

Sri Lanka Human Capital Development

REALIZING THE PROMISE AND POTENTIAL OF HUMAN CAPITAL

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Human Development



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ABBREVIATIONS AND ACRONYMS

ACER	Australian Council for Educational Research
ADB	Asian Development Bank
BMI	Body Mass Index
CAL	Computer-assisted Learning
CDC	Center on the Developing Child
CT	Cooperating Teacher
DCS	Department of Census and Statistics
DHS	Demographic and Health Survey
ECCE	Early Childhood Care and Education
ECD	Early Childhood Development
ECEC	Early Childhood Education and Care
EGMA	Early Grade Mathematics Assessment
EGRA	Early Grade Reading Assessment
EPI	Expanded Program on Immunization
EPSI	Enhanced Program for School Improvement
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GG	Grade Group
GoSL	Government of Sri Lanka
GRG	Generalized Reduced Gradient
HCI	Human Capital Index
HCP	Human Capital Project
HIES	Household Income and Expenditure Survey
HRCSL	Human Rights Commission of Sri Lanka
ICS	Intellectual Capital Statement
ICT	Information and Communications Technology
IEA	International Association for the Evaluation of Educational Achievement
IGME	Interagency Group for Child Mortality Estimation
IMR	Infant Mortality Rate
IQ	Intelligence Quotient
IYCF	Infant and Young Child Feeding
LBW	Low Birth Weight
LMIC	Lower-Middle-Income Country
LPG	Lesson Preparation Group
LTCI	Long-Term Care Insurance
MCH	Maternal and Child Health
MDG	Millennium Development Goal
MIHOPE	Mother and Infant Home Visiting Program Evaluation
MoE	Ministry of Education
MoH	Ministry of Health

MSC	Multimedia Super Corridor
MSSI	Malaysian Smart School Initiative
NCD	Noncommunicable Diseases
NEREC	National Education Research and Evaluation Center
NIE	National Institute of Education
NIES	NIE Supervisor
NTFS	National Teaching Fellowship Scheme
OECD	Organization for Economic Co-operation and Development
OLPC	One-Laptop-Per-Child
OOP	Out-of-pocket
PHC	Primary Health Care
PIRLS	Progress in International Reading Literacy Study
PISA	Program for International Student Assessment
PLC	Professional Learning Community
PSSP	Primary Health Care System Strengthening Project
RHMIS	Reproductive Health Management Information System
RTI	Research Triangle International
SBPTD	School-based Professional Teacher Development
SCM	School Coordinating Mentor
SDC	School Development Committee
SEIA	Secondary Education in Africa
SHPP	School Health Promotion Program
SHSDP	Second Health Sector Development program
SMHP	School Mental Health Program
SSQS	Smart School Qualification Standards
STEM	Science, Technology, Engineering, and Mathematics
TIMSS	Trends in International Mathematics and Science Study
TNER	Total Net Enrollment Rate
TRG	Teaching and Research Group
TTP	Teacher Training Program
UAS	University of Applied Sciences
UBL	University-Business Linkage
UIS	UNESCO Institute of Statistics
UMIC	Upper- Middle-Income Country
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children’s Fund
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization
WPP	World Population Prospects
YLD	Years Lived with Disabilities

PURPOSE AND ORGANIZATION OF THE REPORT

The Sri Lanka Human Capital Report has several objectives. First, the report serves as a vehicle to explain the Human Capital Project (HCP) and Human Capital Index (HCI) to an audience of national and provincial policy makers and technocrats, and academics and researchers. Second, the report analyzes the main achievements and challenges in human capital development in the context of the World Bank's HCP, with a special focus on the variables covered in the HCI. Third, the report applies the HCI to an analysis of regional variations in human capital in Sri Lanka. The range of variation among the provinces of the country is assessed and discussed. Education and health are both subjects that are devolved to the provinces, so that provincial rankings and comparable countries are of interest to provincial-level policy makers and officials. Fourth, the report presents policy and program options for Sri Lanka to combat the main challenges identified in the analysis of the HCI variables. Fifth, some strategic options broader than the HCI but within the scope of the HCP are discussed.

The report is organized into four parts. Part one of the report consists of two chapters. The first chapter analyzes the pattern of human capital development, as measured by the HCI, in an international context, and explores regional variations in the HCI. The second chapter analyzes regional variations in the component variables of the HCI, child survival, years of schooling, stunting, learning, and adult survival. Part two of the report consists of a chapter that addresses the key health and nutrition challenges identified in the context of the HCI. Stunting is a major need, and the chapter discusses this issue in detail. In addition, the success of promoting high rates of child and adult survival has resulted in increasing life expectancy. This has raised the burden of geriatric ailments, and the health care needs of an aged population will dominate the health and nutrition landscape of the country in the future. Chapter three also outlines this challenge and discusses options to address it in depth. Part three of the report consists of two chapters that discuss the education challenges for future human capital development. Chapter four analyzes and outlines a program to address the principal human capital challenge facing the country, enhancing learning outcomes. Chapter five addresses a challenge emerging from the success of certain aspects of human capital development in the past. Sri Lanka has achieved high rates of participation in primary and secondary education. However, participation in higher education is unusually low, although it will be of increasing importance for the future as Sri Lanka seeks to become an upper-middle-income country. Chapter five of the report discusses a transformation that will be required in higher education development. The fourth and final part of the report consists of a short chapter that discusses the importance of building public consensus and stakeholder commitment to an ambitious human capital development program.

EXECUTIVE SUMMARY

1. **Human capital is a central determinant of economic well-being and social advancement in the modern world economy.** The concept of human capital covers the knowledge, skills, nutrition, and health that people accumulate over their lives, enabling them to realize their potential as productive members of society (World Bank 2019a). The global economy places an increasing premium on higher-order cognitive skills such as expert thinking and complex communication (World Bank 2018a) and socio-emotional skills such as problem solving, resilience, achievement motivation, control, team work, initiative, confidence, and ethics or PRACTICE¹ skills (Guerra, Modecki, and Cunningham 2014). Building these skills requires strong human capital foundations. In recent years, industry, agriculture, and especially services have become increasingly knowledge and technology intensive. The main components of human capital, education, health, and nutrition play a central and synergistic role in the production of the human capital required for development in the information-rich, technology-intensive world of the future.

Education, Health, and Nutrition Play Vital and Synergistic Roles in the Production of Human Capital

2. **The vitally important contribution of education to economic development is well known, but the quality of education, not simply the quantity of schooling, matters for economic growth.** There is abundant global evidence of the importance of education for development (Barro and Lee 2013; Hanushek and Woessmann 2015). A high-quality basic education lays the foundation for citizens to absorb and adapt to technological change, which can spur economic growth. More advanced levels of education support innovation and accelerate economic growth. Whether at the basic education level or at more advanced levels, the evidence increasingly suggests that it is the quality of schooling as demonstrated in learning outcomes, rather than years of schooling, that is the best predictor of economic growth. The main channel by which schooling improves economic growth is by improving learning and skill acquisition (Glewwe, Maiga, and Zheng 2014; Hanushek and Woessmann 2012).

3. **A healthy population translates into higher economic productivity.** It is well established that the health of a population and the economic status of a country are highly correlated. A strong relationship exists between health outcomes and growth over many health indicators. However, the direction of causality between the two is more complicated. Economists have investigated the direction of causality with various approaches and settings, and evidence points toward the existence of multiple causal channels that can run in both directions. Scholars attribute the significant improvements in population health that have taken place in the last two centuries to three factors attained by economic growth: improved standards of living, improved public health environment, and improved health technology (Weil 2014). Conversely, healthier populations work harder and learn more in school, which contribute to higher productivity. The most intuitive channel through which productivity can be affected would be through adult health. Illness or the premature death of an adult at a productive age reduces work performance and output. Sustaining good adult health of the workforce is a critical element of human capital. Another

¹ The eight skills identified within the PRACTICE framework are as follows: problem-solving, resilience, achievement motivations, control, teamwork, initiative, confidence, and ethics.

channel is through early-life health. Nutritional status in the first 1,000 days has a lasting effect on a child's cognitive and physical development, which affect the ability to grow and learn. Evidence shows a positive relationship between age-appropriate height in early years of life and health and nutritional status and that height-for-age in early-life is also a predictor of future education attainment and of adult income. A recent study suggests that childhood stunting can result in 7 percent loss of per capita income (Galasso and Wagstaff 2018). The relationship between early-life health and future income is partly mediated through educational attainment. There are also synergistic relationships between health, nutrition, and education.

Developing Human Capital Is Key to Achieving Sri Lanka's Development Goals

4. **Sri Lanka is a lower-middle-income country (LMIC) with a gross domestic product (GDP) per capita of US\$4,073 in 2017 and a total population of 21 million people.** Since the end of the 26-year secessionist conflict in 2009, Sri Lanka's economy has enjoyed rapid growth at an average rate of approximately 5.8 percent between 2010 and 2017, reflecting a peace dividend and a determined policy thrust toward reconstruction and growth, although there are some signs of a slowdown in the last three years. The economy is transitioning from a previously predominantly rural economy toward a more urbanized economy. Social indicators rank among the highest in South Asia and often compare favorably with those in LMICs, but lag behind upper-middle-income countries (UMICs). The policy framework of the government is seeking to promote a globally competitive, export-led economy to generate inclusive and sustained growth.

5. **Sri Lanka now has the objective of becoming an upper-middle-income economy, and developing human capital to a new and higher level will be key to achieving this development goal.** The Government of Sri Lanka (GoSL) is seeking to promote a modern knowledge-based economy and accelerate growth (Government of Sri Lanka's Vision 2025: A Country Enriched). These objectives place an increasing premium on higher-order cognitive skills, socio-behavioral skills, reasoning, and self-efficacy. Building these skills requires strong human capital foundations. Consequently, accelerating human capital development is of central importance for Sri Lanka's successful transition to an upper-middle-income economy and eventually a high-income country.

The Human Capital Index (HCI) Is an Important New Tool for Measuring a Country's Human Capital

6. **Given the vital importance of human capital for economic growth, the World Bank has launched the Human Capital Project (HCP), which includes the HCI.**² The objective of the HCP is to accelerate human capital development around the world. The HCI is a cross-country metric designed to measure and forecast a country's human capital. The index follows the trajectory, from birth to adulthood, of a child born today. It measures the amount of human capital that a child can expect to attain by age 18, given the risks of poor health and poor education that exist in the country at the time of birth. The HCI has three components: (a) a measure of whether

² The HCI is different from the United Nations Development Programme's Human Development Index, which is a composite measure of three key dimensions of human development: adult life expectancy, education, and per capita income. As such, it differs from the HCI, which is designed to capture the main dimensions of human capital development as discussed earlier.

children survive from birth to school age (age 5); (b) a measure of expected years of quality-adjusted schooling, which combines information on the quantity and quality of education; and (c) two broad measures of nutrition and health, stunting rates and adult survival rates. This framework and metric provide countries with a model for understanding the quantity and quality of their human capital and can help them navigate a path forward to develop their human capital.

In the Global Context, Sri Lanka's Performance on the HCI is Modest

7. **Sri Lanka performs only moderately well, with an overall score of 58 percent, in the HCI and has a ranking of 74 out of 157 countries included in the HCI.** This means that children born in Sri Lanka today will be 58 percent as productive in adulthood compared to their full potential. In contrast, children born in the top performing countries can expect to achieve much higher levels of human capital. Children born today in Singapore can expect to achieve 88 percent of their potential, children born in Japan and the Republic of Korea 84 percent, and children born in Hong Kong SAR, China, 82 percent. In terms of ranking, Sri Lanka is the best performing country in South Asia. However, it lags behind East Asian countries such as China, Malaysia, Mongolia, Thailand, and Vietnam,

Sri Lanka performs well in some components of the HCI but performs less well in others. Overall, the HCI for Sri Lanka is above the average for LMICs and on par with the average for UMICs. Sri Lanka does well on the probability of children surviving to age 5, with 99 percent of children reaching this age. This is equal to the probability of child survival in high-income countries. Sri Lanka also shows strong performance in the expected number of years of schooling, with an average of 13 years. This is on par with high-income countries. In addition, the probability of adults surviving from age 15 to 60 is high at 87 percent. This is slightly above the adult survival probability of 86 percent for UMICs. However, Sri Lanka does less well on learning outcomes and stunting rates. On learning outcomes, Sri Lanka has a score of 400. This is slightly above the average for LMICs, 391, but less than the average for UMICs, 428, and well below the mean score for East Asia and the Pacific, 451. On stunting, 83 percent of Sri Lankans are not stunted. This is above the percentage for LMICs at 73 percent, but below the percentage for UMICs at 87 percent.

8. **The country faces deep-rooted challenges in stunting (reflecting chronic undernutrition) and learning adjusted years of schooling.** These are second-generation challenges that are hard to address. Yet, they are vital for human capital development and equitable economic growth. Learning outcomes, in particular, are a major challenge when compared to the performance of UMICs and the potential demonstrated by advanced education systems in East Asia.

There is Significant Provincial Variation in Human Capital Outcomes in Sri Lanka

9. **The pattern in provincial variations in human capital reveals some surprising findings.** The HCI values for the different provinces show that the Southern Province has the highest HCI value followed by the Western Province, while the Eastern Province has the lowest HCI value, followed by the Northern Province. The high rank of the Southern Province is an unexpected finding. The received wisdom is that the wealthy Western Province is the most advanced region. However, the current study shows that the Southern Province, despite being

considerably poorer than the Western Province, has attained a slightly higher level of human capital, particularly due to better learning outcomes. The main reason for the higher learning levels in the Southern Province is the close attention of policy makers to good teacher management and development. The Southern Province effectively deployed teachers from schools with teacher surpluses to schools with teacher deficits in a way that minimized disruptions to the family lives of teachers and reduced resistance to teacher transfers. In addition, the Southern Province recruited teachers to fill vacancies in remote, estate sector schools which had suffered from teacher shortages for many years. This is an encouraging finding for other provinces, as human capital development can be promoted faster than economic growth.

10. **Among the regions that perform less well in the HCI, the Northern and Eastern Provinces were the principal theatres of the 30-year secessionist conflict which ended in 2009, and their economies and education and health sectors are still recovering from the effects of the conflict.** The Uva Province has large estate sector areas,³ which are remote interior rural regions. The relatively lower HCI values in these provinces can be attributed to their lower levels of economic and human development. Overall, the pattern that emerges is that the Western Province and the provinces that border it, Southern, North-Western, and Sabaragamuwa, have the highest HCI values. The HCI scores decrease as the locations of the provinces move away from the western region.

11. **The provincial HCIs in Southern, Western, Sabaragamuwa, and North-Western Provinces are comparable to countries with higher per capita income levels than these provinces.** Even Sri Lanka's best performing provinces in HCIs are lagging behind East Asian countries such as Vietnam, China, Macao SAR, China, and of course the highest performers in the world, Singapore, Japan, the Republic of Korea, and Hong Kong SAR, China. Nonetheless, if Sri Lanka had been only the Southern Province, with an HCI value of 63 percent, the HCI rank would have been between 51 and 53 in the world rankings, instead of 74. The Southern Province is on par with countries such as Turkey, Mongolia, and Mauritius, which are richer than the Southern Province. The HCI performance of the Western Province is equal to countries such as Costa Rica, Malaysia, Montenegro, and Oman, all of which are richer than the Western Province, but also at the same level as Albania and Bosnia and Herzegovina, which have lower per capita incomes. The North-Western and Sabaragamuwa Provinces have HCI scores equal to countries such as Peru, Colombia, and Iran, which are wealthier than these provinces.

12. **The less performing provinces have comparator countries that fall well below the national average of Sri Lanka.** The HCI score of the Eastern Province would have ranked it 95–96 in the world, on par with countries such as Tonga and Tunisia, which are wealthier than the Eastern Province. The HCI value of the Northern Province would have ranked it 93–94 in the world, on par with countries such as Kenya, which has a lower per capita income, and Algeria, which is richer than the Northern Province. The HCI score of the Central Province would have ranked it 85 in the world, equal to countries such as Jamaica and Lebanon, both of which are wealthier than the Central Province. The HCI value of the Uva Province would have ranked it 82–84 in the world, on par with countries such as the Philippines, Tuvalu, and the West Bank and Gaza, all of which are poorer than the Uva Province.

³ Estate sector refers to the large-scale tea and rubber plantations.

There are Significant Gender Differences in Human Capital

13. **Gender variations in human capital favor girls and women.** Women live longer, spend more time in school, and learn better. This is a consistent pattern across all provinces. The gender gap is most significant in the Eastern Province, followed by the Northern Province, Western Province, and Southern Province. These are the provinces with the lowest and the highest HCI scores. The gender gap in human capital is significant and suggests that promoting human capital development among boys is particularly important for policy makers.

The Provinces Perform Equitably on Educational Attainment and Child Survival Outcomes

14. **Expected years of schooling are evenly distributed across the provinces and can be attributed to a wide range of demand- and supply-side policy measures to enable school attendance.** The number of expected years of schooling ranges from 12.8 years in the Sabaragamuwa Province to 13.1 years in the Western Province. All other provinces cluster within this narrow range. This is a highly equitable pattern across the provinces. Gender variations in expected years of schooling are also small. The expected years of schooling for girls varies between 12.5 years in the Sabaragamuwa Province and 13.1 years in the Western and North-Central Provinces. Among boys, the range in the expected years of schooling is from 12.9 to 13.0 years among all provinces. These outcomes are attributable to a set of supply-side measures, which include a distribution of schools across provinces which enable universal access to general education. Demand-side measures such as free education, textbooks, and school uniforms have also contributed to these outcomes.

15. **Likewise, across all provinces the likelihood of a child surviving to age 5 is high.** Overall, Sri Lanka performs well in child health outcomes and the under-five mortality rates are relatively low. This translates into good child survival in the country. All provinces have child survival rates of 98–99 percent. Although there are some disparities in the child survival rates between provinces, the size of difference remains relatively small. The Northern and Eastern Provinces, which were the main theatres of the civil conflict up to 2009, have the lowest child survival rates. The Southern and North-Central Provinces have the highest child survival rates. The differences between these provinces, however, are small, less than 1 percentage point. Child survival rates are not worse off in Central, Uva, Sabaragamuwa Provinces despite having large estate sectors.

There is Substantial Variation across the Provinces on Learning, Adult Survival, and Stunting Outcomes

Provincial Variations in Learning Outcomes

16. **Learning outcomes in mathematics vary substantially among the provinces.** Mathematics achievement is necessary for modern living. The range of mathematics learning outcomes (based on Trends in International Mathematics and Science Study [TIMSS] items from the national assessment data) ranges between a score of 325 in the Eastern Province and 445 in the Southern Province. The other lower performing areas in the country are the Northern Province, with a score of 349, and the Uva and Central Provinces, both of which score 367. The highest

performing provinces in the country, after the Southern Province, are the Western Province which scores 426, the Sabaragamuwa Province which scores 421, and the North-Western Province which scores 410. The differences between the weaker provinces and the high-performing provinces are large.

17. **There are considerable gender differences in mathematics learning outcomes.** At the national level, girls have an average score of 418 and boys have an average score of 383. In all provinces, girls outperform boys. The gender gap is largest in the Eastern Province, where girls score 353 and boys score 295, resulting in a difference of 58 marks. The second largest gender gap is in the Western Province, with girls scoring 446 and boys scoring 405, leading to a difference of 41 marks. The gender gap is lowest in the Central Province, 6 marks, and the North-Central Province, 10 marks; however, in all the other provinces the gender gap is at least 27 marks, which is a substantial difference. The superior performance of girls compared to boys is becoming increasingly recognized in global policy circles (OECD 2015a) and in Sri Lanka (Aturupane, Shojjo, and Ebenezer 2018).

18. **English language learning outcomes show considerable variation among provinces.** English is the language of the global knowledge economy and one of the most valuable economic assets of a country. In terms of English language outcomes (drawn from national assessment data), students in the Western Province have the highest score, 459, followed by students in the Southern Province, 425. Students in the Northern Province have the lowest score, 318, followed by students in the Eastern Province, 322. The difference between students across these two sets of provinces is large, over 100 marks. This shows a major difference between children, based on the region in which they live, English language fluency, and the economic and social opportunities it provides.

19. **Gender differences in English language learning outcomes are large.** At the national level, girls have an average score of 432 and boys have an average score of 365. In eight of the nine provinces, girls outperform boys, with the Eastern Province, where boys score slightly higher than girls, as the exception. The largest gender gap is in the Western Province, with girls scoring 510 and boys scoring 404, leading to a difference of 106 marks. There are also large gender gaps in favor of girls in the Uva Province, 87 marks, Sabaragamuwa Province, 83 marks, and Southern Province, 79 marks. The gender gap is lowest in the Central Province, 30 marks, and the Northern Province, 37 marks. However, even in these provinces the gender gaps are considerable.

Provincial Variations in Learning Adjusted Years of Schooling

20. **There is considerable variation in years of schooling, adjusted for mathematics learning outcomes, across provinces.** The Southern Province has the highest learning adjusted years of schooling, 9.2 years, followed by the Western Province, 8.9 years, the Sabaragamuwa Province, 8.6 years, and the North-Western Province, 8.5 years. The Eastern Province has the lowest performance, 6.8 years, followed by the Northern Province, 7.3 years, and the Central and Uva Provinces, 7.6 years.

21. **Education outcomes decline in all provinces when years of schooling are adjusted for mathematics learning outcomes.** At the national level, expected years of schooling fall from 13 to 8.3 years when adjusted for learning. This is a substantial decrease. The gap between expected

years of schooling and learning adjusted years of schooling ranges from about 6 years in the Eastern and Northern Provinces to around 4 years in the Western and Southern Provinces.

22. **There are steep gender differences in expected years of schooling adjusted for mathematics learning outcomes.** Girls outperform boys in all provinces. The gender gap is sharpest in the Eastern Province, where girls have effectively 1.3 years of education more than boys. This is followed by the Western Province and the Southern Province, where girls have effectively 0.9 years and 0.8 years of education more than boys, respectively. The gender gap is lowest in the Central and Sabaragamuwa Provinces, 0.2 years, and the North-Central Province, 0.3 years.

23. **There are substantial differences in years of schooling, adjusted for English language learning, among provinces.** Students in the Western Province have the highest level of achievement, 9.6 years, followed by students in the Southern Province, 8.8 years, and students in the Central Province, 8.1 years. Students in the Northern Province have the lowest level of achievement, 6.6 years, followed by students in the Eastern Province, 6.7 years. The learning gap between students in the highest performing provinces and lowest performing provinces is considerable, over 2 years.

Adult Survival

24. **The probability of adult survival is relatively good in all provinces, yet there are pockets where further improvements are expected.** The Northern Province has the lowest adult survival rates, while Southern, Western, and Sabaragamuwa Provinces have the highest. Adult survival rates do not seem to be substantially worse off in the Central, Uva, and Sabaragamuwa Provinces despite having large estate sectors. Lower adult survival rates seem to be associated more with the previously conflict-affected areas rather than the estate sector in the province.

25. **Females have substantially better chance of adult survival.** In comparing the difference in adult survival rates between males and females, females have consistently higher rates of survival compared to males. The females' dominance is similar to child survival, but the degrees of differences are quite substantial for adult survival. The Northern Province experiences the greatest gap, which is as large as 16 percentage points between males and females. Even in the Western Province that has the smallest difference between males and females, the gap is over 10 percentage points.

