industry employs far fewer workers than do the other three sectors, it has the greatest potential to offer decent work opportunities, particularly for women and young people, in the future. However, the industry currently faces a significant skills gap, which needs to be met by increasing the capacity of training institutes to produce more graduates. At the moment, most of the ICT training providers are catering to the lowest tier of competency triangle due to high demand. Besides, many training providers lack resource personnel to provide training programmes that cater to the higher tier of competency levels.

The varying structures of the four key sectors may indicate the types of training delivery models are likely to be more effective and have a better outreach. For example, the majority of workers in construction work in micro and small establishments will not have the resources to provide their own training programmes. The low incidence of external training in the industries suggests that pre-employment training is very important in Sri Lanka. Therefore, a key challenge that needs to be met when designing a skills development strategy for the four key sectors is to formulate models

of training provision that can deliver pre-employment training that meets the changing needs of a dynamic market. Greater involvement of the ultimate employers of the skills produced can be sought through greater recourse to internships and apprenticeships.

Sri Lanka is undergoing several important structural changes internally, even while facing ever-increasing competition in the international market. This has been prompted by multiple factors including demographic transformation, changes in the economic structure, diversified division of labour, global competition and economic integration. Market-oriented skills acquisition is at the heart of enhancing productivity and competitiveness to meet the internal and external challenges that the country faces. Thus, the availability of high-level cognitive skills (e.g. analysis, problem solving and communication) and behavioural skills (e.g. discipline and work effort) will continue to be key determinants of the demand for Sri Lankan workers both here and abroad as the demand for manual and routine cognitive skills continues to fall everywhere.

REFERENCES

Abidoye, B.,Orazem, P. F. and Vodopivec, M. 2009. "Firing cost and firm size: a study of Sri Lanka's severance pay system," Social Protection Discussion Papers50671, The World Bank.

Asian Development Bank (ADB) (2013a) Skills Development Project (RRP NEP 38176): Labor Market Assessment of Demand for Skills. Manila. Asian Development Bank (ADB) (2013b) Projects: Technical Education Development. Available online at: www.adb.org/projects/35197-013/details.

Asian Development Bank (ADB) (2012) Sri Lanka: Technical Education Development. Completion Report. Available online at:www.adb.org/sites/default/files/projdocs/2012/35197-013-sri-pcr.pdf

Arunatilake, N. and Jayawardena, P. 2010. Explaining Labour Market Imbalance in Sri Lanka: Evidence from Jobsnet Data. In, Gunatilaka, R., Mayer, M. and Vodopivec, M. (eds) *The Challenge of Youth Unemployment in Sri Lanka*, Washington D.C. The World Bank, pp.69-89.

Azam, M. Chin, A. and Prakash, N. (2010) The returns to English-language skills in India. Bonn: Institute for the Study of Labor. Discussion Paper No. 4802. Available online at: http://ideas.repec.org/p/iza/izadps/dp4802.html.

Central Bank of Sri Lanka (various years), Annual Reports, Colombo: Central Bank of Sri Lanka.

Department of Census and Statistics. 2011. *Annual Survey of Construction Industry 2010*. Colombo: Department of Census and Statistics.

Department of Census and Statistics. 2013. *Sri Lanka Labour Force Survey Annual Report 2012*. Colombo: Department of Census and Statistics.

Department of Census and Statistics, 2014.*Annual Survey of Industry 2013*.Colombo: Department of Census and Statistics.

Department of Census and Statistics, 2014a.*Census of Population and Housing 2012 Provisional Information based on 5% Sample*. Colombo: Department of Census and Statistics.

Department of Census and Statistics, 2014b.*Census of Population and Housing 2012 Key Finding*. Colombo: Department of Census and Statistics.

Dickens, W. T. and Lang, K. 1991. "An Analysis of the Nature of Unemployment in Sri Lanka". NBER Working Paper 3777, National Bureau of Economic Research, Cambridge, MA.

diGropello, Emanuela, with Hong Tan and Prateek Tandon, 2010. Skills for the Labor Market in the Philippines, World Bank, Washington. D.C.

Dundar, H., B. Millot, Y. Savchenko, H. Aturupane, T. Piyasiri. 2014. *Building the Skills for Economic Growth and Competitiveness in Sri Lanka,* Washington, DC : World Bank Group.

Dutz, M. A., and S. D. O'Connell. 2013. "Productivity, Innovation and Growth in Sri Lanka: An Empirical Investigation". World Bank Policy Research Working Paper 6354.Washington, DC. World Bank.

Erling, E. J. 2014. The Role of English in Skills Development in South Asia: Policies, Interventions and Existing Evidence, June 2014.British Council, U.K.

ICTA, 2014, National ICT Workforce Survey, November 2013, Colombo.

Glewwe, P. 1987. "Unemployment in Developing Countries: Economists' Models in Light of Evidence from Sri Lanka". *International Economic Journal,* 1 (4):1-17.

Gunatilaka, R. 2014. Women and Poverty in Sri Lanka, Background paper prepared for the Country-wide Review of Critical Areas of Concern identified by the Beijing Declaration and Platform for Action (1995), Colombo: Centre for Women's Research.

Institute of Policy Studies, 2012. *Sri Lanka State of the Economy 2012 Report*. Institute of Policy Studies, Colombo.

Institute of Policy Studies (IPS), 2013. *Migration Profile-Sri Lanka*, Colombo.

KPMG, Ford Rhodes, Thornton and Company, 2007.*Training Needs Analysis for the ICT Industry of Sri Lanka*, Colombo.

Ministry of Finance and Planning, 2014.Budget Speech, 2015. Colombo.

Ministry of Labour Relations and Manpower, Central Bank of Sri Lanka, Department of Census and Statistics, 2009. *Labour and Social Trends in Sri Lanka 2009*. Ministry of Labour Relations and Manpower, Central Bank of Sri Lanka, Department of Census and Statistics, Colombo.

National Planning Department(NPD), 2014.*Skills Sector development Programme of Sri Lanka, 2014-2020 (Towards employable skills for everyone)*, National Planning Department, Ministry of Finance and Planning, Democratic Socialistic Republic of Sri Lanka, 20-June-2014.

National Planning Department(NPD), 2013.*Sri Lanka the Emerging Wonder of Asia*, *Unstoppable Sri Lanka 2020, Mahinda Chintana Vision for the Future, Public Investment Strategy, 2014-2016*,National Planning Department, Ministry of Finance and Planning, Colombo.

Perera, S and Ukwatta, S. 2000. 'How Popular is the Western Province among the Migrants in Sri Lanka, in *Demography of Sri Lanka: Issues and Challenges*, Colombo: Department of Demography, University of Colombo.

Price Waterhouse and Coopers (PWC), 2012a, Human Resources and Skills Requirements of Metal and Light Engineering Sector, Draft Report. November 2012, Colombo.

Price Waterhouse and Coopers(PWC),2012b, Human Resource and Skills Requirements of Construction Industry of Sri Lanka, Draft Report. November 2012, Colombo.

Riboud, M., Savchenko, Y. Tan, H. (2007) *The knowledge economy and education and training in South Asia*. Washington, DC: The World Bank.

Skills International (Pvt) Ltd (SIPL), 2012a.Labour Market Survey - Construction Industry, Unpublished report, Colombo.

Skills International (Pvt) Ltd (SIPL), 2012b.Labour Market Survey - Information Technology Industry (ICT) / Business Process Outsourcing (BPO) Industry, Unpublished report, Colombo.

Skills International (Pvt) Ltd (SIPL), 2012c.Labour Market Survey - Tourism Industry, Unpublished report, Colombo.

TVEC, 2010, Vocational Education and Training Plan, Information and Communication Technology Sector

TVEC, 2012, Vocational Education and Training Plan for Hotel and Tourism Sector

TVEC, 2014, Labour Market Information Bulletin, June 2014.

Seers, D. 1971. "Matching Employment Opportunities and Expectations" International Labour Office, Geneva.

Tan, H. and S. Chandrasiri. 2004. "Training and Labour Market Outcomes in Sri Lanka". World Bank Institute Working Paper, Washington D.C: World Bank.

World Bank, 2010.*Stepping up Skills for more Jobs and Higher Productivity*, The World Bank, Washington D.C.

World Bank. (2007). *Sri Lanka Poverty Assessment Engendering Growth with Equity: Opportunities and Challenges*. Colombo. The World Bank.

World Economic Forum (WEF), 2014.Global Competitiveness Reports, 2008/09 and 2014/15. Geneva.