Fraction of Children Under-five Not Stunted

26. **Stunting prevalence correlates highly with the size of the estate sector.** The Central, Uva, and Sabaragamuwa Provinces have the greatest issue of stunting. These provinces are known to have large estate sectors. The proportion of children not stunted is only about 75 percent in the Central Province, which has the largest estate sector (approximately 19 percent of the population). The previously conflict-affected areas also have major issues in stunting, particularly in the Eastern Province where the proportion of children not stunted is less than 80 percent. The Southern and Western Provinces have the highest proportion of children not stunted, although the value of about 86 percent shows that the problem exists even in this province.

The Analysis of Provincial Variation in Human Capital Outcomes Has Many Policy Implications

27. **The analysis of provincial variations in human capital provides several interesting and important findings for future policy.** There is a high degree of regional equity in two of the three HCI outcomes in which Sri Lanka performs well at the global level: child survival and expected years of schooling. The child survival rates vary between 98 percent and 99 percent among all provinces. Expected years of schooling range from 12.8 years in the lowest performing province, Sabaragamuwa, to 13.1 years in the highest performing province, Western. This clearly shows that if there is high and equitable development in human capital in all regions, the country will score well at the international level too. In the third HCI outcome in which Sri Lanka performs well in global terms, adult survival, there is a high degree of parity among eight of the nine provinces, where the range is between 86 percent and 88 percent. However, one province, the Northern Province, falls behind with an adult survival rate of 81 percent. However, even 81 percent is a high rate, especially given that this province was the main theater of the secessionist conflict over a long period of time.

28. **There are major regional disparities in the HCI outcomes in which Sri Lanka performs poorly at the global level, child stunting and learning adjusted years of schooling.** Child stunting rates vary between 75 percent in the Central Province, which is the lowest performing province, and 86 percent in the Southern and Western Provinces, which are the best performing provinces. Learning adjusted years of schooling range between 6.8 years in the Eastern Province, the lowest performing province, and 9.2 years in the Southern Province, the highest performing province. These are substantial differences. The findings suggest that programs to improve HCI outcomes require a targeted approach, with special attention to the low-performing provinces.

29. **The component of the HCI which shows the highest degree of regional variation is learning outcomes.** This applies to harmonized test scores in mathematics and in English language, as well as to learning adjusted years of schooling in these two subjects. Learning is also the component of the HCI in which the country performs weakest in international comparisons. In addition, the largest gender gap among the variables of the HCI is also in learning. Overall, improving learning outcomes is the most important challenge to address for the development of human capital in the country.

30. **The component of the HCI which shows the second highest degree of regional variation is stunting.** Stunting is also the component of the HCI in which the country performs weakest in international comparisons after learning. This suggests that levels of undernutrition vary significantly among provinces and need to be addressed urgently to improve the overall level of nutrition in future generations.

31. **There is a high degree of consistency in the performance of provinces in the components of HCIs.** For instance, the Southern Province, which has the highest overall HCI score, also performs best on mathematics harmonized test scores, mathematics learning adjusted years of schooling, child survival, stunting, and adult survival rates. The Western Province, which has the second highest HCI score, has the highest number of years of schooling and performs close to the Southern Province in the other components of the HCI. Provinces that score relatively poorly

on the HCI, such as the Eastern, Central, Northern, and Uva Provinces, show comparatively weak performance on mathematics learning adjusted years of schooling and stunting.

Health and Nutrition are of Critical Importance for Human Capital Development

32. **Health and nutrition are critical components of human capital.** Being unhealthy at any given stage of the life cycle hinders productivity and affects human capital. The fact is particularly prominent in the first 1,000 days of life that has a lasting effect on health and educational attainment toward the future. Impaired linear growth is associated with childhood risk of infections, childhood mortalities, cognitive and motor development, and school performance. In later life, undernutrition affects productivity, wages, reproductive health, and nutrition-related chronic disease such as diabetes and heart disease, and can have a significant negative impact on an individual's human capital.

33. **Sri Lanka has a track record of providing effective health services with favorable maternal and child health (MCH) indicators, albeit with a growing challenge to cater to the ageing population.** Life expectancy at birth, which stood at 75 years as of 2016, was higher than the South Asian average of 69 years⁴). In terms of MCH indicators Sri Lanka's neonatal, infant, and under-five mortality rates in 2018 were 6.5, 9.1, and 10.6 per 1,000 live births, respectively, and the maternal mortality ratio was 39.3 per 100,000 live births in 2017 (FHB 2019). In consequence, age-related health and nutrition issues are rising and will become the main challenge in the future. The country needs to prepare to address this challenge urgently.

34. **The public health care services in Sri Lanka have been provided free of charge to the population, but a significant portion of health services are still provided by the private sector.** Public health care services are provided through a network of 1,118 government institutions operating at three levels. A unique feature of the Sri Lankan health care system is that patients can opt to bypass primary-level institutions and obtain services directly from secondary- and tertiary-level institutions. Although the backbone of health services provision is the public sector, it accounts for less than half the total health spending in the country; the private sector accounts for over 50 percent of the health spending (Amarasinghe, Dalpatadu, and Rannan-Eliya 2018). Out-of-pocket (OOP) funding is the predominant source of private funding and comprises 87 percent of private health spending (that is, approximately 45 percent of total health spending). While inpatient, preventive, and public health services are primarily provided by the public sector, outpatient care, investigation, and drugs/supplies for outpatients are predominantly financed by the private sector.

Stunting Remains a Key Challenge for the Development of Human Capital

35. **Sri Lanka is burdened with a high rate of stunting, which reflects long-term undernutrition and has been resistant to many substantial intersectoral interventions over decades.** Stunting before the age of 2 predicts poorer cognitive and educational outcomes in later childhood and adolescence, which has significant educational and economic consequences at the

⁴ World Development Indicators Database (<http://databank.worldbank.org/data/source/world-development-indicators>)

individual, household, and community levels (WHO 2014). The causes of malnutrition (referring to both undernutrition and overnutrition) are multisectoral and pervade the whole life cycle. Emerging evidence on the role of intergenerational effects in determining maternal preconceptional nutritional status indicates the need for continued investment in strategies that improve women's nutrition and health throughout the life cycle, especially during the early years.

36. Albeit with stagnant improvements in the stunting rate, Sri Lanka continues to perform well in South Asia. Regional comparisons set Sri Lanka apart from other countries in South Asia with respect to nutritional indicators, including rates of stunting. Sri Lanka has the lowest stunting rates in the South Asian region. A well-established, free health care delivery system; free universal education; and high female literacy rate are cited as the main contributory factors for the better nutritional status relative to other countries in the region.

37. The country is facing a triple burden of malnutrition. Apart from stunting that reflects long-term undernutrition, overnutrition is becoming a major risk factor contributing to the disease burden of the country. The noncommunicable disease (NCD) risk factor survey (2015) identified that nearly one-fourth of males (24.6 percent) and one-third of females (34.3 percent) between the ages 18 and 69 were either overweight or obese (WHO 2017). With the maternal body mass index (BMI) being a major determinant of low birth weight (LBW), it is important to note that undernutrition is also seen among women of the reproductive age group. The third arm of malnutrition is anemia. The Demographic Health Survey (DHS) 2006 found an estimated overall prevalence of anemia of 34 percent, with 20.7 percent categorized as mild anemia and 13.3 percent categorized as moderate to severe anemia. Statistics show that the most common cause for anemia is iron deficiency. It is estimated that one in three children and one in four adults suffer from iron deficiency anemia (Daily Mirror 2014).

38. It is widely acknowledged that the nutritional status of people is determined by multiple factors that go way beyond the health sector. Undernutrition can be caused by inadequate dietary intake and diseases (direct causes) with inadequate health services, unhealthy environment, household food insecurity, and inadequate maternal and child care (UNICEF 1990). Sri Lanka has been rigorously addressing the direct causes through a number of programs such as Thripasha (supplementary feeding targeting pregnant/lactating women and underweight infants), micronutrient supplementation, and management of severe acute malnutrition. In addressing the underlying causes, the country has performed reasonably in providing basic health services and maternal and child care as described earlier. Household food security and healthy environment have been addressed by various sectors, including agriculture, livestock, fishery, and water, sanitation and hygiene (WASH). However, global evidence provides a mixed picture for some of these programs. For instance, WASH has been widely recognized as an essential element to improve nutrition, particularly by reducing diarrheal diseases. Freeman et al. (2014) suggested that WASH interventions can reduce diarrheal diseases by 40 percent. However, findings from recent randomized controlled studies from Bangladesh, Kenya, and Zimbabwe demonstrated limited or insignificant effects of WASH on nutritional status (Humphrey et al. 2019; Luby et al. 2018; Stewart et al. 2018). This may indicate that improving WASH alone may not be sufficient to improve the nutritional status.

39. Strategies to improve the nutrition of girls and women of reproductive age need to go beyond the conventional approach of providing services to pregnant women through the

traditional MCH care programs. This means that greater effort needs to be placed on nutrition-related behavior changes that can be integrated with other health and non-health programs. Key strategies for improved nutrition include the following:

- Improving women and girls’ nutrition throughout their life by facilitating positive behavior change and increased energy and nutrient intake
- Improving the quality of infant and young child feeding (IYCF) programs
- Improving evidence-based food fortification programs
- Improving integration of health services and programs within the health sector
- Promoting intersectoral collaboration that results in improving food safety and security
- Improving the quality of care and services provided
- Improving availability of information with disaggregated outcome data by gender
- Addressing the nutritional needs of feeding during illnesses, of adolescents, and of the elderly

40. **More knowledge and evidence are critically needed to maximize the impact of various nutrition programs.** Nutrition requires a multisectoral approach including interventions that target the underlying causes of malnutrition such as agriculture, food safety, and WASH. Nonetheless, their impact on nutrition has not been well evaluated and likely needs revisiting strategies and implementation. The country needs a sound evidence base to prioritize resources to be allocated to different geographies, sectors, and programs.

The Country Has Performed Well in Child Survival

41. **The under-five mortality rate is one of the most widely used health-related indicators.** Poor health in childhood diminishes the formation of human capital. Evidence shows that much of a person’s physiological and cognitive development happens in childhood, and economic theories show that human capital investments should be made early in life. Under-five mortality refers to deaths among children from birth until the age of 5. Deaths that occur during the first five years of life can be categorized according to the time of death. As such, under-five mortality includes (a) early neonatal deaths (deaths in first 7 days of life), (b) neonatal deaths (deaths in first 28 days of life), (c) post neonatal deaths (deaths between 7 and 28 days), and (d) infant deaths (deaths in the first year of life).

42. **Sri Lanka has performed well in bringing down under-five mortality in the region.** Sri Lanka has shown impressive achievements in the reduction of all types of childhood mortality. The country has the lowest under-five mortality rate (11 per 1,000 live births) in the South Asian region, compared to countries such as India (39 per 1,000 live births), Bangladesh (32 per 1,000 live births), Afghanistan (68 per 1,000 live births), and Pakistan (75 per 1,000 live births) (IGME 2017). Similar to its nutritional indicators, Sri Lanka’s under-five mortality rate is comparable to rates of UMICs in the Asian region such as Thailand (10 per 1,000 live births), China (9 per 1,000 live births), and Malaysia (8 per 1,000 live births). Most under-five mortalities in Sri Lanka occur within the first year of life, particularly during the neonatal period. The infant mortality rate (IMR) was reported at 10 per 1,000 live births, of which 7 per 1,000 live births correspond to neonatal mortality (MoH 2018b). Around 68 percent of infant mortalities occur during the neonatal period.

43. **Nonetheless, disparities exist between different geographical areas and populations.** Under-five mortality rates are generally higher in districts in the Northern and Eastern Provinces. High rates are reported in the Kilinochchi District from the North (44 per 1,000 live births), Trincomalee District from the East (26 per 1,000 live births), and Mullaitivu District from the North (22 per 1,000 live births) (DCS 2017). Similar to stunting, a significant variation in the under-five mortality rate was observed according to the place of residence. Estate dwellers had the highest rates (15 per 1,000 live births) and lower rates were recorded among urban populations (11 per 1,000 live births). Among the social determinants of child survival, maternal education and wealth of the households were identified as the main factors that determine the under-five mortality. An under-five mortality rate of 14 per 1,000 live births was recorded among mothers who did not have a formal education, while the rate of mothers who had a degree-level education was only 6 per 1,000 live births (DCS 2017). Similarly, a higher under-five mortality rate was recorded among children from the poorest households when compared to those from the richest quintile (17 versus 9 per 1,000, respectively).

Adult Survival is Improving, but the Increasing Burden of NCDs is Posing a New Challenge to Human Capital Development

44. **Adult mortality has immediate implications on the country's economic productivity.** Adult mortality refers to deaths among the population of between ages 15 and 60. In many countries, this group of population comprises the majority of the workforce. Generally, the probability of death of a person is higher right after birth, and then decreases with age until the person reaches around age 10. Mortality then gradually increases with age in an exponential shape (Figure 3.7). Although the probability of death becomes prominent after the age of retirement, a sizable portion of the population will die before reaching the age of 60.

45. **Overall, the number of deaths among the working-age population is decreasing, but the share of NCDs as causes of death and morbidity is increasing.** The overall number of deaths among the adult population between ages 15 and 59 has generally been decreasing in Sri Lanka, particularly after the war ended in 2009. This is a potentially favorable situation from a productivity perspective as the working-age population is growing. However, the epidemiological profile has been changing; NCDs now dominate the burden of disease in the country (66 percent of adult deaths were due to NCDs in 2017), which is posing a new challenge to the human capital development. A critical consequence of the advancement of NCDs is that many conditions lead to sustained or chronic morbidities. It is this aspect of NCDs that can severely compromise the potential of human capital in terms of productivity despite reduction in the overall mortality.

46. **Similar to childhood mortality, Sri Lanka has performed well in adult mortality in the region.** Sri Lanka's adult mortality rate was 132 per 1,000 in 2017, which was the second lowest in South Asia after Bangladesh (UN 2017). Similar to the under-five mortality rate, Sri Lanka's adult mortality rate is comparable to (or better than some) UMICs such as Thailand (145 per 1,000), Brazil (141 per 1,000), Bulgaria (133 per 1,000), and Jamaica (130 per 1,000). Nevertheless, compared to the outstanding achievement in childhood mortality indicators, adult mortality could be further improved by investing in the prevention and treatment of NCDs.

47. **The government is taking a major step forward to address the burden of NCDs.** The Ministry of Health, Nutrition and Indigenous Medicine (MoH) of Sri Lanka launched the National

Multi-Sectoral Action Plan for the Prevention and Control of Non-Communicable Diseases 2016–2020. To date, this action plan serves as the guiding principle in combatting the growing burden of NCDs in the country. The plan comprises four strategic areas: (a) advocacy, partnership, and leadership; (b) health promotion and risk reduction; (c) health system strengthening for early detection and management of NCDs and their risk factors; and (d) surveillance, monitoring, evaluation, and research.

48. **Promotional and preventive measures have been put in place to address behavioral risks.** The government has been taking measures to discourage unhealthy behaviors such as smoking, drinking of alcohol and sugar-sweetened beverages, the consumption of unhealthy diets, and sedentary lifestyles. Most of these behaviors are key risk factors for NCDs in Sri Lanka, and indoor air pollution is also addressed. Cigarette excise in Sri Lanka is one of the highest in the world and alcoholic drinks are also taxed—both were proposed for increase in 2019. Given the increasing prevalence of overweight and obesity, sugar-sweetened beverages have also been taxed since 2017 and a unique traffic light labeling on bottles has been introduced, which classifies the sugar concentration in three colors.

49. **Sri Lanka’s primary health care system needs to be reorganized to better respond to the emerging burden of NCDs.** A sizable proportion of working-age adults lose their lives from NCDs, and an even larger portion suffer from the nonfatal burden of NCDs that undermine the productivity of the workforce. It is therefore imperative for the government to invest in NCD prevention and treatment to maintain and maximize the potential of human capital in this age group. In addition to promotional and preventive measures, it is also critical to strengthen the health system to enable early detection of risk markers and diseases followed by adequate therapies and treatments to mitigate the NCD burden, especially at the primary health care (PHC) level. In this regard, the MoH has launched a position paper on reorganizing the PHC system in 2017 with a key component of NCD screening and management.

As a Natural Course of Achieving Good Health Outcomes, the Country is Facing a Rapidly Ageing Population

50. **The challenges of addressing the NCD burden are exacerbated by a rapidly ageing population.** Sri Lanka is ageing at a faster rate than the average for South Asian and other LMICs. Although life expectancy at birth is high (75.3 both sexes) in Sri Lanka, the gap of 8.5 years between this and healthy life expectancy (66.8 years) shows that increasing numbers are surviving with some forms of morbidities and disabilities. These together with the pressure from social influences and changing expectations of the people have called for a revisiting of the current health service delivery model in Sri Lanka.

51. **Rapid ageing has had an effect on the dependency ratio of the country.** During 1981–2012, the median age of the Sri Lankan population increased from 21.4 years to 31 years, which is the highest median age among South Asian countries (UNFPA 2017). In 2012, 25.2 percent of the population were children under the age of 15 and 62.4 percent were working-age persons between the ages 15 and 59 (UNFPA 2017). The changes in age structure have affected the dependency ratio in the country. As of 1981, there were 61 child dependents and 11 aged dependents (72 dependents in total) for every 100 working people. By 2012, the total dependents had decreased to 60—comprising 40 child dependents and 20 aged dependents for every 100

working persons. The decrease in the number of child dependents and the increase in the number of aged dependents will have major health and social consequences for the country. The number of people (ages 20–59) to provide support for old people decreased from seven in 1981 to four in 2012.

52. From a social perspective, rising numbers of old people will increase the burden on families and pose a challenge to traditional social structures. Culturally, the elderly in Sri Lanka are cared for by extended family, particularly the women in the household. As of 2012, 99 percent of old people lived in households, while only 1 percent were institutionalized (UNFPA 2017). With the rising numbers of aged people and increasing employment pressures, and with many women working outside the home, the city, and even the country, this system is becoming more and more unsustainable. As the numbers grow, elderly care will become a strain on the traditional support system, giving rise to an urgent need for affordable, high-quality elderly care facilities outside the home. Policy interventions will be required to address the consequences of population ageing and the increasing dependency ratio, and policy makers will need to consider strategies to reduce the burden of the elderly on the working population. This involves reallocating resources and planning and developing the country’s physical and social infrastructure at all levels.

53. Ageing involves a natural deterioration of the body, which affects the physical, mental, and cognitive abilities of elderly persons. In Sri Lanka, more than half of the elderly population reported physical or mental difficulties—21.8 percent had problems with their eyesight, 11.3 percent had difficulty hearing, 19.4 percent had difficulty walking, and 8.3 percent had difficulty related to cognition (UNFPA 2017). From a health care perspective, Sri Lanka requires sufficient geriatric care facilities to cater to illnesses and conditions that occur naturally as a part of ageing. Proper geriatric care can promote healthy ageing, which in turn can improve the quality of life and prevent premature morbidity, disability, and death.

54. Nutrition has a major impact on elderly health. Elderly people are more susceptible to nutritional problems arising from issues with the body’s digestion and absorption mechanisms, which deteriorate as part of the natural ageing process (HRCSL and Helpage Sri Lanka 2014). The elderly population is also more susceptible to malnutrition, and a recent study revealed that 30 percent of institutionalized elders in Sri Lanka were malnourished (De Silva et al. 2017). Overweight or obesity in elders is also a concern, and obesity in elderly women was recorded at 60 percent while obesity in elderly men was 43.8 percent (De Silva et al. 2017). Despite its importance, elderly nutrition is a relatively neglected area that needs to be given due attention.

55. The growing requirement for long-term care and trained caregivers is a challenge to the health care system. Long-term care in Sri Lanka is currently not provided through the public health system and is usually provided by the family or by private caregivers, leading to high OOP spending. Long-term care has been identified as a priority in the draft National Elderly Health Policy, which proposes the establishment of at least two long-term care institutions per province (Institute of Policy Studies 2017). In addition, a health care system catering to an elderly population must also be equipped to provide palliative care for terminally ill patients (particularly among the oldest old—above 80 years) aimed at improving a patient’s quality of life.

56. Sri Lanka’s health care system will require strengthening, reorientation, and coordination to meet the needs of the growing elderly population. Responding to the

requirements of an ageing population will involve changes in the health care delivery system. Dedicated geriatric care units with specialized medical and nursing staff will be necessary to cater to the physical and mental conditions and long-term care of older people. Skilled health care personnel, including medical officers, nurses, and caregivers, must be trained to ensure adequate human resources in the geriatric sector. Elderly patients may suffer from several conditions, requiring different types of medical attention. A holistic approach to elderly health care has proven benefits over compartmentalized care, and evidence from other countries has demonstrated the need for a multidisciplinary service in geriatric wards.

57. The provision of elderly-oriented services in the health care and social care sectors is one of the biggest concerns for a country dealing with a rapidly ageing population. In the recent past, the GoSL has initiated several measures to respond to the changing population dynamics, and several policies formulated in the last decade have recognized elderly health care as a national priority. A National Elderly Health Policy, which is in the draft stage at the time of writing this report, lays out the health care needs of the country's elderly population and the government's plan to meet these needs. The enactment of the Protection of the Rights of Elders Act in 2000, the establishment of the National Council for Elders, and the introduction of the National Policy for Senior Citizens in 2011 have also helped promote the rights and needs of elders and have set the stage to create better social networks and elderly care facilities.

58. It is often argued that employees' productivity reduces as they age, and organizations often refrain from investing in aged workers, assuming that there will be little or no return on investing in that age group. According to Mincer (1996), however, improved population health and rising life expectancy are associated with a longer investment payback period which helps ensure greater return on investment in people. Aaltio, Salminen, and Koponen (2014) stress that the assumption that human abilities and skills decline with age has to be treated with caution until extreme old age. The scientific literature notes that human capital development in the context of population ageing concentrates not only on the older people but it also highlights the potential of young people.

Addressing the Issues of an Ageing Population

59. The population needs to be better informed about major diseases and risk factors that predominantly affect the elderly. Diseases that dominate the burden among the aged population are predominantly NCDs. A significant portion of burden of NCDs can be prevented, delayed, or mitigated by reducing exposure to lifestyle-related risk factors and by early detection of risk markers and diseases, followed by adequate care.

60. Information will need to be complemented by an adequate enabling environment. It is well acknowledged that knowledge of healthier options alone does not readily translate into healthier practice of the population. The population need to be supported by an enabling and supporting environment such as opportunities for physical exercise, access to healthier and affordable diet, support for abstaining from unhealthy behaviors, or access to screening and routine health examinations. As the issues of elderlies are multifaceted and will cut across different sectors, a multidisciplinary/sectoral coordination mechanism needs to be in place to ensure that culturally and age-appropriate supporting programs are available at all levels. In fostering a sound enabling environment, research and evidence-generating activities need to be promoted.

61. **Long-term health care provision will need to be upgraded.** Long-term care will need to include both home-based and institution-based care. Such care will also require an expansion in staff trained to care for elderly patients, including meeting their nutrition needs. The community can play a critical role to fill the gap that may exist in home- and institution-based care, particularly in maintaining mental well-being among the aged population. On institution-based care, optimal resources need to be allocated to facilities to ensure provision of equitable, integrated curative, preventive, and rehabilitative services at all levels.