APPENDICES

Appendix Table 1: Four-digit industrial sub-sectors included in the definitions of the four key sectors

ISIC Code (Revision) 3	Four-digit classification of industry
ICT	
3000	Manufacture of office, accounting and computing machinery
7123	Renting of office machinery and equipment (including computers)
7210	Hardware consultancy
7220	Software consultancy and supply
7230	Data processing
7240	Data base activities
7250	Maintenance and repair of office, accounting and computing machinery
7290	Other computer related activities
Hospitality	
5510	Hotels; camping sites and other provision of short-stay accommodation
5520	Restaurants, bars and canteens
6304	Activities of travel agencies and tour operators; tourist assistance activities n.e.c.
Construction	
4100	Collection, purification and distribution of water
4510	Site preparation
4520	Building of complete constructions or parts thereof; civil engineering
4530	Building installation
4540	Building completion
4550	Renting of construction or demolition equipment with operator
Engineering	
2710	Manufacture of basic iron and steel
2720	Manufacture of basic precious and non-ferrous metals
2731	Casting of iron and steel
2732	Casting of non-ferrous metals
2811	Manufacture of structural metal products
2812	Manufacture of tanks, reservoirs and containers of metal
2813	Manufacture of steam generators, except central heating hot water boilers.
2891	Forging, pressing, stamping and roll-forming of metal; powder metallurgy
2892	Treatment and coating of metals; general mechanical engineering on a fee or contract basis
2893	Manufacture of cutlery, hand tools and general hardware
2899	Manufacture of other fabricated metal products n.e.c.
2911	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
2912	Manufacture of pumps, compressors, taps and valves
2913	Manufacture of bearings, gears, gearing and driving elements
2914	Manufacture of ovens, furnaces and furnace burners

2919	Manufacture of other general purpose machinery
2921	Manufacture of agricultural and forestry machinery
2922	Manufacture of machine-tools
2923	Manufacture of machinery for metallurgy
2924	Manufacture of machinery for mining, quarrying and construction
2925	Manufacture of machinery for food, beverage and tobacco processing
2926	Manufacture of machinery for textile, apparel and leather production
2929	Manufacture of other special purpose machinery
2930	Manufacture of domestic appliances n.e.c.
3110	Manufacture of electric motors, generators and transformers
3120	Manufacture of electricity distribution and control apparatus
3130	Manufacture of insulated wire and cable
3140	Manufacture of accumulators, primary cells and primary batteries
3150	Manufacture of electric lamps and lighting equipment
3190	Manufacture of other electrical equipment n.e.c.
3210	Manufacture of electronic valves and tubes and other electronic components
3220	Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy
3311	Manufacture of medical and surgical equipment and orthopedic appliances
3312	Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except control equipment industrial process
3313	Manufacture of industrial process control equipment
3320	Manufacture of optical instruments and photographic equipment
3330	Manufacture of watches and clocks
3410	Manufacture of motor vehicles
3420	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers
3430	Manufacture of parts and accessories for motor vehicles and their engines
3511	Building and repairing of ships
3512	Building and repairing of pleasure and sporting boats
3591	Manufacture of motorcycles
3592	Manufacture of bicycles and invalid carriages
3599	Manufacture of other transport equipment n.e.c.
3710	Recycling of metal waste and scrap
3720	Recycling of non-metal waste and scrap
5020	Maintenance and repair of motor vehicles
5030	Sale of motor vehicle parts and accessories
5040	Sale, maintenance and repair of motorcycles and related parts and accessories

Appendix Table 2: Employment by 4-digit occupation categories ICT, 2004 and 2012

ISCO 88	Occupation	Employment	
		2004	2012
1210	Directors and chief executives	332	
1227	Computing service managers	29	1599
1317	General managers of business service firms	223	349
2131	System designers and analysts	273	875
2132	Computer programmers	223	4503
2139	Other computing professionals (new)	593	2528
2145	Mechanical engineers		366
2149	Other architects, engineers and related professionals	206	1309
2359	Other teaching professionals not elsewhere classified (new)	1157	
2411	Accountants	306	
2444	Philologists, translators and interpreters	354	
2452	Sculptors, painters and related artists		427
3114	Electronics and telecommunications engineering technicians	257	
3121	Computer assistants (new)		1405
3122	Computer equipment controllers	119	944
3419	Other finance and sales associate professionals		595
3431	Administrative and related associate professionals		488
3433	Book keepers		787
3439	Other administrative associate professionals (new)		526
3449	Other government associate professionals		249
4112	Word processing and related operators	1625	3864
4113	Data entry operators	251	2570
4114	Calculating machine operators		525
4121	Accounting and book keeping clerks		602
4131	Stock clerks	232	
4222	Receptionists and information clerks	98	
5149	Other personal services workers not elsewhere classified		119
7239	Other machinery mechanics and fitters	509	289
7241	Electrical mechanics and fitters		547
7242	Electronics fitters and services	24	369
7244	Telegraph and telephone installers		410
7311	Telegraph and telephone installers	256	182
7341	Compositors and type setters		500
7442	Shoemakers and related goods makers		294
9132	Helpers and cleaners in offices and hotels and related workers	345	
9162	Sweepers and related labourers	280	