62. **Inpatient services need to be strengthened and expanded.** The demand for inpatient care at hospitals will rise as the aged population grows over time. Apart from investing in construction of new buildings, it would be important to maximize the use of existing hospital capacities. The current bed occupancy is tight in higher-level hospitals while the beds are not fully used to their potentials in lower-level hospitals. Building the capacity of first-level hospitals to become more capable of accommodating less severe cases will free up spaces from secondary and tertiary hospitals to care for more severe patients, who are anticipated to increase with the ageing population.

63. **Human resources need to be expanded in terms of both number and specialties.** As part of the expansion of long-term and inpatient care, the demand for health care personnel will increase at various levels, including medical specialists and nurses trained in health care related to geriatric diseases and their management and treatment. Older people usually develop issues that are unique and are a direct result of ageing, in addition to having medical conditions such as hypertension and diabetes (for example, difficulties in walking, special dietary needs, loneliness and bereavement, and bone fragility). This requires specialist knowledge, in coordination with other services and systems for care coordination, for best outcomes.

64. **A sustainable financing mechanism needs to be developed to meet the costs of health care that will rise with the ageing population.** Public financing of health services has been low, particularly in recent years. Sri Lanka's government health expenditure as a share of the GDP has been relatively low for a middle-income country (1.68 percent in 2016). Public health care is financed through general tax revenue, and is managed by the MoH and its nine provincial counterparts. Despite the provision of free health care, public spending on health has constituted only 40–45 percent of the country's total current health expenditure, while OOP health payments have contributed around 50 percent of the total current health expenditure. A sound health financing mechanism will need to be developed to enable the country to meet the health care needs of an aged population.

Broadening and Enhancing Learning is the Key Education Challenge for Human Capital Development

65. **The key education challenge under the framework of the HCP is to improve learning.** This is especially important for Sri Lanka as it seeks to develop the human capital required for an internationally competitive upper-middle-income economy. There are five main priority policies to increase learning, drawing on the framework of the Promise of Education, (WDR 2018, and the recent literature on human capital. The first policy priority is the development of socio-emotional skills, which play a vital role in enhancing the learning outcomes of children and in promoting successful employment outcomes among adults. Socio-emotional skills are also extremely

important for the promotion of a peaceful and cohesive society. The second policy priority is the importance of early learning. Children who fail to learn early face a cumulative deficit, which makes it extremely difficult to catch up later. A high-quality education system needs to have a sound foundation for learning in the early years. The third policy priority is the use of technology in education. Rapidly evolving technologies are transforming the learning environment. Sri Lanka needs to be able to obtain the benefits of technology to promote learning. The fourth policy priority is the new and changing role of teachers in the learning process. The pedagogical methods needed to address the learning needs of modern children are rapidly evolving. This in turn is transforming teacher development and teacher management. The fifth and final policy priority is the measurement of cognitive and socio-emotional skills, and the use of information in developing programs to increase these skills.

66. **Socio-emotional skills are now widely acknowledged to be critical for fostering a stable and prosperous society and being successful in the workplace of the future.** These skills are generally defined as “the learned competencies that help us understand ourselves, help us get along with others, and help us solve important social problems and resolve conflicts (Guerra 2015). They are important not only for relating in the social and work context but also are increasingly recognized as important to the development and use of cognitive skills (OECD 2018). One of the most widely used frameworks for socio-emotional skills is the Big Five model. This model categorizes socio-emotional skills into five broad traits. They are as follows: (a) openness to experience (open-mindedness), (b) conscientiousness (task performance), (c) emotional stability (emotional regulation), (d) extraversion (engaging with others), and (d) agreeableness (collaboration) (OECD 2015b). Under each of these categories, there is a cluster of mutually related social and emotional skills (OECD 2015b).

67. **A subset of socio-emotional skills (known as the PRACTICE skills) are considered especially important to employers.** Socio-emotional skills are now widely acknowledged to be critical to success in today’s workplace. These skills are generally defined as “the learned competencies that help us understand ourselves, help us get along with others, and help us solve important social problems and resolve conflicts” (Guerra 2015). The ‘Big Five’ is a well-known framework that categorize socio-emotional skills into five broad traits. They are as follows: (a) openness to experience (open-mindedness), (b) conscientiousness (task performance), (c) emotional stability (emotional regulation), (d) extraversion (engaging with others), and (e) agreeableness (collaboration) (OECD 2015b). A subset of these skills, ones that are considered especially valuable to employers, has been categorized into eight skills groups, summarized in the acronym PRACTICE (Guerra, Modecki, and Cunningham 2014). The eight skills identified within the PRACTICE framework are as follows: problem solving, resilience, achievement motivations, control, teamwork, initiative, confidence, and ethics. The PRACTICE framework was specifically designed to provide guidance for labor market-oriented skill-building policies and programs, and to frame the socio-emotional skills dialogue in a language that is consistent with intervention programs to promote job-oriented noncognitive skills.

68. **Moving forward, it would be useful for Sri Lanka to explore how schools can further promote socio-emotional skills and how these skills can be assessed in the school context.** Sri Lanka recognizes the importance of cultivating socio-emotional skills, and its ‘World of Work’ curriculum is a strong step forward in promoting the development of these skills, particularly for the labor market. However, it is unclear whether there has been enough of a focus on preparing

teachers to promote these skills in the classroom context. As discussed earlier, for teachers to effectively cultivate these skills in their students, they themselves need to possess the skills to some degree and have a strong understanding of pedagogical practices that will enhance these skills. Sri Lanka's teaching cadre may benefit from further training in this area. Likewise, school leadership may also benefit from further training and development in this area. To understand whether socio-emotional skills promotion efforts are effective, they must be assessed. As Sri Lanka explores avenues to develop the socio-emotional skills of its students, it should also develop a system to assess these skills—to ensure that its students develop the socio-emotional skills needed for the future of work.

Improving Learning Begins with Investing in the Early Years

69. **The GoSL has made significant efforts to invest in early childhood development but access to preprimary education is not yet universal and the quality of early childhood education programs remains a challenge.** Sri Lanka has a well-established program for MCH, which boasts free and near universal coverage. In contrast, the government does not provide free preprimary education to children in Sri Lanka—but the GoSL is increasingly focused on expanding access to preprimary education. To this end, it is pursuing a strategy of public-private partnerships to expand access to early childhood care and education (ECCE) services. The government's efforts to improve access to ECCE are at a nascent stage, and, as such, the result of these efforts remains to be seen. At present, access to preprimary education is still relatively low, with a little over half (56 percent) of 3–5-year-olds attending preschool (DCS 2018). Moreover, there are clear disparities in access based on income and location. The GoSL is also increasingly invested in improving the quality of ECCE services and has provided facility grants for teaching and learning materials to approximately 6,000 centers across the island in the last two years. However, a recent census indicates that a large percentage of ECCE centers in Sri Lanka still lack adequate resources for teaching and learning (GoSL National Census of ECD Centers 2016). In terms of the ECCE staff, teacher quality has improved over time, and the vast majority of teachers (83 percent) have some sort of professional training to teach ECCE (GoSL 2016). Still, most lead teachers do not have an advanced degree specialization in early childhood development—which is considered a best practice in many advanced systems in the world. So, although about half of children in Sri Lanka have access to ECCE, it is unclear what this access entails, and whether a basic standard for service delivery is maintained across service providers.

70. **Expanding child day-care centers, in addition to preprimary education centers, is of primary importance.** In addition to preprimary education centers for 3–5-year-old children, there is a need to expand child day-care services for children below age 3. The limited availability of day-care services in Sri Lanka may not only be affecting young children but also the female labor force participation in the country. Many working mothers find it challenging to continue working once they have children and tend to leave the workforce to stay at home and care for their children. This is reflected in the lower female labor force participation rate in Sri Lanka (at approximately 36 percent) (Solotaroff, George, and Kuriakose 2018). The GoSL is keen to increase the female labor force participation rate and has set a target of developing 10,000 female caregivers for child day-care centers, trained with the National Vocational Qualifications Level 4 certificate. In light of the government's interest in establishing child day-care centers, it will be important for the country to explore the best means of achieving this goal. Many countries have followed an integrated model for ECCE, where both child day-care services (for children under age 3) and

early childhood education (for children between ages 3 and 5) are established and managed in an integrated system, often under one government agency or body. Ultimately, Sri Lanka will have to decide whether to expand child day-care services under an integrated model or in a differentiated model.

71. Sri Lanka must also continue to focus on improving the quality of its ECCE workforce. Teacher quality is one of the most vital elements in determining the effectiveness of early education programs. A high-quality curriculum must be well implemented if it is to be effective—and strong implementation requires high-quality teachers. Research suggests that teachers with special knowledge of early childhood development are particularly important to the implementation of successful ECCE programming (Bueno, Darling-Hammond, and Gonzales 2010). Many successful ECCE programs, such as those in the United States, require their lead teachers to have a bachelor’s degree with a specialization in early childhood education (Bueno, Darling-Hammond, and Gonzales 2010; Wechler et al. 2016). Still, the relationship between qualification and ECCE outcomes is complex, and it is not entirely clear that a degree or high level of specialization in early childhood development is a prerequisite for a high-quality ECCE teacher (OECD 2012a). What is clear, however, is that teachers with specialized training are able to provide a more nurturing, interactive environment for children (Bueno, Darling-Hammond, and Gonzales 2010). The GoSL recognizes the importance of the quality of an ECCE workforce and has initiated a range of short-term programs to improve the quality of ECCE teachers in the short term. However, the long-term solution to address teacher quality will have to focus on improving the system for recruiting, developing, and retaining high-quality ECCE teachers, particularly those with degrees and or/specializations in early childhood development—this will help raise the bar for ECCE quality in Sri Lanka.

Teacher Development is an Important Element of Education Quality

72. Sri Lanka’s teacher system has made strides, but challenges such as the quality of preservice and in-service teacher training and a weak system for teacher deployment may affect the quality of the country’s teacher cadre. Sri Lanka has about 241,590 teachers, serving in its network of government schools (Ministry of Education School Census 2017). In terms of teacher qualifications, approximately 98 percent of these teachers are either trained teachers or graduates. The system for teacher training, both preservice and in-service, has improved over time. Still, a closer attention to the quality of these programs will be important as Sri Lanka moves toward its goal of developing a high-quality teacher cadre. Moreover, the system for teacher deployment is a particular challenge for the country. Although the 2017 school census suggests that government schools in Sri Lanka have an adequate number of teachers, many schools do not have the right mix of teachers (Dundar et al. 2017). Rural and plantation schools, in particular, find it challenging to attract and retain teachers in key subject areas such as English, mathematics, and science (Aturupane et al. 2011). The country also faces a shortage of English, mathematics, and science GCE A/L⁵ teachers, which is partly due to low teacher salaries. Overall, the system for recruiting, developing, compensating, evaluating, and promoting teachers in Sri Lanka does not appear to be as well developed as in most high-performing countries. In effect, although Sri

⁵ General Certificate of Education (Advanced Level).

Lanka has a system in place for teacher management, there are systemic gaps, which may undermine the quality of its teaching cadre.

73. **Moving forward, Sri Lanka should pay closer attention to the quality of its preservice and in-service teacher training programs (TTPs).** A well-structured preservice TTP with strong coursework and a strong practical component is vital for developing a high-quality teacher cadre (UNESCO 2018). Experts agree that high-quality TTPs share a set of common objectives; perhaps the most critical being the development of subject matter knowledge for teachers (Lim et al. 2009). This is important because there is substantial evidence that the subject knowledge of teachers has an impact on student performance (Bramwell, Anderson, and Mundy 2014; UNESCO 2013). More and more TTPs are also seen to have a role in developing the tools to study teaching (Lim et al. 2009). This is particularly salient as many of today's high-performing systems are aiming to develop a cadre of teachers who view themselves as professionals with a role to play in shaping education reform (Schleicher 2011). While high-quality preservice teacher training is critical, in-service teacher training is also recognized as an effective tool for improving teacher quality. In a rapidly changing world, professional development provides an opportunity to keep teachers' subject knowledge up-to-date and to apply skills and new teaching methods. It also enables schools to develop and apply new strategies and implement new teaching practice. The best performing education systems, such as that of Shanghai (China), have strong in-service training programs to ensure that the teaching and subject content skills of their teachers are developed throughout their teaching career. It will be important for Sri Lanka to review the quality of its preservice and in-service TTPs and improve them in line with best practices in preservice teacher development.

74. **Sri Lanka will also have to manage the urban/rural gap in teacher quality to ensure its education system is responsive to the needs of all its students.** Around the world, students in rural and low-income settings face certain challenges that are different from their urban and/or more affluent counterparts. The most acute challenge may be the that of access to high-quality teachers in rural areas. Rural areas (as well as the plantation sector in Sri Lanka) often find it harder to attract qualified teachers and sometimes find it harder to recruit teachers in subjects that are in high demand. The 'digital divide' appears to be another challenge faced by rural schools around the world, as rural students often have less access to technology and rural areas have less information and communication technology (ICT) infrastructure to implement technological innovation. Both teachers and students in rural schools may benefit from distance education (Schleicher 2016). In contrast, students in urban schools may have vast exposure to and immersion in technology and the Internet. As such, they may require teachers who are more technologically savvy and able to leverage these conditions to enhance student learning. In either case, Sri Lanka's teacher management system will have to pay close attention to the unique needs of teachers and students in rural and urban areas. This may require more nuanced training or different induction programs for teachers in rural and urban schools. It may also require some innovative thinking to fill teacher shortages in certain subjects. For example, in Sri Lanka, where there is a significant shortage of English teachers, teachers may have to be recruited from overseas to fill vacancies (Dundar et al. 2017). Ultimately, Sri Lanka will have to explore innovative options to ensure that children in rural/urban and plantation sector schools have equal access to high-quality teachers.

Enhancing Learning Outcomes through Technology-Based Initiatives.

75. **Sri Lanka is now poised to strategically deploy ICT to improve educational outcomes.** In recent years, the GoSL has introduced a number of initiatives related to the use of ICT in education and has been gradually upgrading the ICT infrastructure across schools in Sri Lanka. ICT infrastructure has been provided to approximately 4,500 schools, covering almost 90 percent of the student population (Pasqual 2018). The Ministry of Education (MoE) recently launched the e-thaksalawala initiative, aimed at developing digital content (including test papers, online digital course material, supplementary questions for test preparation, and so on) to support the teaching-learning process for Grades 1–13 (MoE 2019). In addition, nearly 100,000 teachers have been provided with basic ICT training and introduction to computer-assisted learning (CAL) (ADB 2017). These initiatives signal Sri Lanka’s interest and engagement with technology as a tool for learning. Still, it is unclear how widespread the impact of these programs has been, particularly because Internet connectivity in schools stands at about 21 percent (ADB 2017). However, in the last decade Sri Lanka’s telecommunication sector has made significant progress in terms of market efficiency, product innovation, and rural penetration of services (ADB 2017). This puts the education sector in a better place to begin strategic planning for the integration of ICT in education. Sri Lanka should take the lessons learned from its small-scale implementation of ICT in schools and begin to focus on strategically deploying ICT to improve educational outcomes.

76. **Sri Lanka should aim to situate ICT tools, such as CAL, within the broader strategic goals of the education sector.** Effectively integrating ICT in education involves more than putting computers and other technological resources in schools. There are a wide range of online learning tools and resources available to support all aspects of the teaching and learning experience, from Khan Academy to ReadWriteThink and EdX (see Box 4.3). Other online platforms, such as Google Classroom or Blackboard, are designed to help facilitate an exchange of information and also aid communication between teachers and students. (CAL software has also become increasingly popular in the education space. These tools can enhance communication between teachers and students and/or their parents and help teachers and parents to identify and use age-appropriate development activities to support student learning (World Bank 2018a). Whichever tools or platforms are integrated, it is important to keep in mind that to be effective, they must be viewed as tools to support the teaching-learning process (World Bank 2018a). None of these programs are designed to serve as a substitute for teachers but rather to complement them. Most advanced education systems have made efforts to integrate ICT into education. The most successful ones, including Korea, Singapore, and Malaysia have developed master plans for the integration of ICT in education (see Box 4.4). Moving forward, it will be important for Sri Lanka to develop a master plan to integrate ICT interventions in the context of the broader strategic goal of improving student learning outcomes.

A Well-Developed System for Assessment of Learning Outcomes Can Further Improve Learning

77. **Sri Lanka’s learning assessment system has made progress but there is still room for improvement.** Sri Lanka introduced national assessments in 2003. Every three years these national assessments test cognitive skills in first language (Sinhala and Tamil), English, and mathematics for Grade 4 students and English, mathematics, and science for Grade 8 students.

There are a few ways to make these national assessments more useful for education development. First, the technical rigor of the national assessments, including test design, sampling, survey management, analysis of results, and dissemination and publication, needs to be strengthened (Aturupane et al. 2011). Moreover, these assessments miss out on the opportunity to collect data on schools, students, teachers, parents—which could be beneficial to policy makers for educational planning. Although, the MoE introduced a TIMSS module in its national assessment, to date, the country has not participated in any of the international assessments such as TIMSS or the Program for International Student Assessment (PISA).

78. Moving forward, Sri Lanka will need to develop its institutional capacity and conditions to use national assessments for education development. According to Kellaghan, Greaney, and Murray (2009), there a number of conditions which must be met for a country to make optimal use of the findings of a national assessment. First, there must be sufficient political will to consider reforms and changes that may need to be undertaken in response to the findings of a national assessment. Second, policy and decision makers in the MoE should have the knowledge and skills to interpret and use information from a national assessment—and if such capacity is lacking, substantial investments may have to be made to build this capacity. Third, national assessments must be integrated into existing structures, policy and decision-making processes, and resource allocation channels. Fourth, there must be a clear dissemination strategy to communicate the findings of a national assessment. Finally, the government must ensure that the team responsible for undertaking and interpreting the results of the national assessments is maintained at a high level, and staff turnover is minimized—as this can seriously affect the quality of the process (Kellaghan, Greaney, and Murray 2009). Sri Lanka must cultivate an ecosystem that effectively uses national assessments for education planning.

79. Sri Lanka should also accelerate efforts to participate in international assessments. Most high-income and upper-middle-income countries participate in a range of international assessments such as the Progress in International Reading Literacy Study (PIRLS), TIMSS, and PISA. Developing countries are also stepping up efforts to participate in these tests because they help policy makers to benchmark learning outcomes against international standards. Many countries have used international assessments to accelerate education reforms and, ultimately, improve educational outcomes. For example, TIMSS results in Japan spurred parliamentary discussions about planned changes in education policy (Japan). In New Zealand, a taskforce on mathematics and science was established in response to the TIMSS results. In Canada, the results led to the development of instructional materials based on an analysis of the common misconceptions and errors of students in their response to TIMSS tasks. In Singapore and Canada, participation accelerated changes in the revision of curricula (Greaney and Kellaghan 2008). Sri Lanka would benefit from participation in international assessments, particularly as it undertakes reforms to improve the quality of its education system.

Higher Education is Increasingly Important for Economic Development

80. Higher education is increasingly important for development in the modern, technologically advanced, knowledge-intensive global economy. The economic benefits of investment in higher education have been steadily increasing over the last 30 years (Psacharopoulos and Patrinos 2018). However, participation in higher education in Sri Lanka is low by international standards (Aturupane 2017; Gunatilleke 2015). Higher education enrollment

is considerably below East Asian middle-income countries such as China, Indonesia, Malaysia, Mongolia, the Philippines, and Thailand, as well as India in South Asia. However, the demand for higher education is increasing in Sri Lanka as the number of students who complete secondary education is large and rising (Dundar et al. 2017). Further, the demand for higher education is income elastic: as the per capita income of the country increases and the aspirations of young people grows, the demand for higher education will rise. In addition, employers in the private sector are seeking graduates with high-quality knowledge, skills, and expertise for their firms and industries.

81. Higher education can make a direct and strong contribution to the development of the provinces. The location of large higher education institutions such as universities in provincial towns has the potential to stimulate regional economic development through multiple channels. The presence of thousands of students and hundreds of staff members generates demand for a wide array of commodities, including food, clothing, housing, education and cultural activities, recreation, and transport. Substantial inflows of investment in response to these demands can transform a regional economy (Harrison and Turok 2017). For instance, small towns can become large towns when universities are set up in their neighborhood. The production of graduates can also supply regional economies with educated human resources for managerial, professional, and technical jobs.

82. The next stage of higher education development can draw upon three global waves of higher education: mission differentiation, internalization, and the development of the private sector. These three waves of global experience commenced in advanced higher education systems such as the United States of America and Western Europe but are now spreading to UMICs. They can also complement the development of regions through higher education. Mission differentiation, for instance, can be used to strategically develop provincial universities and regional economies. Internationalization can enable provincial universities to reach out to global flows of knowledge and ideas and can accelerate their development. The promotion of the private sector can help provinces attract investment and stimulate their economies. The next section discusses these various policy initiatives.

Mission Differentiation: The Next Stage of Higher Education in Sri Lanka

83. Mission differentiation would be the logical next stage in higher education development. One set of universities, mainly drawn from among the newer higher education institutions in the provinces, could be designated as predominantly teaching universities, with their main mission focusing on excellence in teaching and learning. The financing of these universities, and their internal governance systems, could reflect this focus. Another set of universities, mainly drawn from among the older, more developed higher education institutions could have, in addition to their teaching role, an important mandate for research and innovation, and the commercialization of innovations. A third set of universities could emphasize, along with their teaching functions, community services and regional development.

84. An incentive system can be designed to promote high-quality teaching and learning in universities designated as centers of teaching excellence. This would include career pathways and promotion schemes for academics which emphasize the quality of teaching and learning, with a special focus on the employment prospects of their graduates. The U.K. Teaching Excellence

and Student Outcomes Framework, for instance, focuses on teaching quality, learning environment, student outcomes, and learning gains. The learning environment could also be more oriented toward outcome-based education and learning-centered teaching. In fund allocations, learning spaces could be redefined so that greater emphasis is given to learning spaces that seek to promote collaborative and team-oriented learning, rather than the traditional large lecture theatres and halls. Concepts such as the greater use of air and light, flexible seating, and individual and personalized spaces for students and staff, and smaller open learning spaces for group-based learning, can be emphasized. Teaching excellence awards can also be introduced for academic staff in these universities.

85. The role of universities in advancing growth through research and innovation, and economic links with industry, is increasingly important in upper-middle-income and high-income economies (Altbach 2013). Sri Lanka's innovation policy acknowledges the value of universities in promoting innovation-led growth. The older, established universities, such as the more research-oriented universities, could be promoted as developmental universities. These universities would place greater emphasis on research leading to innovations, and the commercialization of innovations. The funding mechanisms, the incentive framework for academic staff, and the governance systems of these universities could explicitly recognize their roles as developmental universities. Science, technology, engineering and mathematics (STEM) academics could be encouraged to undertake research and innovation leading to intellectual property such as patents and industrial designs. Social science and humanities academics could be encouraged to engage in policy-oriented research, which is useful for economic growth and social and cultural development. The latter could also result in intellectual property such as copyrights and trademarks.

ICT Can Be Used to Support Teaching and Learning

86. ICT can be used to enhance and support teaching and learning, especially in the less developed provincial universities, to bring them closer to the levels of teaching performance in more developed metropolitan universities. Some of the trends in ICT and higher education which can facilitate this process include the following:

- (a) **Personalized learning and open courseware.** There is a vast quantity of higher educational resources available on the Internet. In consequence, academics are increasingly providing links to video lectures and texts through which students can use their level of prior preparation and follow studies tailored to their personal interests. For instance, the Khan Academy has algebra lessons intended to fill gaps in the learning of more disadvantaged students and enable them to attain parity with their peers.
- (b) **Teacher-generated open content.** Organization for Economic Co-operation and Development (OECD) higher education systems are increasingly empowering academics to identify and create learning resources with the greatest learning impact. Online textbooks allow teachers to edit, add to, and customize material and enable students to prepare a tailored copy precisely matching the style and pace of the degree program. These ICT-enabled activities are often supported through nontraditional

forms of intellectual property and copyright, such as Open Courseware and Creative Commons Licenses.

- (c) **Teacher managers or mentors.** The role of academic staff members in the lecture halls is being transformed from a ‘font of knowledge’ to ‘an instructional manager’ whose role is to assist students through individualized learning pathways, identify applicable learning resources, create collaborative learning opportunities, and provide academic insight and learning support during formal class time and also beyond the designated lecture period.

Expanding Private Sector Higher Education

87. **The development of private universities in the provinces would be a landmark achievement.** At present, Sri Lanka lags badly behind the rest of the world in private higher education. The share of private sector higher education enrollment in the country, at 20 percent, is lower than the average for all world regions. It is also less than half the average for South Asia and well below the shares in Sub-Saharan Africa and Eastern Europe and Central Asia, which are the world regions with the lowest share of enrollment in private higher education institutions. Yet, private higher education institutions have expanded rapidly around the world, and countries such as the Republic of Korea, which lead the world in higher education enrollment, have a large private higher education sector.

88. **The low overall enrollment in higher education and the small share of enrollment in private higher education institutions means that the country has an excellent opportunity to promote enrollment expansion through the development of private higher education.** Currently, the country has few private higher education institutions. These are concentrated mainly in the Western Province, although there are also a few in Kandy in the Central Province. Over time, as the country develops, there will be demand for private higher education institutions to be located in other provinces. Further, the location of private higher education institutions in provinces outside of the Western Province can help generate economic activities in these provinces and promote their development. There are several strategies the government could adopt to promote the growth and development of the private sector in higher education.

Internationalization Can Accelerate of Higher Education Development

89. **The internationalization of higher education offers excellent prospects for the accelerated development of provincial universities.** Internationalization—with cross-border movements of students, staff, and institutions—is one of the most significant recent developments in the global higher education landscape (Altbach 2013, 2015). One of the key features of internationalization is the integration of university teaching and learning across national and regional boundaries. This provides the universities in the less advanced provinces opportunities for rapid development of their teaching and learning activities through connections with overseas universities.

90. **There are several initiatives that the national government and provincial councils could implement to promote Sri Lanka as a hub for international students.** These would include the following:

- Commissioning market research among potential students on the image of the country compared to competitor countries
- Identifying the most promising overseas markets
- Devising strategies for the recruitment of full-time undergraduate and postgraduate students
- Producing promotional and public relations material to stimulate interest overseas
- Developing partnerships with overseas recruitments agents
- Promoting the country as a major destination for international academic conferences
- Conducting research into pricing, competitive behavior, and student satisfaction

91. **The private higher education sector can play a central role in promoting Sri Lanka as an international hub for foreign students.** The internationalization of higher education provides an excellent opportunity for Sri Lanka to broaden and stimulate higher education development by attracting foreign students. An inflow of foreign students will increase the revenues of domestic higher education institutions. The presence of foreign students on university campuses will also benefit Sri Lankan students, as it would expose them to other cultures and be educationally enriching. The demand for university education in Sri Lanka greatly exceeds the supply, and providing places in public universities to foreign students, beyond a small percentage, will be contentious and difficult to justify in the current context. Nonstate higher education institutions do not face such constraints. Developing an enabling environment for nonstate higher education institutions to deliver services to both domestic and foreign students is feasible. Good quality nonstate higher education institutions would be able to attract students from other low-income and middle-income countries, including South Asian neighbors. This already happens on a small scale, with students from Maldives, for instance, travelling to Sri Lanka for higher education. Expanding the inflow of foreign students would be important for future higher education development. It would also be a lucrative source of income for the country.

Public Consensus and Stakeholder Commitment is Vital for Human Capital Development

92. **The strategic initiatives for human capital development need to be prioritized and sequenced.** Human capital development is a lively topic of debate in Sri Lanka, and the government has stated that development of the education and health sectors is a high policy priority. The discussion and the menu of development options presented in this report is extensive and far reaching. The government needs to select a set of strategic policy initiatives that can be implemented efficiently and equitably. Some of the initiatives presented can be implemented in parallel, other initiatives may need to be implemented sequentially, and yet other initiatives could be implemented cumulatively.

93. **The human capital development strategy needs to be broadly communicated among the general public and widespread ownership needs to be generated.** The reduction of stunting and the promotion of learning are long-term challenges and need sustained commitment to development initiatives from politicians, policy makers, technocrats, and administrators. In addition, academics, researchers, teachers, principals, doctors, nurses, and health workers are of

central importance to the delivery of good quality human capital services. Therefore, the ownership and commitment of these key stakeholders is a necessary condition for a successful human capital development strategy. The political authorities and policy makers need to communicate the scope, objective, and rationale for the human capital development program to these stakeholders. The choice of strategies to implement, and their ordering and sequencing, will need to be accomplished with the participation, ownership, and commitment of the education and health communities.

94. **The media needs to be allies in the process of implementation of the human capital development strategy.** The popular media plays a vital role in providing information and shaping the perceptions of the general public. It is important that the achievements of the education and health systems, their future challenges, and the strategies adopted to address these challenges are communicated to and understood by the media. This, in turn, will enable the leaders of change and development to communicate to the general public their vision of the future of education and health systems and their strategy to achieve that vision. The support and understanding of the public will be of great importance to generate long-term political interest and commitment to the human capital development strategy.

CHAPTER 1. THE POTENTIAL OF HUMAN CAPITAL

1.1 HUMAN CAPITAL FOR ECONOMIC AND SOCIAL DEVELOPMENT

1. **Human capital is a central determinant of economic well-being and social advancement in the modern world economy.** The concept of human capital covers the knowledge, skills, nutrition, and health that people accumulate over their lives, enabling them to realize their potential as productive members of society (World Bank 2019a). The global economy places an increasing premium on higher-order cognitive skills such as expert thinking and complex communication (World Bank 2018a) and socio-emotional skills such as problem solving, resilience, achievement motivation, control, team work, initiative, confidence, and ethics or PRACTICE skills (Guerra, Modecki, and Cunningham 2014). Building these skills requires strong human capital foundations. In recent years, industry, agriculture, and especially services have become increasingly knowledge and technology intensive. The chief characteristic that distinguishes advanced economies, middle-income economies, and low-income economies is the knowledge content of their economic activities and production processes. The main components of human capital, education, health, and nutrition play a central and synergistic role in the production of the human capital required for development in the information-rich, technology-intensive world of the future.

2. **The vitally important contribution of education to economic development is well known.** There is abundant global evidence of the importance of education for development (Barro and Lee 2013; Hanushek and Woessmann 2015). Among advanced economies, the education levels of their populations is the single-most important factor determining their economic performance. Among middle-income and low-income countries too, economies that have high education attainment enjoy considerable welfare gains. Cross-country data show that schooling drives increased earnings. An additional year of schooling raises an individual's earnings by 8–10 percent, on average (World Bank 2018a).

3. **Education also has an important role to play in promoting a stable and peaceful society—which is a vital precondition for economic and social development.** A peaceful and stable society is a precondition for sustained economic growth. Good citizenship values such as tolerance and mutual respect as well as socio-emotional skills such as teamwork and collaboration are important ingredients for the development of peaceful, stable, and prosperous societies—and schools are widely acknowledged to be one of the most important platforms for developing these values in the citizenry (Reimers et al. 2005). Education systems around the world are increasingly sensitive to this role and are focused on developing programs that will instill these values in students from a young age. As such, education plays an important role, not only in fostering economic stability but also in promoting a peaceful one—by developing citizens who are aware of their shared humanity and have the necessary civic values and socio-emotional skills to contribute to the development of a strong, stable, and vibrant society.

4. **East Asia provides outstanding examples of the impact of education on economic growth.** The rapid economic development of many countries in East Asia can be attributed in large part to their growth promoting education policies (Crawford, Hasan, and Bentaouet 2018). Economies such as Japan, the Republic of Korea, and Singapore implemented comprehensive and positive education policies early and saw their economies develop quickly. Other East Asian

economies such as China and Vietnam implemented such policies later and are now starting to see their economic dividends (Crawford, Hasan, and Bentaouet 2018). Box 1.1 provides a picture of the vital contribution of education in the extraordinary economic growth of East Asia. Likewise, evidence from other regions such as Europe and North America suggests a strong association between education and equitable economic growth.

Box 1.1: Education and the Extraordinary Growth in East Asia and the Pacific

Continuous robust economic growth has made East Asia and the Pacific a high- and middle-income region. Since 1960, East Asia and the Pacific has grown faster and sustained high growth longer than any other world region. Progress has been remarkable, especially among the region's low- and middle-income economies, which grew at more than twice the world average during 1960–2015 (7.2 versus 3.5 percent). As recently as 1991, two-thirds of East Asians worked in agriculture, most as low-income smallholders; by 2012, that figure had dropped to one-third.

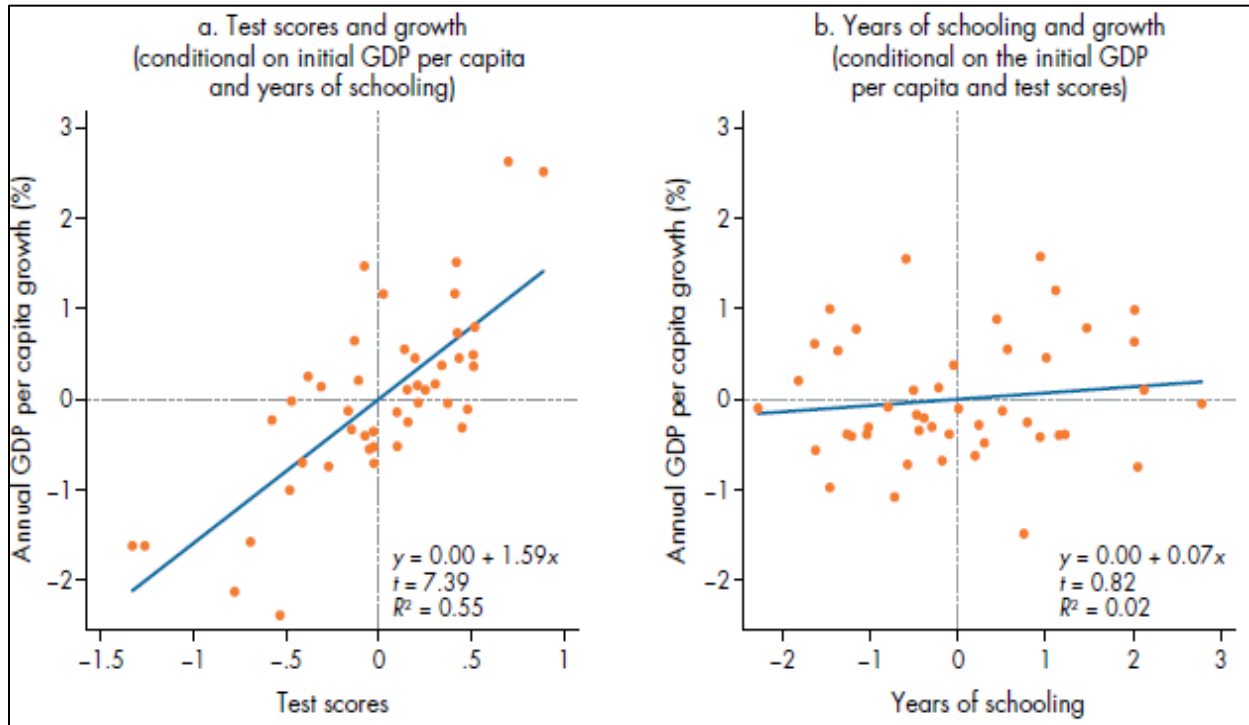
Countries pursued a broad set of complementary policies to accelerate growth, with education at the forefront. Policy makers tried to reduce inequality, first by boosting rural incomes and then by promoting educational opportunity and outcomes. Policies also improved labor force abilities and skills, mostly through increased schooling, and made education broadly relevant to current and expected future economic challenges. Some countries went from rural agricultural societies to high-tech knowledge economies. Japan, the Republic of Korea, and Singapore set their education policy goals within a larger framework that sought to eliminate technology gaps with the world's most advanced countries. Their goal was to create domestic capacity to produce knowledge and technology that was new to the world. Long-term increases in productivity depend on continuously improving and applying new technologies, which in turn increases demand for more highly skilled workers.

Education raised productivity among farmers and promoted structural transformation. Investments in education paid off at all education and income levels, not just for people who worked in high-tech jobs and industries. Rural dwellers with education—even when limited to a few years of primary school—consistently outproduced and outlearned their less educated neighbors. Poverty rates dropped substantially as jobs and income-earning opportunities grew. Educational attainment increased dramatically to converge with the global average. In 1950, the average adult in East Asia and the Pacific had only 1.3 years of schooling—less than half the prevailing world average of 2.9 years. By 2010, average attainment was more than six times higher than it had been and converged on the world average, which had risen to eight years. This increase in average schooling occurred as the population more than doubled. Trends in attainment continue to climb, with more and more students completing secondary school and proceeding to tertiary studies. Schools today provide twice as many students with more than six times as much instruction.

Source: Crawford Hasan, and Bentaouet 2018.

5. The quality of education, not simply the quantity of schooling, matters for economic growth. Different levels of education generate varying dividends. A high-quality basic education lays the foundation for citizens to absorb and adapt to technological change which can spur economic growth. More advanced levels of education support innovation and accelerate economic growth. Whether at the basic education level or at more advanced levels, the evidence increasingly suggests that it is the quality of schooling as demonstrated in learning outcomes, rather than years of schooling, that is the best predictor of economic growth (Figure 1.1 and Figure 1.2). The main channel by which schooling improves economic growth is by improving learning and skill acquisition (Glewwe, Maiga, and Zheng 2014; Hanushek and Woessmann 2012). Evidence from 23 OECD countries suggested that simple measures of numeracy and reading proficiency explain wages over and above the effect of years of schooling completed (World Bank 2018a).

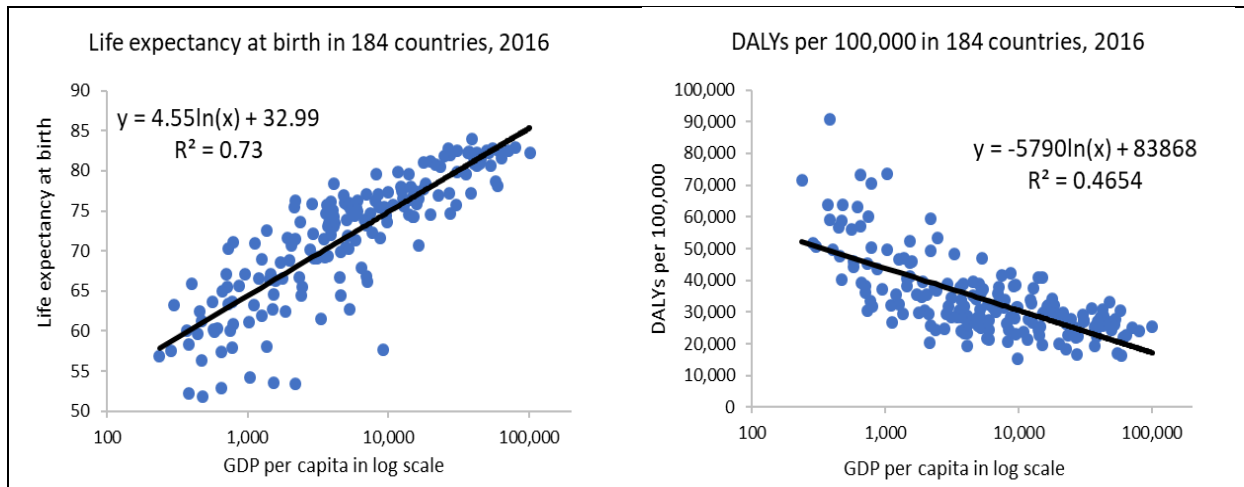
Figure 1.1: What Matters for Growth Is Learning



Source: Learning to Realize Education's Promise, World Development Report 2018, World Bank.

6. **A healthy population translates into higher economic productivity.** It is well established that the health of a population and the economic status of a country are highly correlated. Figure 1.2 shows the relationships between per capita GDP and health-related indicators across 184 countries. A strong relationship exists between health outcomes and growth over many health indicators. However, the direction of causality between the two is more complicated. Economists have investigated the direction of causality with various approaches and settings, and evidence points toward the existence of multiple causal channels that can run in both directions. Scholars attribute the significant improvements in population health that have taken place in the last two centuries to three factors attained by economic growth: improved standards of living, improved public health environment, and improved health technology (Weil 2014). Conversely, healthier populations work harder and learn more in school, which contribute to higher productivity. The most intuitive channel through which productivity can be affected would be through adult health. Illness or the premature death of an adult at a productive age reduces work performance and output. Sustaining good adult health of the workforce is a critical element of human capital. Another channel is through early-life health. Nutritional status in the first 1,000 days has a lasting effect on a child's cognitive and physical development, which affect the ability to grow and learn. Evidence shows a positive relationship between age-appropriate height in early years of life and health and nutritional status and that height-for-age in early-life is also a predictor of future education attainment and of adult income. A recent study suggests that childhood stunting can result in 7 percent loss of per capita income (Galasso and Wagstaff 2018). The relationship between early-life health and future income is partly mediated through educational attainment. There are also synergistic relationships between health, nutrition, and education. In Sri Lanka, parental education has been shown to be positively associated with child nutrition (Aturupane, Deolalikar, and Gunewardena 2011).

Figure 1.2: Health and Economic Status Are Correlated



Source: IHME 2018a; World Development Indicators.

1.2 THE CONTEXT FOR ECONOMIC DEVELOPMENT IN SRI LANKA

7. **Sri Lanka is a lower-middle-income country (LMIC) with a gross domestic product (GDP) per capita of US\$4,073 in 2017 and a total population of 21 million people.** Since the end of the 26-year secessionist conflict in 2009, Sri Lanka’s economy has enjoyed rapid growth at an average rate of approximately 5.8 percent between 2010 and 2017, reflecting a peace dividend and a determined policy thrust toward reconstruction and growth, although there are some signs of a slowdown in the last three years. The economy is transitioning from a previously predominantly rural economy toward a more urbanized economy. Social indicators rank among the highest in South Asia and often compare favorably with those in LMICs, but lag behind upper-middle-income countries (UMICs). The policy framework of the government is seeking to promote a globally competitive, export-led economy to generate inclusive and sustained growth.

8. **Sri Lanka now has the objective of becoming an upper-middle-income economy and developing human capital to a new and higher level will be key to achieving this development goal.** The Government of Sri Lanka (GoSL) is seeking to promote a modern knowledge-based economy and accelerate growth (Government of Sri Lanka’s Vision 2025: A Country Enriched). These objectives place an increasing premium on higher-order cognitive skills, socio-behavioral skills, reasoning, and self-efficacy. Building these skills requires strong human capital foundations. Consequently, accelerating human capital development is of central importance for Sri Lanka’s successful transition to an upper-middle-income economy, and eventually a high-income country.

1.3 HUMAN CAPITAL PROJECT AND INDEX

9. **Given the vital importance of human capital for economic growth, the World Bank has launched the Human Capital Project (HCP), which includes the Human Capital Index (HCI)⁶.** The objective of the HCP is to accelerate human capital development around the world.

⁶ The HCI is different from the United Nations Development Programme’s Human Development Index, which is a composite measure of three key dimensions of human development: adult life expectancy, education, and per capita

The HCI is a cross-country metric designed to measure and forecast a country's human capital (World Bank 2018b). The index follows the trajectory, from birth to adulthood, of a child born today. It measures the amount of human capital that a child can expect to attain by age 18, given the risks of poor health and poor education that exist in the country at the time of birth. The HCI has three components: (a) a measure of whether children survive from birth to school age (age 5); (b) a measure of expected years of quality-adjusted school, which combines information on the quantity and quality of education; and (c) two broad measures of nutrition and health, stunting rates, and adult survival rates. This framework and metric provide countries with a model for understanding the quantity and quality of their human capital, and can help them navigate a path forward to develop their human capital.

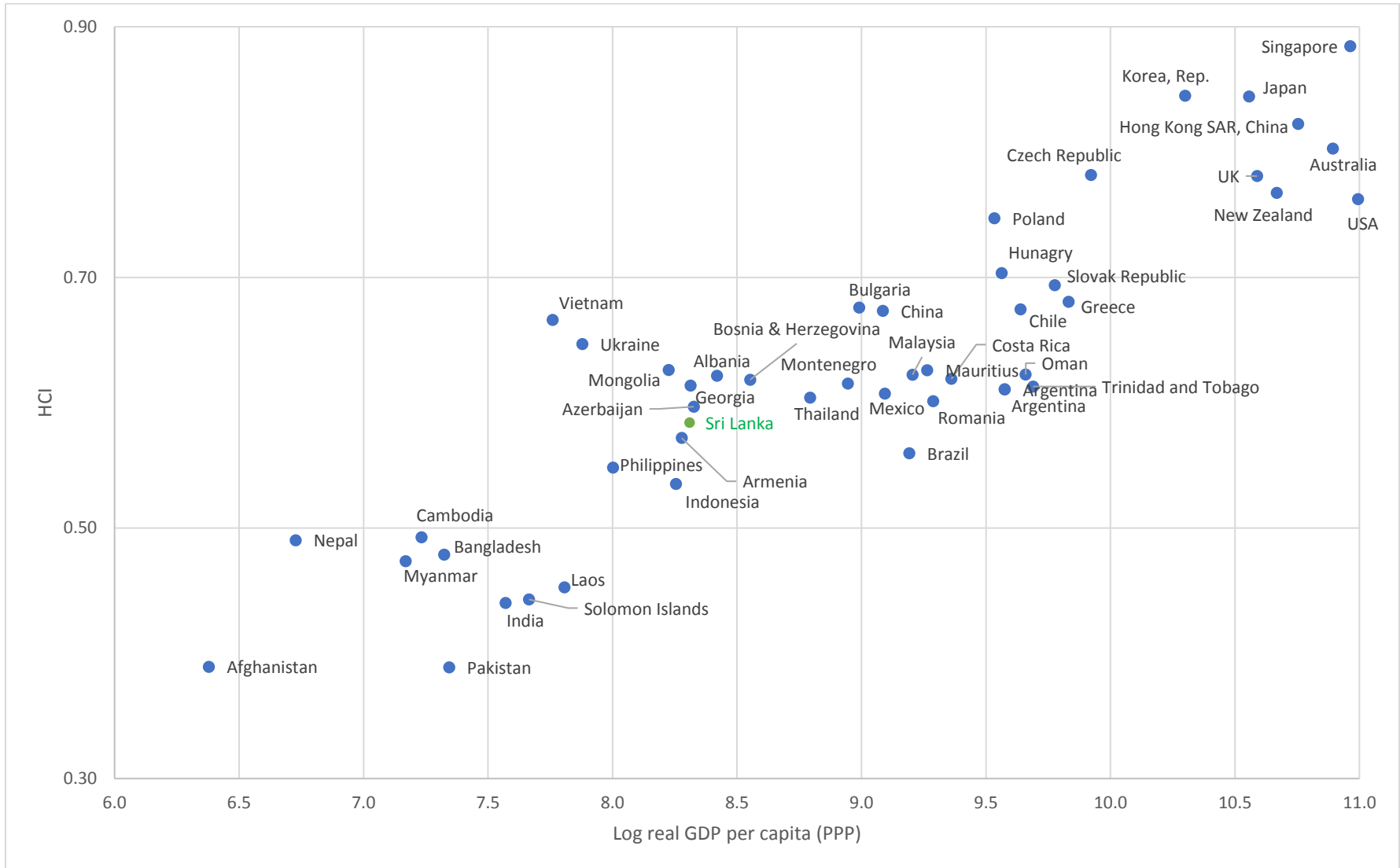
1.4 HUMAN CAPITAL INDEX: SRI LANKA IN GLOBAL CONTEXT

10. **Sri Lanka performs only moderately well, with an overall score of 58 percent, in the HCI** (Figure 1.3). This means that children born in Sri Lanka today will be 58 percent as productive in adulthood compared to their full potential. In contrast, children born in the top performing countries can expect to achieve much higher levels of human capital. Children born today in Singapore can expect to achieve 88 percent of their potential, children born in Japan and Korea 84 percent, and children born in Hong Kong SAR, China, 82 percent.