Source: Estimated using Department of Census and Statistics' Labour Force Survey Data, 2004 and 2012. Sample weights used.
Note: Data for 2004 excludes Mullaitivu and Killinochchi districts in Northern Province. A few ISCO codes contained in the data do not correspond to ISCO 88 and hence we are unable to define the occupational category of these workers. Nevertheless these too are reported in order to make up consistent overall employment figures.

Appendix Table 3: Employment by 4-digit occupation categories,Tourism and hospitality, 2004 and 2012

ISCO 88	Occupation	Employment	
		2004	2012
1210	Directors and chief executives	306	
1221	Production and operations managers		558
1222	Finance and administration managers	936	349
1223	Personnel and industrial relations managers	390	
1224	Sales and marketing managers	965	246
1226	Supply and distribution managers		888
1314	General managers in retail and wholesale trade	2020	4040
1315	General managers of restaurants and hotels	7671	11333
1317	General managers of business service firms	1012	180
1318	General managers in personal care, cleaning, repairs and related services	177	297
1412		934	
2139	Other computing professionals (new)		541
2142	Civil engineers	523	
2143	Electrical engineers		541
2229	Other health professionals (except nursing) (new)		357
2411	Accountants	249	1036
2412	Personal and careers professionals	217	923
2453	Composers, musicians and singers	182	
3122	Computer equipment controllers		502
3123	Industrial robot controllers		443
3152	Safety, health and quality inspectors (vehicles, processor products)		874
3223	Dieticians and nutritionists	762	
3416	Buyers		846
3429	Other business services agents and trade brokers	101	168
3431	Administrative and related associate professionals	323	559
3433	Bookkeepers		531
3439	Other administrative associate professionals (new)	1589	1317
4114	Calculating machine operators		926
4115	Secretaries (new)		1293
4121	Accounting and book keeping clerks	1348	477
4121	Accounting and book keeping clerks		1597
4122	Statistical and finance clerks	222	647
4131	Stock clerks	231	488
4211	Cashiers and ticket issuers	1674	733
4215	Bill, debt and related cash collectors	203	
4221	Travel agency clerks		551

4222	Receptionists and information clerks	1761	2975
4223	Telephone switchboard operators	256	
5111	Flight attendants and travel stewards	57	295
5113	Travel guides and ground hosts		1290
5121	House stewards and housekeepers	419	2864
5122	Cooks	12920	23985
5123	Waiters and bartenders	8177	28714
5131	Child care workers		302
5132	Institution based personal care workers	20	250
5139	Other personal care workers		405
5142	Companions and valets		1108
5149	Other personal services workers not elsewhere classified		1716
5210	Shop salespersons and demonstrators	587	1273
5220	Stall and market salespersons (new)	7055	8100
6113	Gardeners, horticultural and nursery growers	232	407
7135	Plumbers and pipe fitters		493
7232	Aircraft engine mechanics and fitters		449
7241	Electrical mechanics and fitters	749	422
7412	Bakers, pastrycooks and confectionery makers	1296	1688
7413	Food and beverage testers and graders	663	1611
7416		119	
8152	Cooking, roasting and related heat-treating plant operators	282	
8277	Tea, coffee, cocoa, and chocolate preparing and producing machine operators		271
8279	Brewers and wine and other beverage machine operators		399
8281	Mechanical machinery assemblers		341
8322	Car, taxi and light van drivers	574	508
8324	Heavy truck drivers		453
8333	Crane, hoist and related materials-moving equipment operators		374
9111	Street food vendors		2207
9113	Door-to-door and telephone salespersons		522
9114	Shop workers	631	701
9131	Domestic helpers and cleaners	212	366
9132	Helpers and cleaners in offices and hotels and related workers	8042	9895
9133	Hand launderers and pressers	248	
9141	Building caretakers		1016
9152	Watchers and doorkeepers	355	922
9153	Private security guards	743	684
9154	Vending machine money collectors and meter readers		283
9161	Garbage collectors		406
9162	Sweepers and related labourers	203	246
9211	Farmhands and labourers	228	259