11. **Sri Lanka ranks 74 out of 157 countries included in the HCI.** It is the best performing country in South Asia. However, it lags behind East Asian countries such as China, Malaysia, Mongolia, Thailand, and Vietnam, in addition to the top performers mentioned in the previous paragraph. Also, Sri Lanka has an HCI score below European countries with similar levels of per capita income such as Albania, Azerbaijan, and Georgia.

income. As such, it differs from the HCI, which is designed to capture the main dimensions of human capital development as discussed earlier.

Figure 1.3: HCIs from Selected Countries, 2016/17

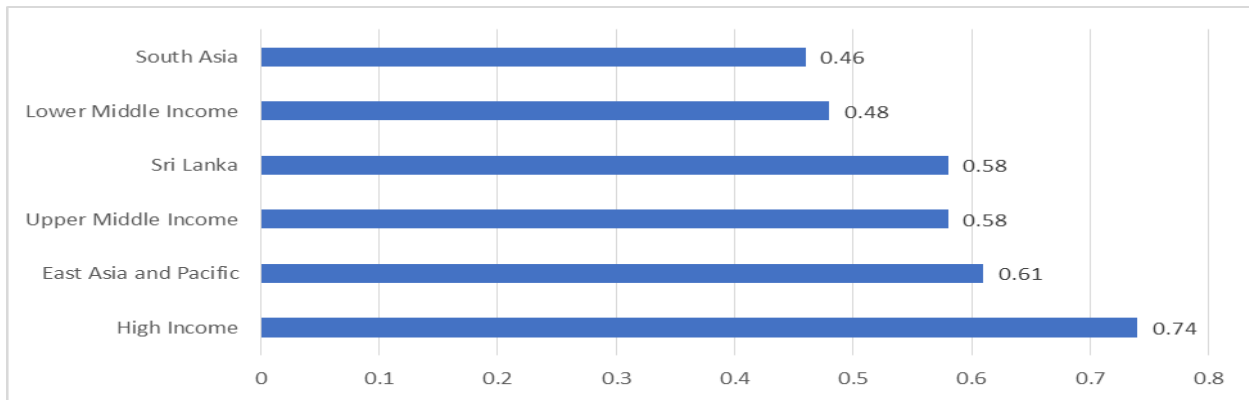


Source: World Bank team calculations.

Note. PPP = purchasing power parity.

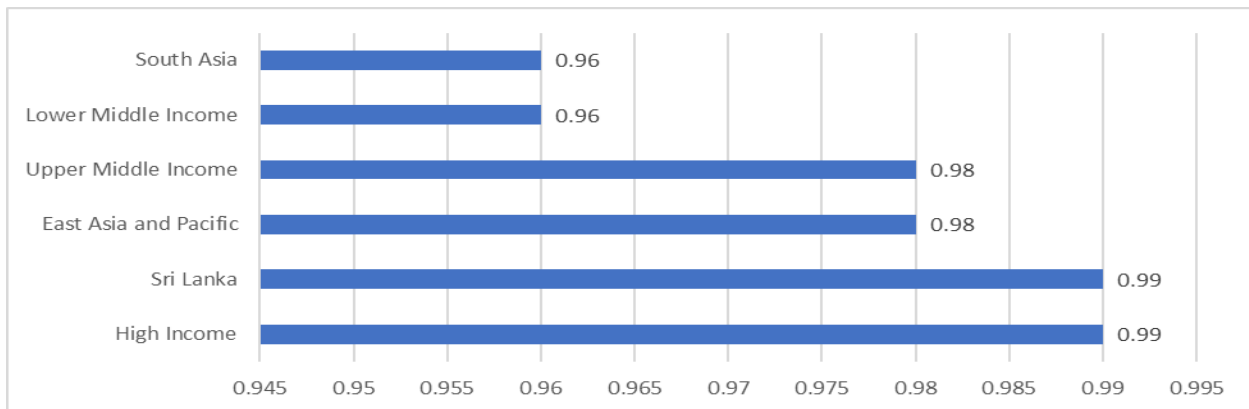
12. **Sri Lanka performs well in some components of the HCI, but less well in others.** Overall, the HCI for Sri Lanka is above the average for LMICs and on par with the average for UMICs (Figure 1.4). Sri Lanka does well on the probability of children surviving to age 5, with 99 percent of children reaching this age (Figure 1.5). This is equal to the probability of child survival in high-income countries. Sri Lanka also shows strong performance in the expected number of years of schooling, with an average of 13 years (Figure 1.6). This is on par with high-income countries. In addition, the probability of adults surviving to the age of 60 is high, at 87 percent (Figure 1.7). This is slightly above the adult survival probability of 86 percent for UMICs. Sri Lanka does less well on learning outcomes and stunting rates. On learning outcomes, Sri Lanka has a score of 400 (Figure 1.8). This is slightly above the average for LMICs, 391, but less than the average for UMICs, 428, and well below the mean score for East Asia and the Pacific, 451. On stunting, 83 percent of Sri Lankans are not stunted (Figure 1.9). This is above the percentage for LMICs at 73 percent, but below the percentage for UMICs at 87 percent.

Figure 1.4: Human Capital Index



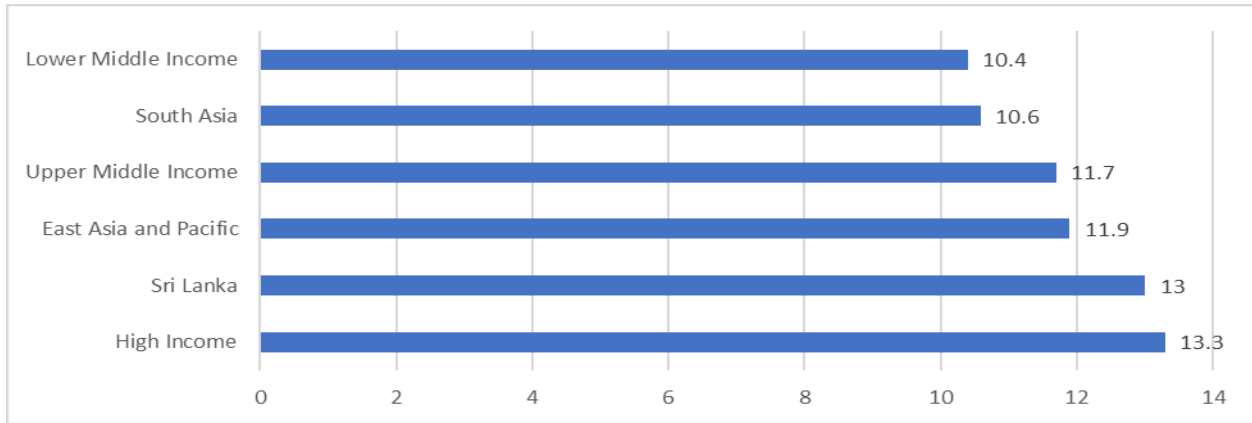
Source: World Bank team calculations.

Figure 1.5: Probability of Survival to Age 5



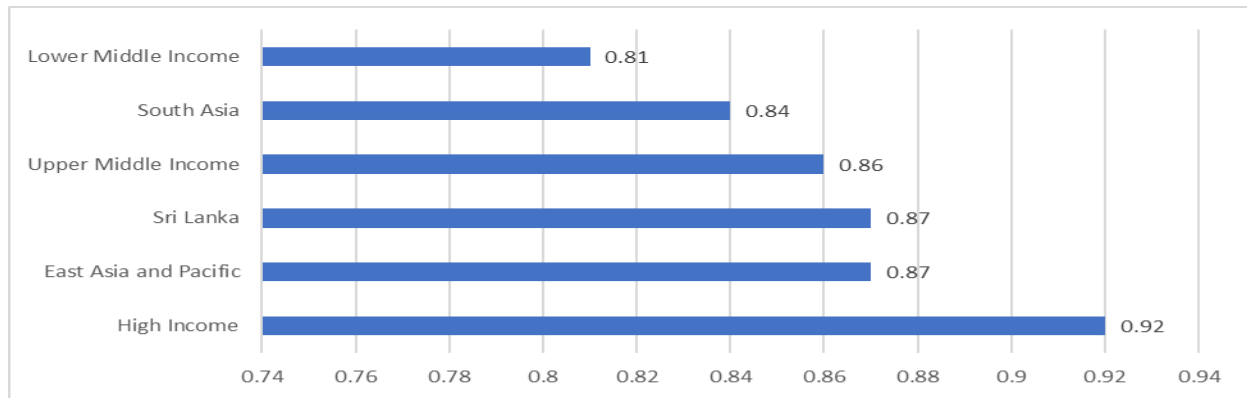
Source: World Bank team calculations.

Figure 1.6: Expected Years of School



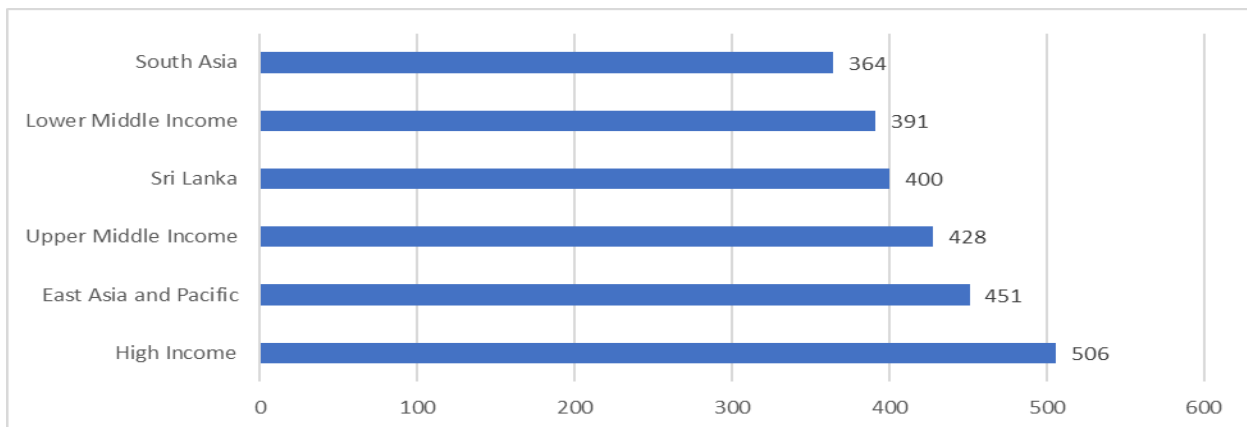
Source: World Bank team calculations.

Figure 1.7: Adult Survival Rate



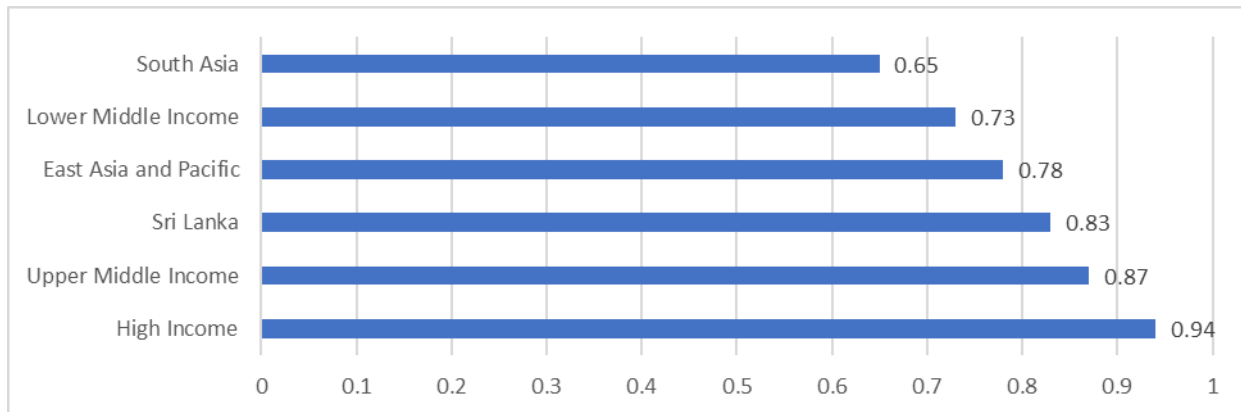
Source: World Bank team calculations.

Figure 1.8: Harmonized Test Scores



Source: World Bank team calculations.

Figure 1.9: Fraction of Children Under-Five Not Stunted



Source: World Bank team calculations.

1.5 REGIONAL PATTERN OF HUMAN CAPITAL WITHIN SRI LANKA

13. **The primary and secondary education sector and the health sector are mainly decentralized to provincial levels in Sri Lanka.** In education, the provinces are responsible for developing and implementing the provincial education sector development plans; managing the provincial school system; managing human resource; developing education administrators, school principals, and school teachers at the provincial level; implementing continuing teacher development programs; and implementing special and nonformal education programs and provincial monitoring and evaluation. In health, the provinces are responsible for curative care provided through base hospitals, district hospitals, and primary medical care units. The provinces are also responsible for preventive care delivered by Medical Officers of Health.

14. At the national level, in education the government is responsible for establishing national policies, norms and standards; developing systems; formulating the school curriculum and the preservice teacher education curriculum; establishing service conditions for the four education services; publishing and distributing textbooks; public examinations; national sectoral planning; monitoring, evaluation, and research; and overall quality assurance. In health, the government is responsible for curative care provided by central-level hospitals (national hospital, teaching hospitals, provincial general hospitals, and district general hospitals) and preventive care delivered through vertical programs such as the maternal and child health program, tuberculosis control, dengue control, filaria control, and sexually transmitted disease control.

15. The next section analyzes the regional variations in human capital, given the importance of the provinces in the delivery of health and education services. The fundamental principle that guided the calculation of provincial HCIs was that the aggregated provincial HCIs must equal the national HCI provided by the global human capital study. The calculation of HCIs from five indicators followed the same approach employed by the global study (World Bank 2018b). However, the estimation of the five ingredients required extra complexities as the data from subnational levels were limited and, even if available, they were not derived in the same way as the national-level indicators used for the global study. The key challenge was in reconciling the aggregated provincial estimates to be consistent with the national estimates while preserving the

regional variations provided by subnational data. Subnational data were obtained from the following sources:

- Child survival: Life Tables for Sri Lanka 2011–2013 by District and Sex (DCS 2016); Sri Lanka Demographic and Health Survey 2016 (DCS 2017)
- Expected years of school: Sri Lanka Household Income and Expenditure Survey for 2012/13 and 2016 (DCS 2015, 2018)
- Harmonized learning outcomes: Patterns and Trends in Achievement: TIMSS (National Assessment of Achievement of Students Completing Grade 8 in Sri Lanka) for 2014 and 2016 (NEREC 2017a)
- Adult survival: Life Tables for Sri Lanka 2011–2013 by District and Sex (DCS 2016)
- Fraction not stunted: Sri Lanka Demographic and Health Survey 2016 (DCS 2017)

The methodological details of estimating HCIs at the provincial level is provided in Appendix B.

1.5.1 Province-wise Variations in Human Capital

16. **There is considerable variation in the HCI score among provinces.** The Southern Province has the highest HCI, 63 percent, followed by the Western Province, 62 percent, and the North-Western Province and Sabaragamuwa Province, 59 percent (Map 1.1).⁷ At the other end of the scale, the Eastern Province has the lowest HCI, 51 percent, followed by the Northern Province, 52 percent, and the Central Province, 54 percent. The Western Province is the industrial and commercial hub of the country and has by far the highest per capita income among all provinces (Table 1.1). It also contains a high proportion of the most advanced education and health institutions. The high HCI value in the Western Province is mainly associated with its level of economic and human development. However, the Southern Province, which has an HCI equal to the Western Province despite being considerably poorer, shows that provinces can develop their human capital ahead of their level of per capita income. The main reason for the better learning levels in the Southern Province is the close attention of policy makers to good teacher management and development. The Southern Province effectively deployed teachers from schools with teacher surpluses to schools with teacher deficits in a way that minimized disruptions to the family lives of teachers and reduced resistance to teacher transfers. In addition, the Southern Province recruited teachers to fill vacancies in remote, estate sector schools which had suffered from teacher shortages for many years.

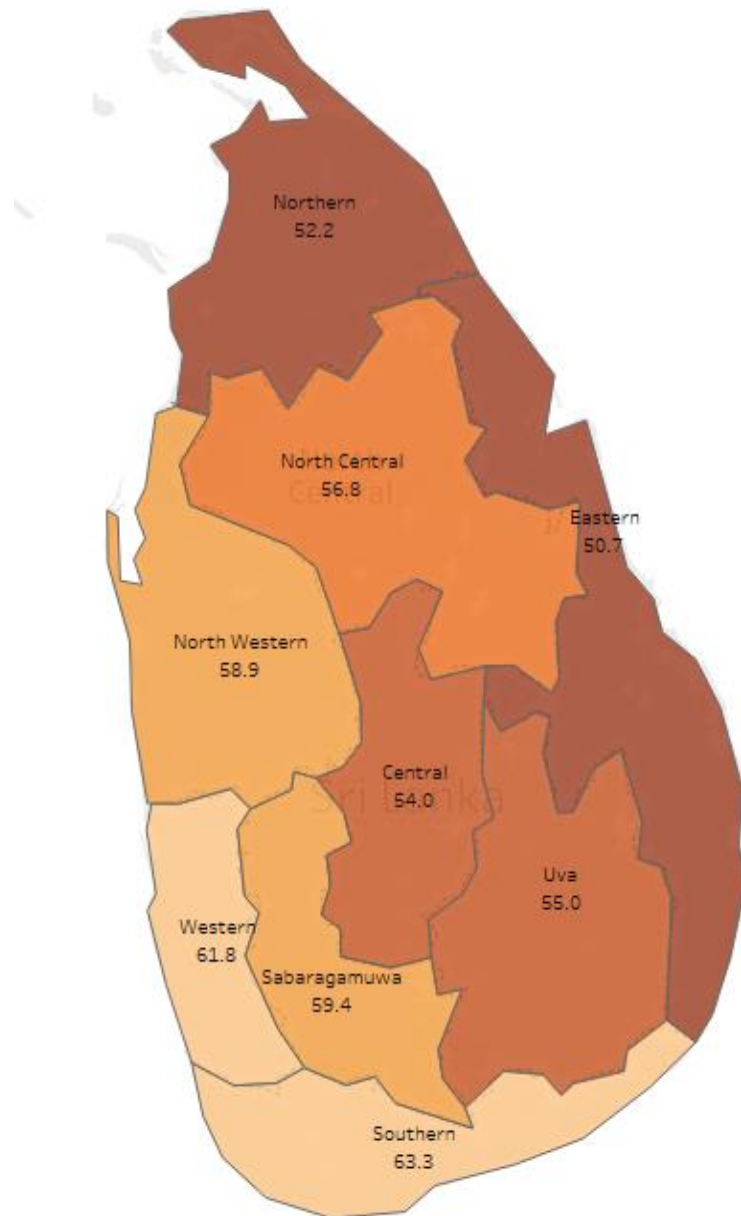
17. Among the regions that perform less well in the HCI, the Northern and Eastern Provinces were the principal theatres of the 30-year secessionist conflict that ended in 2009, and their economies and education and health sectors are still recovering from the effects of the conflict. The Uva Province has large estate sector areas,⁸ which are remote interior rural regions. The relatively lower HCI values in these provinces can be attributed to their lower levels of economic and human development. Overall, the pattern that emerges is that the Western Province and the

⁷ HCIs are expressed in percentage unit.

⁸ Estate sector refers to the large-scale tea and rubber plantations.

provinces that border it—Southern, North-Western, and Sabaragamuwa—have the highest HCI values. The HCI scores decrease as the locations of the provinces move away from the western region.

Map 1.1: HCI Values by Province 2016/17



Source: World Bank team calculations.

Table 1.1: HCI Score by Province, 2016/17

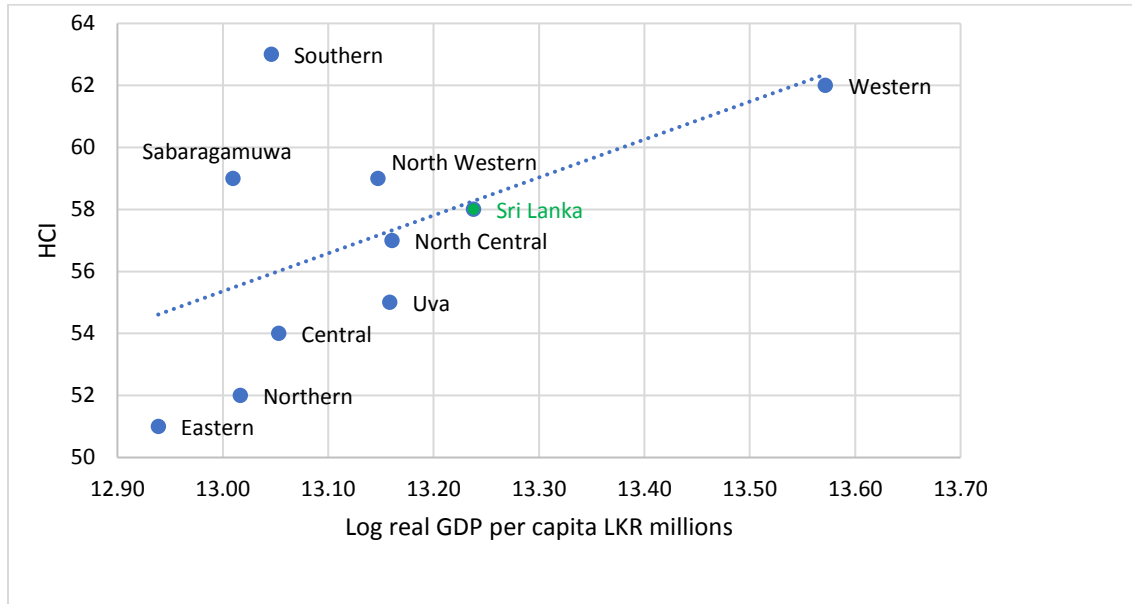
Province	HCI Score (Percentage)	HCI Rank	GDP per capita (LKR, Millions)	GDP per Capita Rank	Population (Thousands)	Share of Total Population (Percentage)
Western	62	2	783,645	1	6,081	28
Central	54	7	466,518	5	2,722	13
Southern	63	1	463,205	6	2,611	12
North-Western	59	3-4	512,520	4	2,508	12
Northern	52	8	449,819	7	1,119	5
Eastern	51	9	416,088	9	1,677	8
North-Central	57	5	519,344	2	1,349	6
Uva	55	6	518,388	3	1,349	6
Sabaragamuwa	59	3-4	446,698	8	2,028	9
National	58		561,321	—	21,444	—

Source: World Bank team calculations.

18. **While there is a positive association between the HCI outcomes and the per capita incomes of the provinces, this association is only partial** (Figure 1.10). The Southern Province has an exceptionally high HCI value, 63 percent, for its level of per capita income. The Sabaragamuwa and the North-Western Provinces, with HCI scores of 59 percent, also perform above the expected values for these provinces given their per capita income levels. The HCI scores for the Western Province, 62 percent, and North-Central, 57 percent, are in line with their expected values, given the per capita income levels of these two provinces. The Central, Northern, Uva, and Eastern Provinces, however, have lower HCI scores than would be expected given their per capita income levels. Overall, the wide variation across provinces in their HCI scores and income levels suggests that human capital outcomes are influenced not only by income levels but also by other factors such as the quality and performance of the education and health sectors.

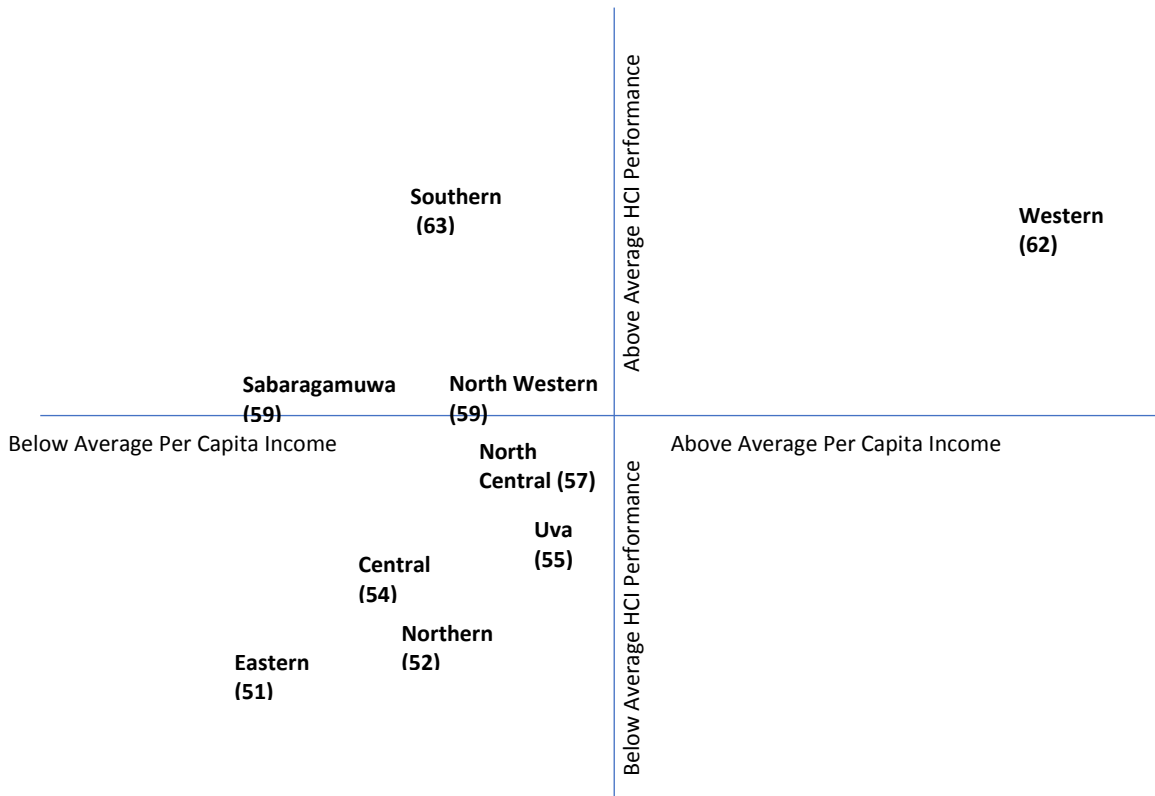
19. **The Western Province is unique in terms of economic and human capital development.** It is the only province in the country with a level of per capita income and human capital above the national average (Figure 1.11). The Western Province has a long history of development, having been the hub of economic activities in the country since the 15th century. Three provinces, the Southern, Sabaragamuwa, and North-Western Provinces, have human capital levels above the national average, but their per capita income levels are below the national average. Provinces such as the North-Central, Central, Uva, Northern, and Eastern Provinces are below average in both human capital development and income per capita. These provinces can be considered especially disadvantaged. Priority policy focus is needed for their human capital and economic development.

Figure 1.10: Provincial HCI and GDP Per Capita



Source: World Bank team calculations.

Figure 1.11: HCI Performance and Per Capita Income in Provinces



Source: World Bank team calculations.

1.5.2 Provincial Human Capital Levels and Global Comparators

20. **The Southern, Western, Sabaragamuwa, and North-Western Provinces have higher comparator countries than Sri Lanka as a whole.** If Sri Lanka had been only the Southern Province, with an HCI value of 63 percent, the HCI rank would have been between 51 and 53 in the world rankings, instead of 74. The Southern Province is on par with countries such as Turkey, Mongolia, and Mauritius, which are richer than the Southern Province. The HCI performance of the Western Province is equal to countries such as Costa Rica, Malaysia, Montenegro, and Oman, all of which are richer than the Western Province, but also at the same level as Albania and Bosnia and Herzegovina, which have lower per capita incomes. The North-Western and Sabaragamuwa Provinces have HCI scores equal to countries such as Peru, Colombia, and Iran, which are wealthier than these provinces. However, even Sri Lanka's best performing provinces lag behind East Asian countries such as Vietnam, China, Macao SAR, China, and of course the highest performers in the world, Singapore, Japan, Korea, and Hong Kong SAR, China (Table 1.2).

Table 1.2: Provinces and HCI Comparator Countries.

Province	HCI (Percentage)	Per Capita Income (US\$)	Comparator Countries	Per capita Incomes of Comparator Countries (US\$)
Western	62	5,349	Albania Bosnia and Herzegovina Oman Costa Rica Malaysia Montenegro	4538 5,181 15,668 11,631 9,945 7,669
Central	54	3,184	Jamaica Lebanon	5,109 8,525
Southern	63	3,162	Turkey Mauritius Mongolia	10,540 10,547 3,735
North-Western	59	3,498	Peru Iran, Islamic Rep. Colombia	6,571 5,415 6,301
Northern	52	3,070	Kenya Algeria	1,508 4,123
Eastern	51	2,840	Tunisia Tonga	3,491 3,944
North-Central	57	3,545	Armenia	3,937
Uva	55	3,538	The Philippines Tuvalu West Bank and Gaza	2,989 3,550 3,095
Sabaragamuwa	59	3,049	Peru Iran, Islamic Rep. Colombia	2,290 20,761 20,761
National	58	3,832	Kuwait Kyrgyz Republic Moldova Saudi Arabia	29,040 1,220 2,290 20,761

Source: World Bank team calculations.

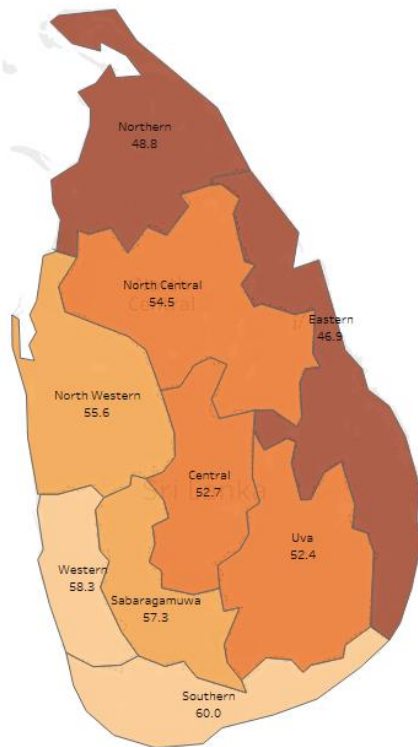
21. **The weaker provinces have comparator countries that fall well below the national average of Sri Lanka.** The HCI score of the Eastern Province would have ranked it 95–96 in the world, on par with countries such as Tonga and Tunisia, which are wealthier than the Eastern Province. The HCI value of the Northern Province would have ranked it 93–94 in the world, on par with countries such as Kenya, which has a lower per capita income, and Algeria which is richer than the Northern Province. The HCI score of the Central Province would have ranked it 85 in the world, equal to countries such as Jamaica and Lebanon, both of which are wealthier than the Central Province. The HCI value of the Uva Province would have ranked it 82–84 in the world, on par with countries such as the Philippines, Tuvalu, and the West Bank and Gaza, all of which are poorer than the Uva Province.

22. **Overall, the provinces exhibit wide variation in their HCI scores and ranks.** The range of countries with HCI values comparable to the various provinces is large and varied, covering countries in East Asia, Europe, Central and South America, and the Middle East and North Africa (Table 1,2). The main drivers of the wide range of HCI values among the provinces appear to be variations in the two dimensions in which Sri Lanka performs less well, stunting and especially learning outcomes.

1.6 GENDER DIFFERENCES IN HUMAN CAPITAL DEVELOPMENT

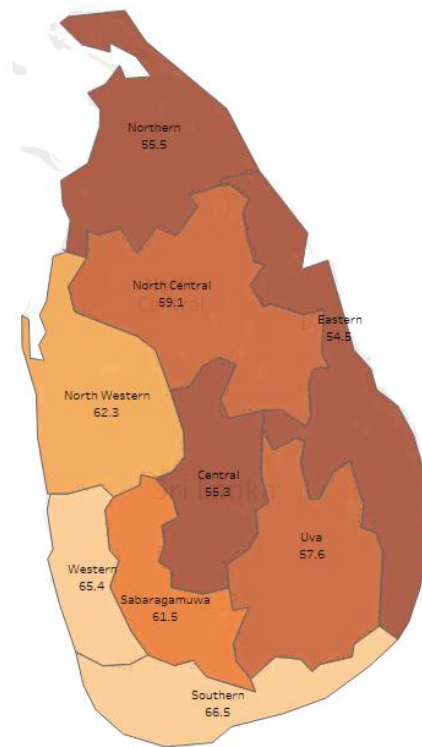
23. **There are substantial gender differences in the HCI values of nearly all the provinces, in favor of women.** The HCI ranges from a score of 67 percent in the Southern Province and 65 percent in the Western Province, to 55 percent in the Central Province and Eastern Province, among women (Map 1.3). In contrast, among men the HCI ranges from 60 percent in the Southern Province and 58 percent in the Western Province, to 47 percent in the Eastern Province and 49 percent in the Northern Province (Map 1.2). The largest gender gap is in the Eastern Province, where the HCI score is 8 percent higher for women than men. This is followed by the gender differences in the Western Province, Southern Province, and Northern Province, where the HCI scores for women are 7 percent higher than for men. The smallest gender gaps are in the Central Province, 2 percent in favor of women, followed by the North-Central Province, with a significant gender difference of 4 percent.

Map 1.2: HCI Values 2016/17, Male



Source: World Bank team calculations.

Map 1.3: HCI Values 2016/17, Female

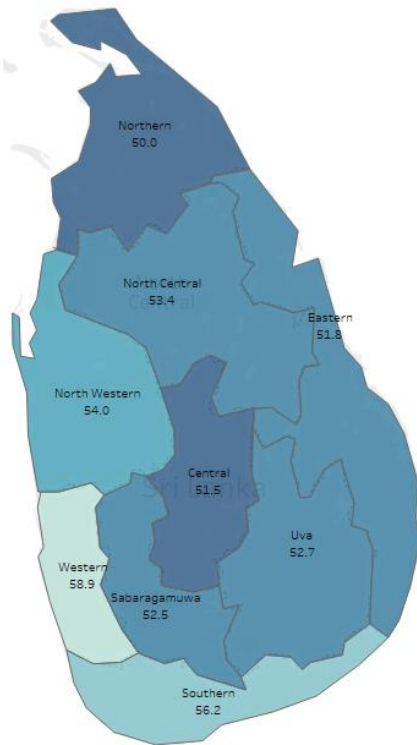


Source: World Bank team calculations.

1.7 TRENDS IN HUMAN CAPITAL DEVELOPMENT

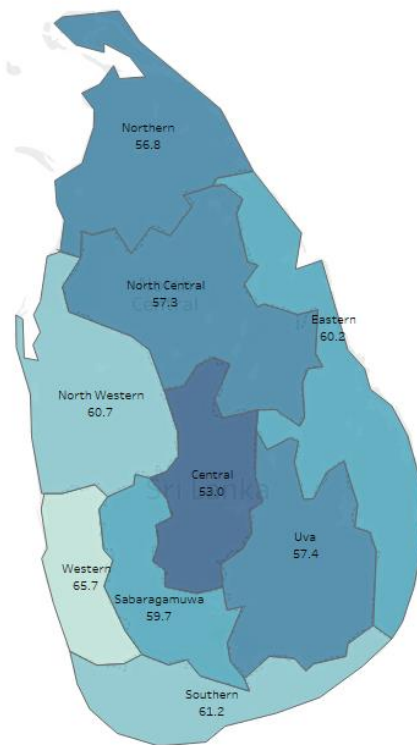
24. **Human capital levels have improved over time in most but not all provinces.** Among women, the HCI score has improved in the Southern, Central, North-Central, North-Western, Uva, and Sabaragamuwa Provinces. The highest increase has been in the Southern Province, where the HCI score has risen 5 percent, from 62 percent in 2012/13 (Map 1.5) to 67 percent in 2016/17. In the other provinces, the increase in the HCI value between 2012/13 and 2016/17 has been in the range of 1–2 percent. In three provinces—the Western, Northern, and Eastern Provinces—the HCI score has declined between 2012/13 and 2016/17. The decrease has been only 1 percent in the Western and Northern Provinces. But the fall in the Eastern Province has been much larger, 5 percent, from an HCI value of 60 percent in 2012/13 to 55 percent in 2016/17. Among men, as in the case of women, the HCI score has improved in the Southern, Central, North-Central, North-Western, Uva, and Sabaragamuwa Provinces. The greatest increase has been in the Southern Province and the Sabaragamuwa Province, where the HCI score has risen 4 percent, from 56 percent in 2012/13 (Map 1.4) to 60 percent in 2016/17 in the Southern Province and from 53 percent in 2012/13 to 57 percent in 2016/17 in the Sabaragamuwa Province. In three provinces, however—the Western, Northern, and Eastern Provinces—the HCI score has decreased between 2012/13 and 2016/17. The decline has been only 1 percent in the Western and Northern Provinces. However, the fall in the Eastern Province has been much larger, 5 percent, from an HCI value of 52 percent in 2012/13 to 47 percent in 2016/17.

Map 1.4: HCI Values for 2012/13, Male



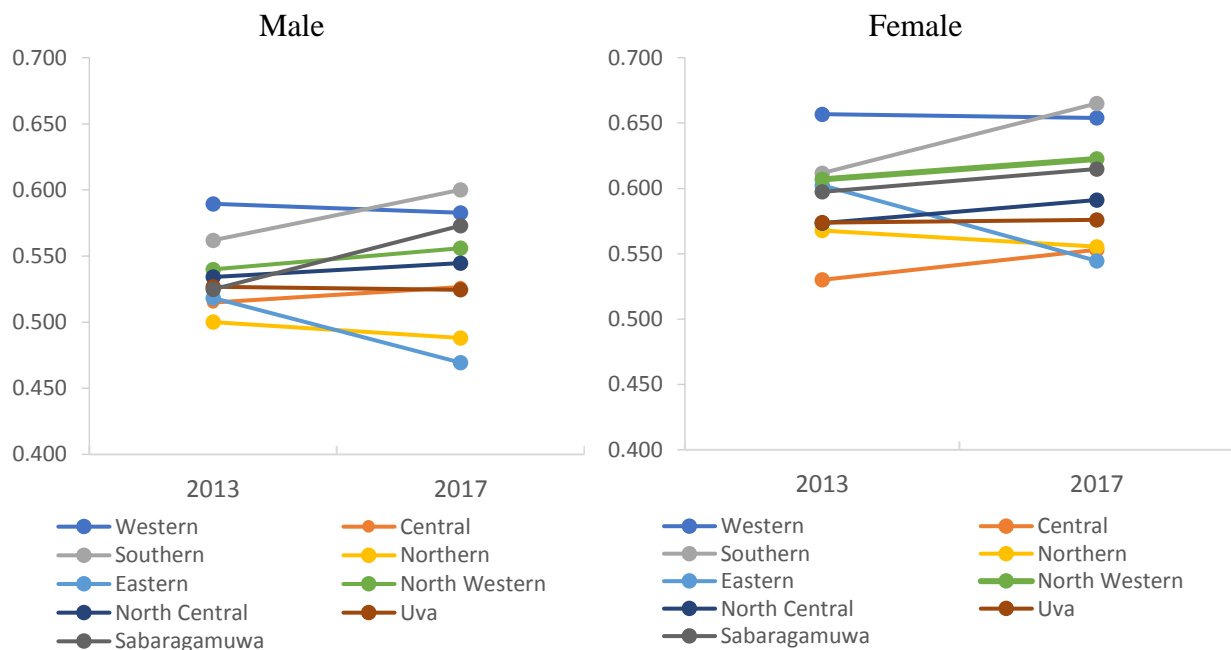
Source: World Bank team calculations.

Map 1.5: HCI Values for 2012/13, Female



Source: World Bank team calculations.

Figure 1.12: HCI s between 2012/13 and 2016/17, by Gender



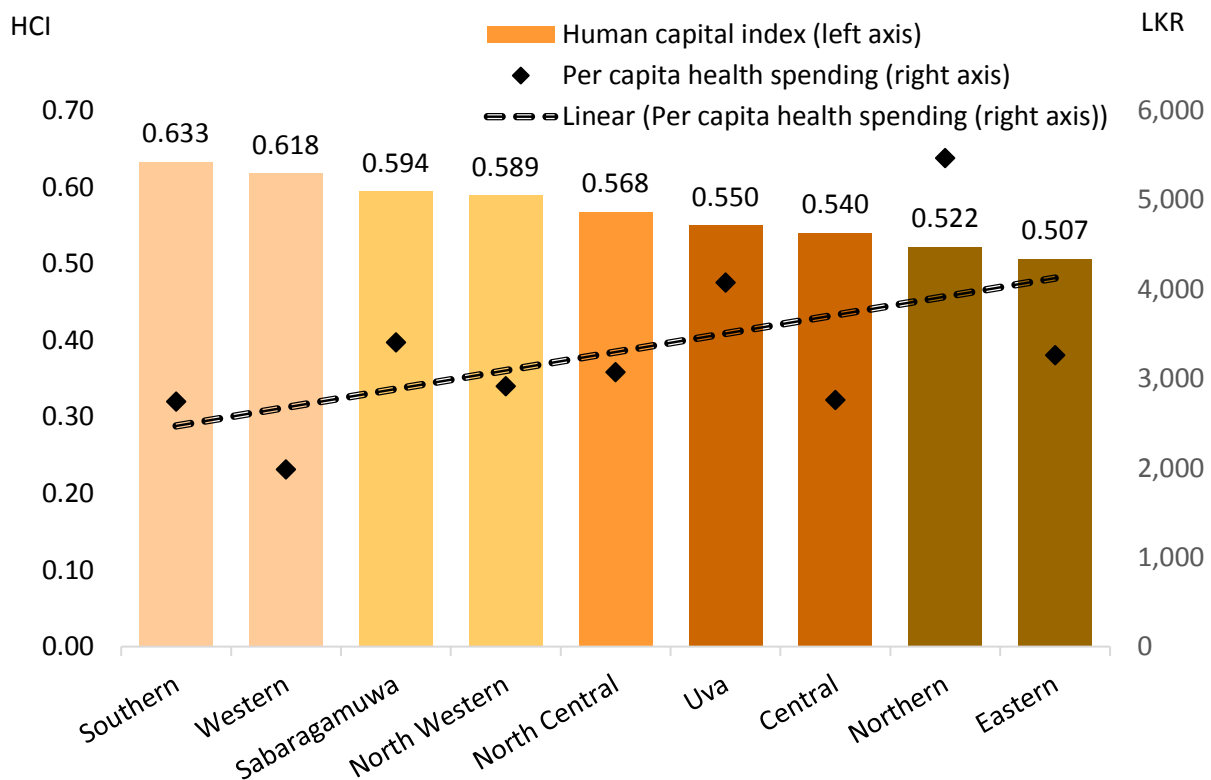
Source: World Bank team calculations.

Source: World Bank team calculations.

1.8 HEALTH SPENDING AND HUMAN CAPITAL DEVELOPMENT

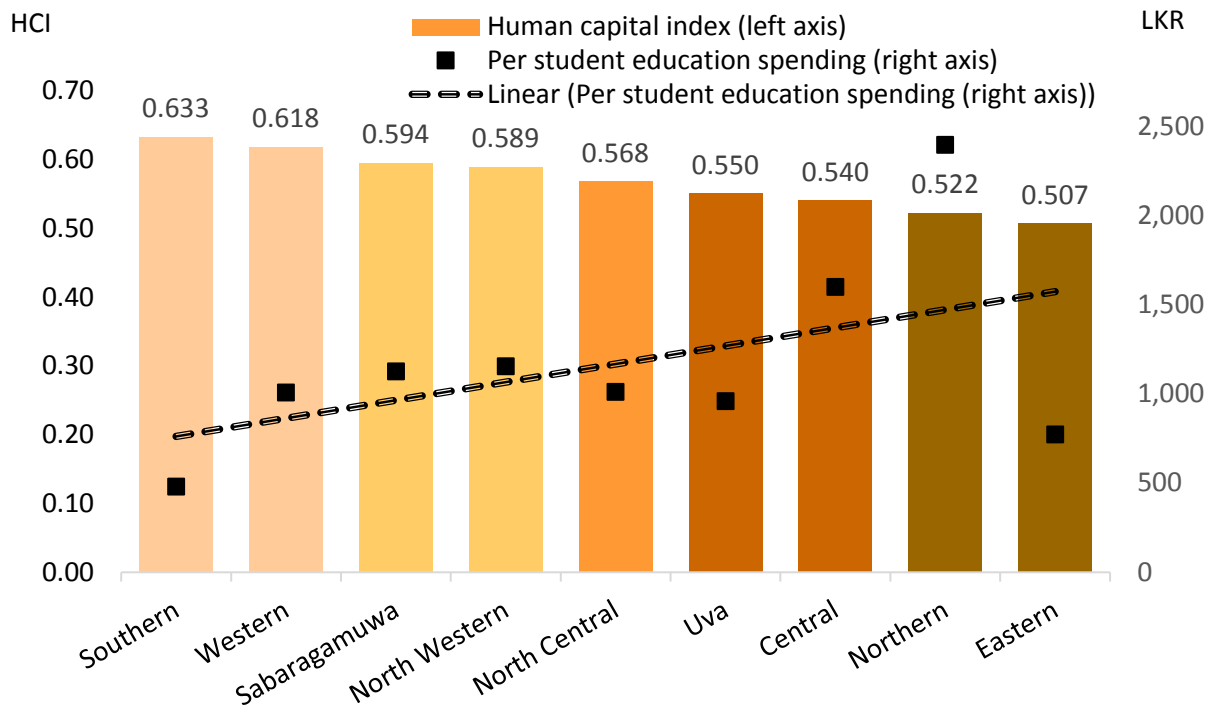
25. **Public policy is to provide greater resources, including for health and education, to the less developed provinces.** The Finance Commission, which recommends the funding for the provinces to the government, seeks to promote balanced regional growth by investing more funds in the provinces that need more resources. This policy is illustrated in Figures 1.13 and 1.14, which compare the levels of HCI and per capita health spending and per student education spending in each province. Provinces with lower HCIs, such as the Northern Province, have higher levels of health and education spending than the more advanced provinces, such as the Western, Southern, and North-Western Provinces. However, some provinces spend less relative to their HCI levels (that is, below the dotted lines), such as the Eastern, Central, and Uva Provinces, which potentially indicates gaps in investments in those provinces.