9313	Building construction labourers		284
9322	Hand packers and other manufacturing labourers		780
9331	Freight handlers	230	
9333	Drivers and operators of animal drawn vehicles and machinery	232	
9341	Labourers (N.E.C.)	1171	

Source and notes: As for Appendix Table 2.

Appendix Table 4: Employment by 4-digit occupation categories,Construction, 2004 and 2012

ISCO 88	Occupation	Employment 2004	
		2004	2012
1210	Directors and chief executives	244	1211
1222	Finance and administration managers	48	
1223	Personnel and industrial relations managers	251	
1226	Supply and distribution managers	116	
1312	General managers in manufacturing	185	
1313	General managers in construction	4873	7218
1317	General managers of business service firms	324	339
2139	Other computing professionals (new)		497
2141	Architects, town and traffic planners	1556	2124
2142	Civil engineers	2261	1340
2143	Electrical engineers		405
2145	Mechanical engineers	303	
2149	Other architects, engineers and related professionals	447	2671
2231		232	
2419	Other business professionals	211	
2431	Archivists and curators		241
2446	Social work professionals	206	
3112	Civil engineering technicians	578	1352
3118	Technical draughters	32	680
3119	Other physical science and engineering technicians	836	182
3151	Building and fire inspectors	908	2171
3152	Safety, health and quality inspectors (vehicles, processor products)	172	
3228	Pharmaceutical assistants		362
3413	Estate agents		298
3415	Technical and commercial sales representatives		162
3417	Appraisers and valuers		315
3419	Other finance and sales associate professionals	320	1413
3423	Labour contractors and employment agents (new)	2560	3859

3429	Other business services agents and trade brokers	662	665
3439	Other administrative associate professionals (new)	1386	2505
3449	Other government associate professionals	292	2122
3461	Decorators and commercial designers		409
4111	Stenographers and typists		1103
4113	Data entry operators		494
4115	Secretaries (new)	1126	622
4121	Accounting and book keeping clerks	676	3893
4131	Stock clerks		1506
4132	Production clerks	702	
4141	Library and filing clerks	583	
4143	Coding, proofreading and related clerks		818
4212	Tellers and other counter clerks	354	419
4215	Bill, debt and related cash collectors		329
5133	Home based personal care workers		148
5142	Companions and valets		353
5149	Other personal services workers not elsewhere classified	22	1363
5169	Protective services workers not elsewhere classified (new)	308	1417
5210	Shop salespersons and demonstrators	339	271
5220	Stall and market salespersons (new)		331
6153	Deep-sea fishery workers	119	
7111	Miners and quarry workers		757
7112	Shot firers and blasters		443
7121	Builders, traditional materials (new)		7489
7122	Bricklayers, stonemasons and tile setters	95644	213283
7123	Concrete placers, concrete finishers and terrazzo workers	12758	24921
7124	Carpenters and joiners	11459	23204
7129	Other building frame and related trades workers	553	9832
7131	Roofers		2146
7132	Plasterers	210	1032
7133	Insulators		502
7134	Glaziers	287	
7135	Plumbers and pipe fitters	1057	5698
7136	Building and related electricians	1248	4543
7141	Painters and paperhangers	8101	25358
7142	Laquerers and spray painters		1853
7212	Welders and flame-cutters	93	1007
7213	Sheet-metal workers	320	298
7231	Motor vehicle mechanics and fitters	1081	2962
7239	Other machinery mechanics and fitters	841	417
7241	Electrical mechanics and fitters	10218	26992