Figure 1.13: Per Capita Health Spending and HCI by Province, 2018



Source: MoH; World Bank team calculation.

Figure 1.14: Per Student Education Spending and HCI by Province, 2018



Source: MoH; World Bank team calculation.

1.9 CONCLUSIONS

26. **The analysis of human capital using the HCI yields several novel and important findings.** Sri Lanka performs well on several dimensions of health and education, such as child survival, expected years of schooling, and adult survival. The country exceeds the average levels of achievement in LMICs and even UMICs on these components of human capital. These are positive findings and show that the policy framework to address the first-generation needs of human capital development has been successful. This can encourage policy makers to prepare bold policy initiatives to combat second- and third-generation requirements for human capital development.

27. **The country faces deep-rooted challenges in stunting, which reflect nutrition levels and learning adjusted years of schooling.** These are second-generation challenges that are hard to address. Yet, they are vital for human capital development and equitable economic growth. Learning outcomes, in particular, are a major challenge when compared to the performance of UMICs and the potential demonstrated by advanced education systems in East Asia. A deeper analysis of provincial variations in stunting and learning adjusted years of schooling is undertaken in the next chapter. Policy options to address these challenges, drawing on lessons from other countries, are discussed in chapters three and four of this report.

28. **The pattern of provincial variations in human capital reveals some surprising findings.** The Southern Province has the highest level of human capital, as measured by the HCI. This is an unexpected finding. The received wisdom is that the wealthy Western Province is the most advanced region. However, the current study shows that the Southern Province, despite being

considerably poorer than the Western Province, has attained a slightly higher level of human capital. This is an encouraging finding for other provinces, as human capital development can be promoted faster than economic growth. The Eastern Province has the lowest level of human capital. This is an unexpected finding, as the popular notion is that the Northern Province, which was the main theatre of the long secessionist conflict, is the least developed region. It is also an important finding showing that the Eastern Province needs special policy attention.

29. **There are substantial variations in human capital across the provinces.** The HCI values for the different provinces show that the global rankings of the provinces range from 51–53 for the Southern Province to 93–94 for the Eastern Province. This contrasts with the national average, which places Sri Lanka 74 out of 155 countries in the global rankings. The provinces fall into two sets, with the Southern, Western, North-Western, and Sabaragamuwa Provinces performing above the national average of the HCI and the Eastern, Northern, Central, Uva, and North-Central Provinces performing below the average value of the HCI for the country. This is an important finding, as it shows the provinces where future policy attention to improve human capital is most urgently needed.

30. **Gender variations in human capital favor girls and women.** Women live longer, spend more time in school, and learn better. This is a consistent pattern across all provinces. The gender gap is most significant in the Eastern Province, followed by the Northern Province, Western Province, and Southern Province. These are the provinces with the lowest and the highest HCI scores. The gender gap in human capital is significant and suggests that promoting human capital development among boys is particularly important for policy makers.

31. **The recent time trend of human capital development shows an uneven pattern among the provinces.** In six of the provinces—Southern, Central, North-Central, North-Western, Uva, and Sabaragamuwa Provinces—human capital levels have risen for both males and females during 2012/13 to 2016. However, in three provinces, the Eastern, Western, and Northern Provinces, human capital levels have declines. A concerted policy effort is needed to promote human capital development in these provinces. The task is especially important because the Eastern and Northern Provinces have the lowest HCI values in the country.

CHAPTER 2. REGIONAL VARIATIONS IN HUMAN CAPITAL OUTCOMES

2.1 INTRODUCTION

32. **Promoting geographically equitable education, health, and nutrition outcomes will be of central importance for future human capital development.** On both equity and efficiency grounds, improving human capital at the national level will increasingly require the development of human capital in the more disadvantaged provinces. The current chapter analyzes regional differences in each of the key components of the HCI. The analysis commences with a discussion of provincial variations in the three education outcome measures: expected years of schooling, internationally comparable learning outcomes, and learning adjusted years of schooling. This is followed by a discussion of provincial variations in the health and nutrition outcome measures of the HCI: child survival, stunting, and adult survival.

2.2 PROVINCIAL VARIATIONS IN HUMAN CAPITAL OUTCOMES: EDUCATION OUTCOMES

2.2.1 Education Attainment

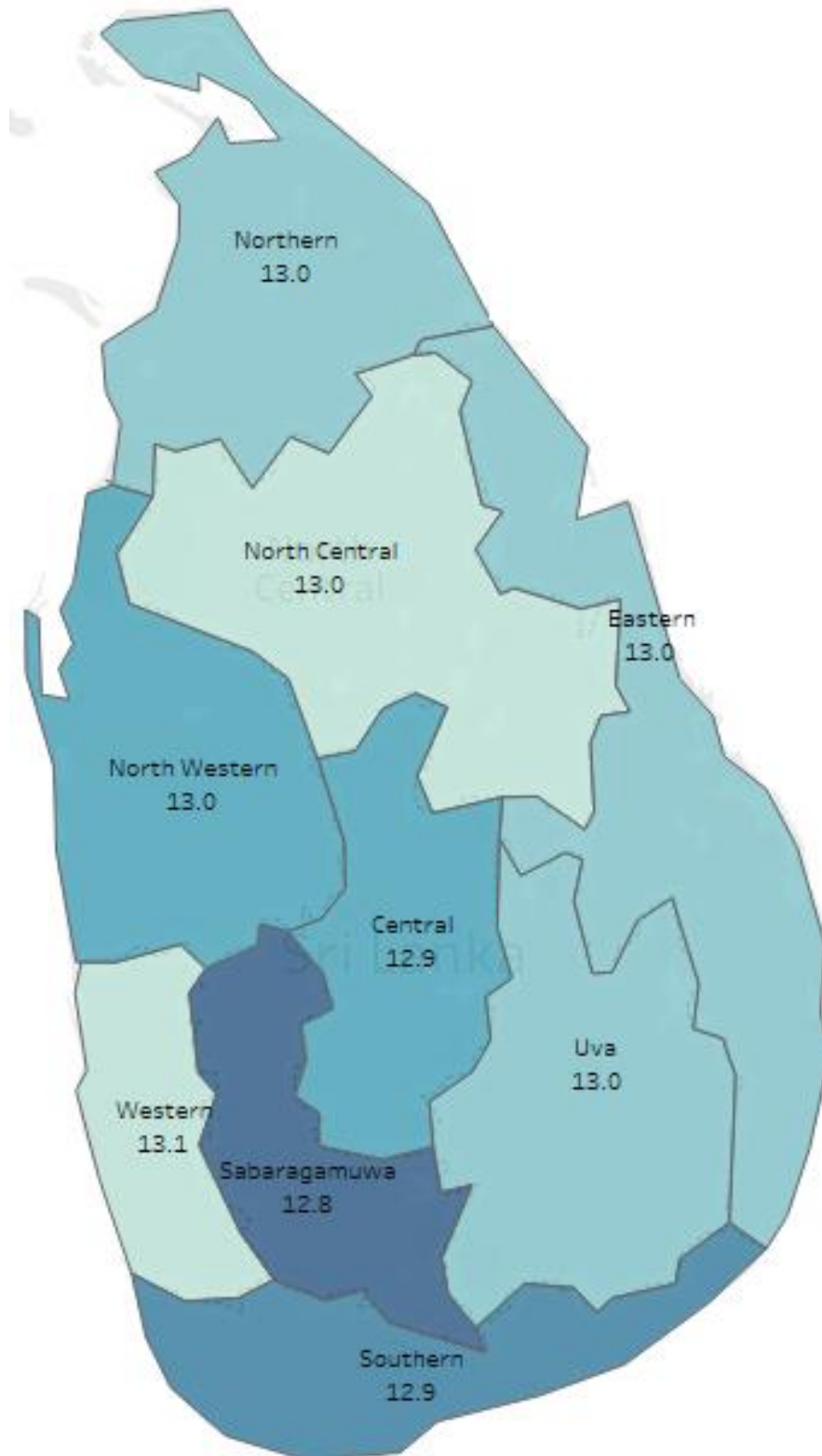
33. **Expected years of schooling are evenly distributed across the provinces.** The number of expected years of schooling range from 12.8 years in the Sabaragamuwa Province to 13.1 years in the Western Province (Map 2.1). All other provinces cluster within this narrow range. This is a highly equitable pattern across the provinces. Gender variations in expected years of schooling are also small (Table 2.1). The expected years of schooling for girls varies between 12.5 years in the Sabaragamuwa Province and 13.1 years in the Western, Eastern, and North-Central Provinces. Among boys, the range in the expected years of schooling is from 12.9 years to 13.0 years among all provinces.

Table 2.1: Expected Years of Schooling by Province and Gender, 2016

Province	Expected Years of Schooling (Girls and Boys)	Expected Years of Schooling (Girls)	Expected Years of Schooling (Boys)
Western	13.1	13.1	13.0
Central	12.9	12.9	12.9
Southern	12.9	12.9	12.9
North-Western	13.0	13.0	12.9
Northern	13.0	13.0	12.9
Eastern	13.0	13.1	12.9
North-Central	13.0	13.1	13.0
Uva	13.0	13.0	12.9
Sabaragamuwa	12.8	12.5	13.0
National	13.0	13.0	12.9

Source: World Bank team calculations.

Map 2.1: Expected Years of Schooling by Province, 2016



Source: DCS 2018; World Bank team calculations.

34. **This equitable pattern of expected years of schooling across the provinces and between boys and girls can be attributed to public policy, covering both demand- and supply-side measures to enable school attendance, implemented over a long period of time.** Public policy to provide equitable access to schools for all children has resulted in a complete island-wide network of schools (Little 2011, Little and Hettige 2013). The distribution of schools across the provinces is based on the pattern of population distribution, to enable universal access to general education. The average school size is 409 students per school (Table 2.2). Among the provinces the average school size is highest in the densely populated Western Province, with 710 students per school. The geographically large but less densely populated provinces, such as the Northern Province with 242 students per school and the Uva Province with 323 students per school, have the lowest average school sizes. The country also possesses a large stock of teachers. The student-teacher ratio, at 17:1, is low by international standards. The teachers are also relatively evenly distributed across the provinces. The Western Province has a student-teacher ratio of 21:1. In the other provinces, the student-teacher ratio ranges between 13:1 in the Northern Province and 18:1 in the Southern, Eastern, and North-Western Provinces. The school teachers are either graduates, 44 percent, or trained teachers, 54 percent. The graduate teachers have a university degree. The trained teachers are educated in National Colleges of Education, which are specialized teacher education institutions.

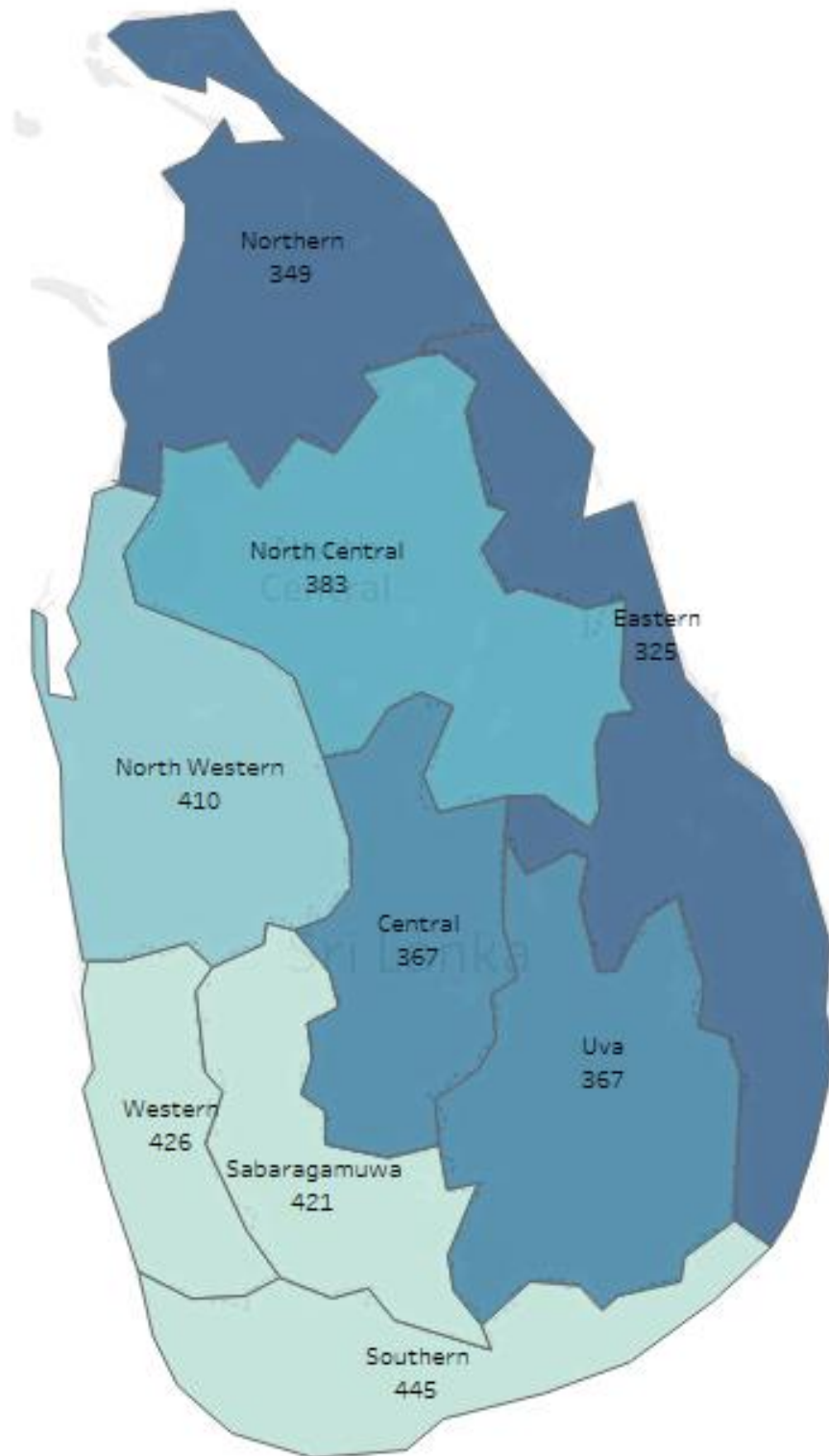
Table 2.2: Government Schools, Enrollment, and Teachers by Province, 2017

Province	Number of Schools	Number of Students	Number of Teachers	Average School Size	Student-Teacher Ratio
Western	1,359	965,113	45,825	710	21
Central	1,519	547,996	34,058	361	16
Southern	1,112	531,695	30,296	478	18
North-Western	1,256	509,359	28,239	406	18
Northern	997	241,085	17,941	242	13
Eastern	1,110	394,734	21,810	356	18
North-Central	812	291,997	17,440	360	17
Uva	900	290,594	20,843	323	14
Sabaragamuwa	1,129	393,391	25,139	348	16
Sri Lanka	10,194	4,165,964	241,591	409	17

Source: GoSL School Census 2017, Ministry of Education.

35. **A set of demand-side policies complement the supply-side policies to provide access to schools for all children.** These demand-side policies include free education in public schools, free textbooks to facilitate learning, a set of free school uniforms for all children every year, and subsidized public transport. In addition, there are school attendance committees at the local level to follow up with children who are either not enrolled in school or have dropped out, and they seek to bring them back into the education system. These demand-side interventions, combined with the universal network of public schools, are largely responsible for the high school enrollment rates (Balasooriya, Wehella and Wijeratne, 2010).

Map 2.2: Harmonized Mathematics Test Scores by Province, 2016



Source: NEREC 2017a; World Bank team calculations.

2.2.2 Learning Outcomes: Harmonized Test Scores

36. **Mathematics achievement is necessary for modern living.** Practical mathematics is needed for normal living and functioning. Also, increasingly jobs require expert thinking and complex communication skills. Mathematics education concentrates on developing the analytical and problem solving skills of students. It is also a subject that improves logical thinking and creativity. The present section analyzes the mathematics learning levels across provinces, using information from the TIMMS items used as part of the national assessments of learning outcomes in the country (see Box 2.1 for details of scores).

37. **Learning outcomes in mathematics vary substantially among the provinces.** The range of mathematics learning outcomes is between a score of 325 in the Eastern Province and 445 in the Southern Province (Map 2.2). The other lower performing areas in the country are the Northern Province with a score of 349, and the Uva and Central Provinces, both of which score 367. The highest performing provinces in the country, after the Southern Province, are the Western Province which scores 426, the Sabaragamuwa Province which scores 421, and the North-Western Province which scores 410. The differences between the weaker provinces and the high-performing provinces are large.

Table 2.3: Mathematics Learning Outcomes by Province and Gender, 2016

Province	Mathematics Learning Outcomes (Girls and Boys)	Mathematics Learning Outcomes (Girls)	Mathematics Learning Outcomes (Boys)
Western	426	446	405
Central	367	370	363
Southern	445	464	424
North-Western	410	426	393
Northern	349	364	333
Eastern	325	353	295
North-Central	383	388	378
Uva	367	380	354
Sabaragamuwa	421	434	407
National	400	416	383

Source: World Bank team calculations.

38. **There are considerable gender differences in mathematics learning outcomes.** At the national level, girls have an average score of 416 and boys have an average score of 383 (Table 2.3). In all provinces, girls outperform boys. The gender gap is largest in the Eastern Province, where girls score 353 and boys score 295, resulting in a difference of 58 marks. The second largest gender gap is in the Western Province, with girls scoring 446 and boys scoring 405, leading to a difference of 41 marks. The gender gap is lowest in the Central Province, 7marks, and the North-Central Province, 10 marks; however, in all the other provinces the gender gap is at least 27 marks, which is a substantial difference. The superior performance of girls compared to boys is becoming increasingly recognized in global policy circles (OECD 2015a) and in Sri Lanka (Aturupane, Shoji, and Ebenezer 2018).

2.2.3 Language as Human and Social Capital

39. **English is the language of the global knowledge economy and one of the most valuable economic assets of a country.** It is the most widely used language in international trade, finance, and commerce. India, Sri Lanka’s large and growing neighbor, has become an economic powerhouse and the back office of the world mainly due to the existence of a large number of entrepreneurs, employees, and workers who are fluent in English. China, the fast-growing economic giant and manufacturing powerhouse of the world, has launched an enormous drive to expand and improve English language teaching and learning, with hundreds of millions of individuals learning English. English, in addition to its economic benefits, is also important for the promotion of social cohesion across the different ethno-linguistic groups in the country and is now seen as an important ingredient in the search for sustainable peace in Sri Lanka (Aturupane and Wikramanayake 2011; Little et al. 2018). Given the importance of English, the current section analyzes the levels of English language learning in the provinces. The English language scores are drawn from national assessment data (see Box 2.1 for details of scores).

40. **English language learning outcomes show considerable variation among provinces.** Students in the Western Province have the highest score, 459, followed by students in the Southern Province, 425 (Table 2.4). Students in the Northern Province have the lowest score, 318, followed by students in the Eastern Province, 322. The difference between students across these two sets of provinces is large, over 100 marks. This shows a major difference between children, based on the region in which they live, in English language fluency and the economic and social opportunities it provides.

41. **Gender differences in English language learning outcomes are large.** At the national level, girls have an average score of 432 and boys have an average score of 365. In eight of the nine provinces, girls outperform boys, with the Eastern Province, where boys score slightly higher than girls, as the exception. The largest gender gap is in the Western Province, with girls scoring 510 and boys scoring 404, leading to a difference of 106 marks. There are also large gender gaps in favor of girls in the Uva Province, 87 marks, Sabaragamuwa Province, 83 marks, and Southern Province, 80 marks. The gender gap is lowest in the Central Province, 30 marks, and the Northern Province, 36 marks. However, even in these provinces the gender gaps are considerable.

Table 2.4: English Learning Outcomes by Province and Gender, 2016

Province	English Learning Outcomes (Girls and Boys)	English Learning Outcomes (Girls)	English Learning Outcomes (Boys)
Western	459	510	404
Central	391	405	375
Southern	425	464	384
Northern	318	335	299
Eastern	322	319	325
North-Western	380	404	354
North-Central	373	394	350
Uva	346	389	302
Sabaragamuwa	392	432	349

Province	English Learning Outcomes (Girls and Boys)	English Learning Outcomes (Girls)	English Learning Outcomes (Boys)
National	400	432	365

Source: World Bank team calculations.

Box 2.1: Note on the Scores of Learning Outcomes

As the scores for mathematics and English come from different sources, brief explanations are provided:

Mathematics: The test scores were obtained from the Sri Lankan version of Trends in International Mathematics and Science Study (SL-TIMSS) for Grade 8 conducted in 2014 and 2016 (NEREC 2017a). The score can range from 0 to 70. The international TIMSS is different. The TIMSS pools results from dozens of countries from the same year and adjusts the values so that the mean score of all countries becomes 500 with a standard deviation of 100. The global human capital study assumed that the maximum attainable score is 625. As the outcomes of mathematics were used for the calculation of HCIs, the scores were scaled so that the population-weighted average score of SL-TIMSS equaled the national average of 400 in the international TIMSS score that was used for the global study. The scaled scores are reported here.

English: The test scores were obtained from the National Assessment of Achievement of Students Completing Grade 8 in Sri Lanka conducted in 2014 and 2016 (NEREC 2015 and 2017b). The score can range from 0 to 100. The reported scores were scaled in the same manner as above for ease of comparison with mathematics.

2.2.4 Provincial Variations in Learning Adjusted Years of Schooling

42. **There is considerable variation in years of schooling, adjusted for mathematics learning outcomes, across provinces.** The Southern Province has the highest learning adjusted years of schooling, 9.2 years, followed by the Western Province, 8.9 years, the Sabaragamuwa Province, 8.6 years, and the North-Western Province, 8.5 years (Map 2.3). The Eastern Province has the lowest performance, 6.8 years, followed by the Northern Province, 7.3 years, and the Central and Uva Provinces, 7.6 years.