7243	Radio and television services	125	
7244	Telegraph and telephone installers		950
7245	Electrical line installers, repairers and cable jointers	528	1947
7311	Telegraph and telephone installers	234	
7322	Glass formers, cutters, grinders and finishers	213	
7331	Handicraft workers in wood and related materials	748	2006
7413	Food and beverage testers and graders		818
7423	Wood working machine setter-operators		158
7433	Tailors, dressmakers and hatters		573
8112	Mineral ore stone treating plant operators		603
8113	Well drillers and borers and related workers	60	853
8141	Sawmill, wood panel and related wood-processing plant operators	224	
8169	Other power-generating and related plant operators		1204
8211	Machine-tool operators	545	684
8240	Wood products machine operators		871
8282	Electrical machinery assemblers	596	2127
8290	Other stationary machine operators and assemblers	76	
8322	Car, taxi and light van drivers	24	3273
8323	Bus and tram drivers	270	885
8324	Heavy truck drivers	1134	5646
8332	Earth-moving and related machinery operators		2065
8333	Crane,hoist and related materials-moving equipment operators	216	
9113	Door-to-door and telephone salespersons	30	357
9114	Shop workers		892
9131	Domestic helpers and cleaners		820
9132	Helpers and cleaners in offices and hotels and related workers	355	899
9141	Building caretakers		777
9142	Window cleaners		1223
9152	Watchers and doorkeepers	207	907
9153	Private security guards	409	438
9154	Vending machine money collectors and meter readers	227	
9162	Sweepers and related labourers	1896	113
9211	Farmhands and labourers		2827
9212	Forestry labourers		63
9311	Mining and related labourers	273	1711
9312	Construction and maintenance labourers: roads, dams and similar constructions	4066	20821
9313	Building construction labourers	62633	91461
9321	Assembling labourers		304
9322	Hand packers and other manufacturing labourers	180	2676
9331	Freight handlers	288	411
9341	Labourers (N.E.C.)	3523	7475

Source and notes: As for Appendix Table 2.

Appendix Table 5: Employment by 4-digit occupation categories,Light engineering, 2004 and 2012

ISCO 88	Occupation	Employment	
		2004	2012
1210	Directors and chief executives	451	1535
1221	Production and operations managers	1000	876
1222	Finance and administration managers	190	692
1223	Personnel and industrial relations managers	250	
1224	Sales and marketing managers	567	864
1226	Supply and distribution managers		507
1229	Other specialised managers	241	
1312	General managers in manufacturing	4105	2083
1314	General managers in retail and wholesale trade		1324
1316	General managers in transportation	39	382
1317	General managers of business service firms	1594	845
1318	General managers in personal care, cleaning, repairs and related services	2229	1190
1319	Other general managers	182	1862
2139	Other computing professionals (new)		782
2143	Electrical engineers	206	
2145	Mechanical engineers		929
2149	Other architects, engineers and related professionals		241
2359	Other teaching professionals not elsewhere classified (new)	339	
2411	Accountants	321	2004
2419	Other business professionals		468
3111	Chemical and physical science technicians	370	
3114	Electronics and telecommunications engineering technicians	249	
3115	Mechanical engineering technicians		1076
3118	Technical draughters		453
3119	Other physical science and engineering technicians		484
3121	Computer assistants (new)	274	
3152	Safety, health and quality inspectors (vehicles, processor products)	460	739
3222	Sanitarians	130	
3415	Technical and commercial sales representatives		405
3417	Appraisers and valuers	206	
3419	Other finance and sales associate professionals	513	737
3421	Trade brokers (new)		1748
3429	Other business services agents and trade brokers	213	427
3431	Administrative and related associate professionals	590	411
3439	Other administrative associate professionals (new)	307	1116

3449	Other government associate professionals		486
4111	Stenographers and typists		453
4112	Word processing and related operators		1394
4113	Data entry operators	255	
4115	Secretaries (new)	742	1228
4121	Accounting and book keeping clerks	624	2634
4131	Stock clerks	1471	845
4132	Production clerks	281	558
4215	Bill, debt and related cash collectors		421
4223	Telephone switchboard operators		460
5142	Companions and valets		857
5149	Other personal services workers not elsewhere classified	135	249
5169	Protective services workers not elsewhere classified (new)	247	
5210	Shop salespersons and demonstrators		1416
5220	Stall and market salespersons (new)	1751	4395
6142	Charcoal burners and related workers		345
7131	Roofers	659	451
7135	Plumbers and pipe fitters	307	1001
7141	Painters and paperhangers	4645	3767
7142	Laquerers and spray painters	2788	4661
7211	Metal moulders and core makers	1170	3138
7212	Welders and flame-cutters	7061	16590
7213	Sheet-metal workers	1705	3834
7214	Structural metal preparers and erectors	101	2368
7221	Blacksmiths, hammer smiths and forgoing-press workers	4100	10750
7222	Toolmakers, metal pattern makers and metal markers	839	2195
7223	Machine-tool setter-operators	552	1184
7231	Motor vehicle mechanics and fitters	33270	59718
7232	Aircraft engine mechanics and fitters		1069
7239	Other machinery mechanics and fitters	6355	14369
7241	Electrical mechanics and fitters	2986	8492
7242	Electronics fitters and services	207	1028
7243	Radio and television services	738	
7244	Telegraph and telephone installers		457
7244	Telegraph and telephone installers	318	806
7311	Telegraph and telephone installers	1411	1828
7313	Jewellery and precious metal trades workers		3425
7412	Bakers, pastrycooks and confectionery makers		603
7422	Cabinetmakers and related workers		490
8121	Ore smelting, metal converting and refining furnace operators	951	250
8122	Metal melters, casters and rolling-mill operators	475	2617

8123	Metal heat-treating plant operators	269	
8162	Steam turbine, boiler and engine operators	551	
8171	Automated assembly-line operators	0	
8211	Machine-tool operators	1391	2323
8223	Metal finishers, platers and coaters	635	1618
8239	Other rubber and plastic products machine operators	1131	190
8251	Printing machine operators		298
8281	Mechanical machinery assemblers	1019	2010
8283	Electronic equipment assemblers	850	1024
8290	Other stationary machine operators and assemblers	609	903
8322	Car, taxi and light van drivers	399	353
8324	Heavy truck drivers		421
8331	Motorized farm and forestry machinery operators		264
8513		230	
9113	Door-to-door and telephone salespersons		789
9114	Shop workers		911
9120	Shoe cleaning and other street services elementary occupations		490
9131	Domestic helpers and cleaners	288	573
9132	Helpers and cleaners in offices and hotels and related workers	786	870
9152	Watchers and doorkeepers	354	
9153	Private security guards		895
9154	Vending machine money collectors and meter readers		87
9162	Sweepers and related labourers	464	307
9211	Farmhands and labourers		409
9321	Assembling labourers		1117
9322	Hand packers and other manufacturing labourers	1623	2921
9331	Freight handlers	326	
9341	Labourers (N.E.C.)	2733	4885

Source and notes: As for Appendix Table 2.

Appendix Table 6: Employment potential of the sub-sectors of the four key industries, 2014-2018

	2014	2015	2016	2017	2018
ICT Sub-sectors					
1.ICT	33727	37100	40810	44891	44891
2.Non-ICT	38591	42065	45851	49977	49977
3.Government	7075	8490	10188	12226	12226
4.BPO	4057	5234	6751	8709	8709
Total	83451	92888	103600	115803	115803
Tourism Sub-sectors					
1. Hotels and Restaurants	63164	63164	72639	72639	83534
2. Travel Agents and Tour Operators	6030	6030	5849	5849	5674
3. Airlines	6089	6089	6333	6333	6586
4. Agencies Providing Recreational Facilities	795	795	954	954	1145
5. Tourist shops	952	952	924	924	896
6. Guides	3742	3742	3667	3667	3594
7. National Tourist Organizations	443	443	461	461	480
8. State Sector	2192	2192	2192	2192	2192
Total	83408	83408	93018	93018	104100
Construction Sub-Sectors					
1.Building	51361	53416	55553	57775	60086
2.Highway	22125	24780	27754	31084	34815
3.Bridge	6454	8003	9924	12306	15259
4.Water Supply & Drainage	5140	5859	6679	7614	8680
5.Irrigation and Land Drainage	2644	2750	2860	2974	3093
6.Dredging & Reclamation	179	186	194	201	209
7.Other	1427	1484	1544	1605	1670
Total	89331	96479	104507	113560	123812
Light Engineering -Sub Sectors					
Manufacturing of,					
Basic iron and steel and casting metals	5414	5685	5969	6268	6268
Fabricated metal products	9905	9934	9964	9994	9994
Machinery & equipment (n.e.c)	4308	4403	4500	4599	4599
Radio, TV & Communication equipment and apparatus	15228	16751	18426	20268	20268
Medical, Precision & Optical instruments, watches etc	602	693	796	916	916
Motor Vehicles, Trailers and Semi-Trailers	1882	2070	2277	2505	2505
Other manufacturing not classified elsewhere (3699)	6238	6550	6878	7222	7222
Total	43578	46086	48811	51772	51772

Sources: Basic data from ICTA (2014), DCS (2010, 2013), TVEC (2012).

Appendix Table 7: ICT Skills in demand

Sector	Skills reported with the highest frequency		
	Core skills	Soft skills	Technical skills
ICT Companies	Programming	Creative thinking skills	.NET
	Systems Analysis	Team working	C#
	Systems design	Communication and presentation skills	Java
	Customer service	Interpersonal skills	SQL sever
Non – ICT Private Companies	Systems Analysis	Communication and presentation skills	Router configuration
	Systems design	Proficiency in English	SAP
	Network design	Professional ethics	Java
	Programming	Interpersonal skills	
	Database design and administration	Creative thinking skills	
Government Organizations	Database design and administration	Team working	MySQL
	Hardware engineering and maintenance	Creative thinking skills	Linux
	Network design		Java
	Systems analysis		
	Programming		
	Network implementation		
BPO Companies	Customer services	Team working	Linux
	Systems / application testing	Interpersonal skills	.NET
	Systems analysis	Professional ethics	
	Hardware engineering and maintenance	Proficiency in English	
	Systems application support		
	Internet and systems security		
Overall	Systems analysis (1)	Creative thinking skills (3)	.NET (6)
	Programming (2)	Team working (4)	Java (9)
	Systems design (5)	Communication and presentation skills (7)	C# (15)
	Network design (10)	Interpersonal skills (8)	SQL server (21)
	Database design and administration (11)	Professional ethics (16)	

	Sales and marking (12)	Proficiency in English (18)	Router configuration (23)
	Hardware engineering and maintenance (13)		
	Customer service (14)		
	Technical writing (17)		
	Systems / application testing (19)		
	Network implementation (20)		
	Project management (22)		

Source: ICTA 2014.

Appendix Table 8: Availability of national competency standards & curricula (NVQ level 1 – 4)

ICT		
	1.	Computer Application Assistant
	2.	Computer Graphic Designer
	3.	Computer Hardware Technician
	4.	Computer Network Technician
	5.	Desk Top Publisher
	6.	Information and Communication Technology Technician
Tourism		
	1.	Baker
	2.	Cook
	3.	Waiter/ Steward
	4.	Room Attendant
	5.	Bartender
	6.	Housekeeping Operations
	7.	Community Based Tourism Operation
	8.	Front Office Operation
	9.	Tour Guiding
	10.	Travel and Tour Operation
	11.	Event Operation
Construction		
	1.	Bar Bender
	2.	Construction Craftsman (Masonry)
	3.	Painter (Building)
	4.	Plumber
	5.	Road Construction Craftsman
	6.	Blaster Painter

Engineering Services		
	1.	Aluminum Fabricator
	2.	Automobile Electrician
	3.	Automobile Air Condition Mechanic
	4.	Automobile Mechanic
	5.	Automobile Painter
	6.	Automobile Tinker
	7.	Electronic Motor Winder
	8.	Electrician
	9.	Fabricator (Metal)
	10.	Household Electrical Appliance Repairer
	11.	Industrial Sewing Machine Operator
	12.	Offset Litho Machine Operator
	13.	Machinist
	14.	Motor Cycle Mechanic
	15.	Plastic Processing Machine Operator
	16.	Pneumetic Technician
	17.	Radio TV & Allied Equipment Repairer
	18.	Refrigirator & Air Conditioning Mechanic
	19.	Rubber Processing Machine Operator
	20.	Tea Factory Mechanic
	21.	Tool & Die & Mould Maker
	22.	Welder
	23.	Three Wheeler Mechanic
	24.	Construction Machinery Equipment Mechanic
	25.	Agricultural Equipment Mechanic
	26.	Road Construction site equipment Operator
	27.	Outboard Motor Mechanic
	28.	Fabric Cutter
	29.	Sewing Machine Mechanic
	30.	Fitter (General)
	31.	Construction Equipment Operator
	32.	Linesman (Electrical)
	33.	Industrial Electronic Craftsman
	34.	Printing Machine Mechanic
	35.	Gaffer (Film and TV Lighting Person)
	36.	Laboratory Assistant for construction sector
	37.	Vehicle serviceman and Interior Cleaner
	38.	Building Services Technician
	39.	Elevator Technician
	40.	Floating Vessel Mechanic

Source: Personal communication, TVEC.

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