43. **Education outcomes decline in all provinces when years of schooling are adjusted for mathematics learning outcomes.** At the national level, expected years of schooling fall from 13 years to 8.3 years when adjusted for learning. This is a substantial decrease. The gap between expected years of schooling and learning adjusted years of schooling ranges from about 6 years in the Eastern and Northern Provinces to around 4 years in the Western and Southern Provinces.

44. **There are steep gender differences in expected years of schooling adjusted for mathematics learning outcomes.** Girls outperform boys in all provinces (Table 2.5). The gender gap is sharpest in the Eastern Province, where girls have effectively 1.3 years of education more than boys. This is followed by the Western Province and the Southern Province, where girls have effectively 1 year and 0.9 years of education more than boys, respectively. The gender gap is lowest in the Central Province, 0.1 years, Sabaragamuwa Province, 0.2 years, and the North-Central Province, 0.3 years.

Table 2.5: Learning Adjusted Years of Schooling by Province and Gender (Mathematics), 2016

Province	Mathematics Learning Adjusted Years of Schooling (Girls and Boys)	Mathematics Learning Adjusted Years of Schooling (Girls)	Mathematics Learning Adjusted Years of Schooling (Boys)
Western	8.9	9.4	8.4
Central	7.6	7.6	7.5
Southern	9.2	9.6	8.7
North-Western	8.5	8.9	8.1
Northern	7.3	7.6	6.9
Eastern	6.8	7.4	6.1
North-Central	8.0	8.1	7.8
Uva	7.6	7.9	7.3
Sabaragamuwa	8.6	8.7	8.5
National	8.3	8.6	7.9

Source: World Bank team calculations.

45. **There are substantial differences in years of schooling, adjusted for English language learning, among provinces.** Students in the Western Province have the highest level of achievement, 9.6 years, followed by students in the Southern Province, 8.8 years, and students in the Central Province, 8.1 years (Table 2.6). Students in the Northern Province have the lowest level of achievement, 6.6 years, followed by students in the Eastern Province, 6.7 years. The learning gap between students in the highest performing provinces and lowest performing provinces is considerable, over 2 years.

Table 2.6: Learning Adjusted Years of Schooling by Province and Gender (English), 2016

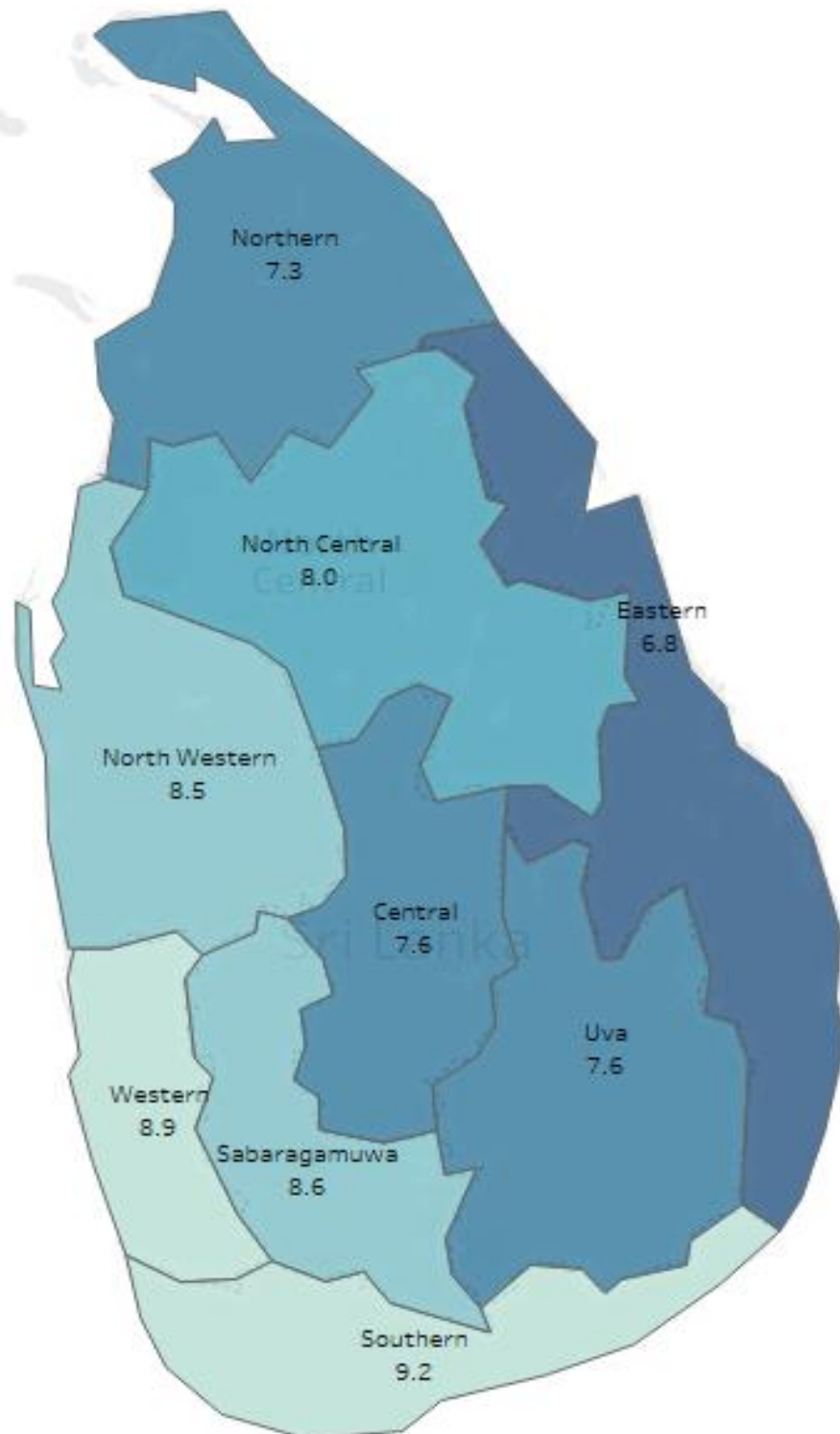
Province	English Language Learning Adjusted Years of Schooling (Girls and Boys)	English Language Learning Adjusted Years of Schooling (Girls)	English Language Learning Adjusted Years of Schooling (Boys)
Western	9.6	10.7	8.4
Central	8.1	8.4	7.7
Southern	8.8	9.6	7.9
North-Western	7.9	8.4	7.3
Northern	6.6	7.0	6.2
Eastern	6.7	6.7	6.7
North-Central	7.8	8.3	7.3
Uva	7.2	8.1	6.2
Sabaragamuwa	8.0	8.6	7.3
National	8.3	9.0	7.6

Source: World Bank team calculations.

46. This highlights the difference between children, based on the region in which they dwell, in English language fluency. Education outcomes decline in all provinces when years of schooling are adjusted for English language learning. The gap between expected years of schooling and learning adjusted years of schooling ranges from about 6 years in the Eastern and Northern Provinces to about 4 years in the Western, Southern, and Central Provinces.

47. **Gender differences in expected years of schooling adjusted for English language learning outcomes are high.** Girls perform better than boys in all provinces except the Eastern Province. The gender gap is highest in the Western Province, where girls have effectively 2.3 years of education more than boys. This is followed by the Uva Province, where girls have effectively 1.8 years of education more than boys, and the Southern Province, where girls have effectively 1.7 years of education more than boys. The gender gap is lowest in the Central and Northern Provinces, where girls have only 0.6 years and 0.8 years more education, respectively, than boys.

Map 2.3: Mathematics Learning Adjusted Years of Schooling by Province, 2016



Source: World Bank team calculations.

2.3 PROVINCIAL VARIATIONS IN HUMAN CAPITAL OUTCOMES: HEALTH AND NUTRITION OUTCOMES

2.3.1 Child survival

48. **The likelihood of a child surviving to age 5 is high in all provinces.** Overall, Sri Lanka performs well in child health outcomes and the under-five mortality rates are relatively low. This translates into a good child survival in the country (Map 2.4). All provinces have child survival rates of 98–99 percent. Although there are some disparities in the child survival rates between provinces, the size of difference remains relatively small. The Northern and Eastern Provinces, which were the main theatres of the civil conflict up to 2009, have the lowest child survival rates. The Southern and North-Central Provinces have the highest child survival rates. The differences between these provinces, however, are small, less than 1 percent. Child survival rates are not worse off in Central, Uva, Sabaragamuwa Provinces despite having large estate sectors.

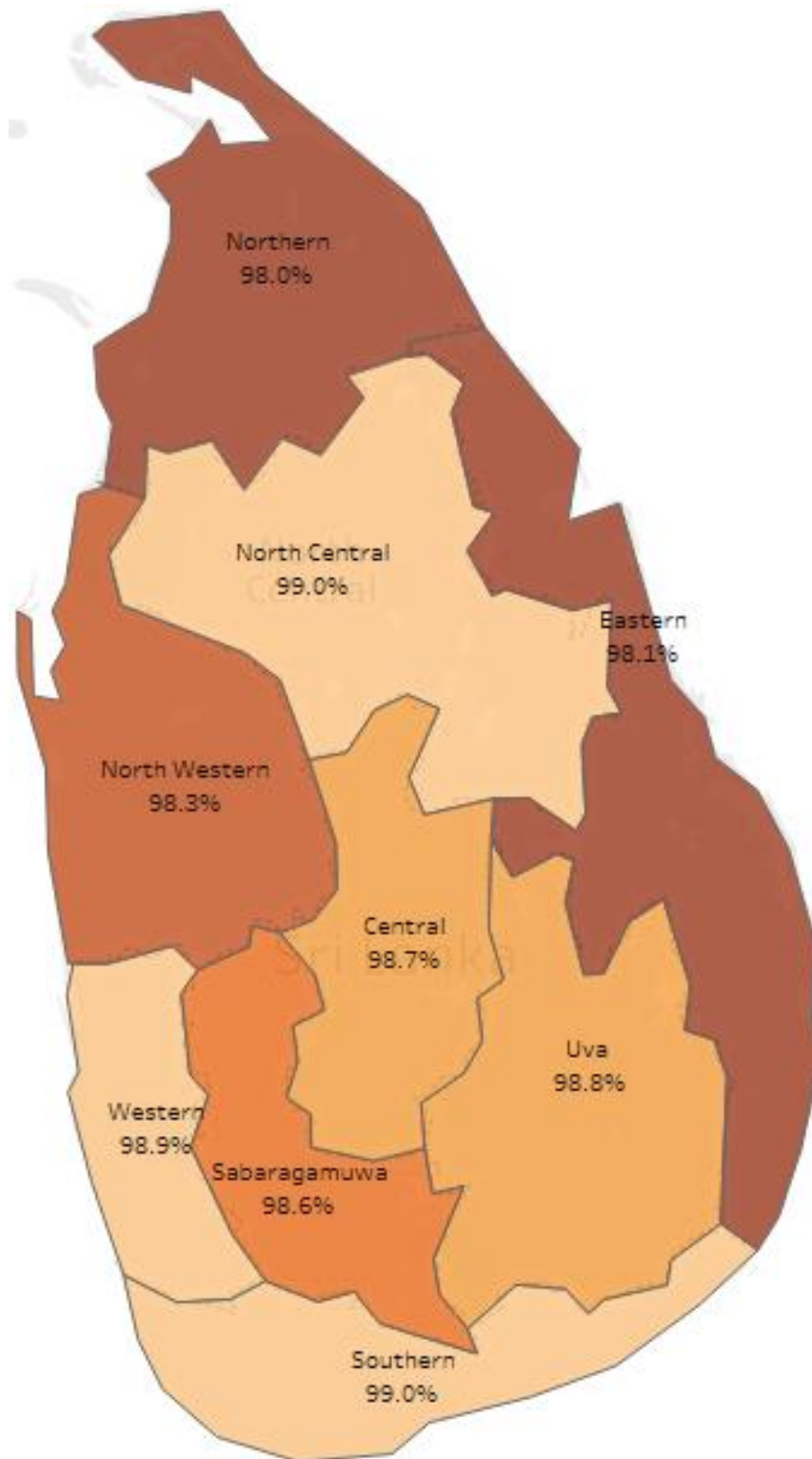
49. **Girls have a better chance of survival to age 5, although the degrees of difference vary between provinces.** Comparing the difference in survival rates between males and females, females generally have higher probabilities of survival to age 5 compared to males, which is consistent irrespective of the province (Table 2.7). The gap in the survival rate between males and females is greatest in the Northern Province with a difference of 1 percentage point, while it is almost negligible in the Western Province. Nevertheless, all provinces perform reasonably well in the child survival indicator, which can largely be attributed to the well-functioning MCH services provided to the population, and the high levels of education among parents, especially mothers.

Table 2.7: Child Survival Rates by Province and Gender, 2016/17 (Percentage)

Province	Probability of Survival to Age 5 (Males and Females)	Probability of Survival to Age 5 (Males)	Probability of survival to Age 5 (Females)
Western	98.9	98.9	99.0
Central	98.7	98.5	98.9
Southern	99.0	98.8	99.2
North-Western	98.3	97.9	98.7
Northern	98.0	97.5	98.5
Eastern	98.1	98.0	98.2
North-Central	99.0	98.8	99.1
Uva	98.8	98.5	99.1
Sabaragamuwa	98.6	98.3	98.8
National	98.7	98.5	98.9

Source: World Bank team calculations.

Map 2.4: Child Survival Rates by Province, 2016/17



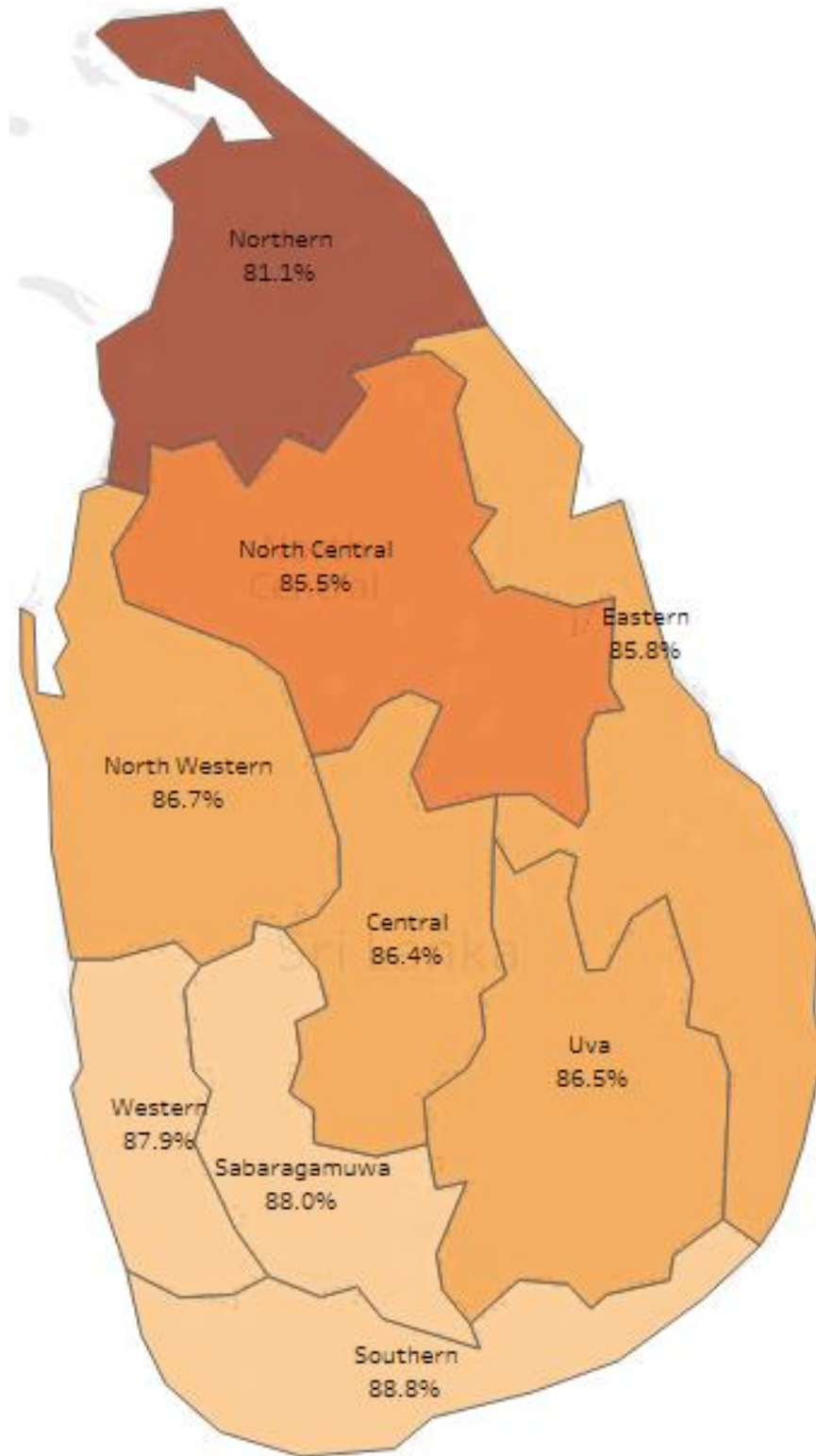
Source: DCS 2016; DCS 2017; World Bank team calculations.

2.3.2 Adult Survival

50. **Probability of adult survival is relatively good in all provinces, yet there are pockets where further improvements are expected.** The Northern Province has the lowest adult survival rates, while Southern, Sabaragamuwa, and Western Provinces have the highest (Map 2.5). Adult survival rates do not seem to be substantially worse off in the Central, Uva, and Sabaragamuwa Provinces despite having large estate sectors. Lower adult survival rates seem to be associated more with the previously conflict-affected areas rather than the estate sector in the province.

51. **Females have substantially better chance of adult survival.** In comparing the difference in adult survival rates between males and females, females have consistently higher rates of survival compared to males. The females' dominance is similar to child survival, but the degrees of differences are quite substantial for adult survival. The Northern Province experiences the greatest gap, as large as 16 percentage point between males and females (Table 2.8). Even in the Western Province that has the smallest difference between males and females, the gap is over 10 percentage point.

Map 2.5: Adult Survival Rates by Province, 2016/17



Source: DCS 2016; World Bank team calculations.

Table 2.8: Adult Survival Rates by Province and Gender, 2016/17 (Percentage)

Province	Probability of Survival Ages 15–60 (Males and Females)	Probability of Survival Ages 15–60 (Males)	Probability of Survival Ages 15–60 (Females)
Western	87.9	82.6	92.9
Central	86.4	80.6	91.7
Southern	88.8	83.3	93.9
North-Western	86.7	79.6	93.3
Northern	81.1	72.7	88.8
Eastern	85.8	78.2	92.9
North-Central	85.5	78.2	92.4
Uva	86.5	80.7	92.1
Sabaragamuwa	88.0	82.7	93.1
National	86.9	80.8	92.6

Source: World Bank team calculations.

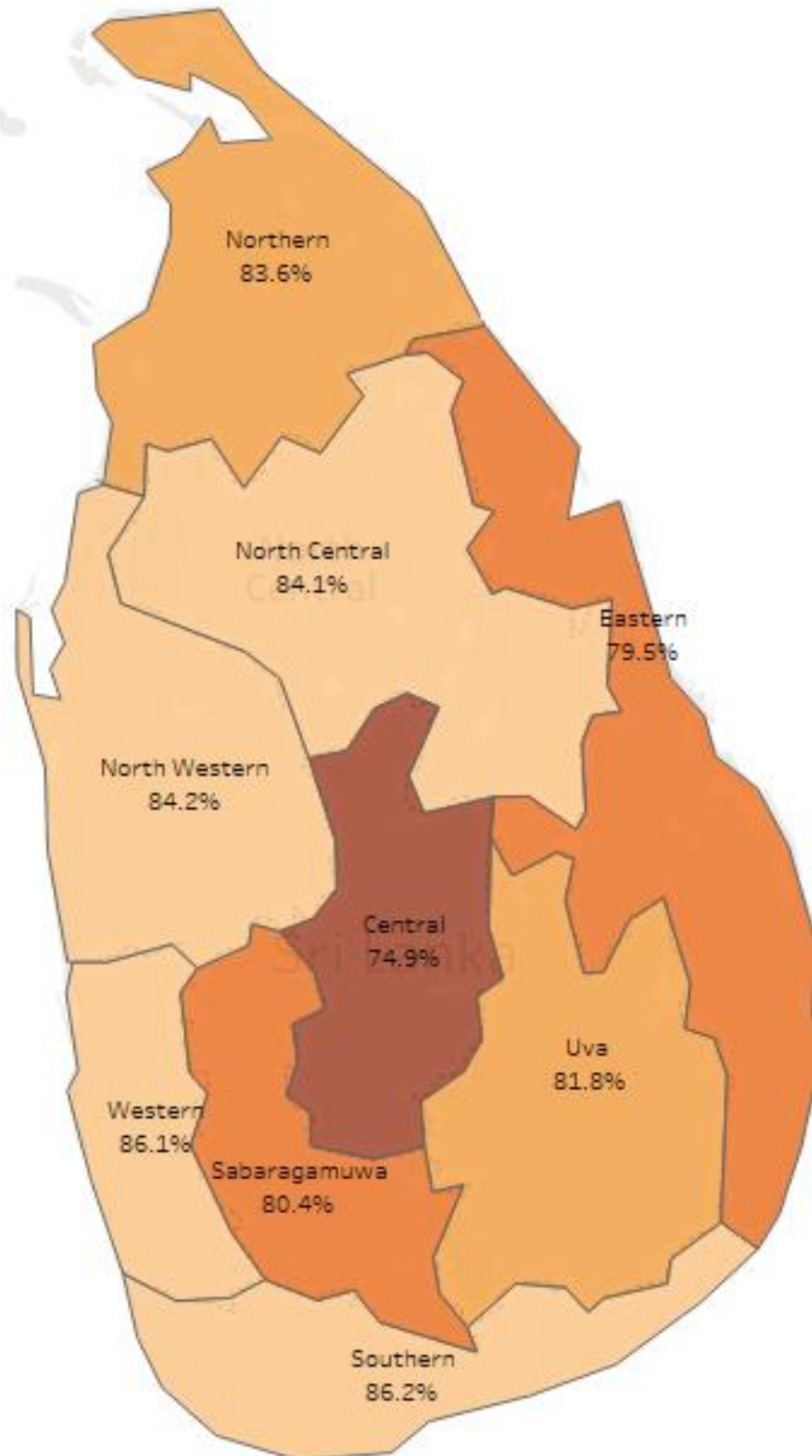
2.3.3 Fraction of Children Under-Five Not Stunted

52. **Stunting is biologically associated with undernutrition.** A well-nourished child can expect to be of a certain height, given other factors such as genes. However, undernutrition in the early years of life can hamper growth and result in stunting. Undernutrition leading to stunting can cause many health issues in later life, reducing learning ability in the school-age period. It is therefore a serious problem that needs to be addressed to promote human capital development.

53. **Stunting prevalence correlates highly with the size of the estate sector.** The Central, Uva, and Sabaragamuwa Provinces have the highest issue of stunting (Map 2.6). These provinces are known to have large estate sectors. The proportion of children not stunted is only about 75 percent in the Central Province, which has the largest estate sector (approximately 19 percent of the population). The previously conflict-affected areas also have major issues in stunting, particularly in the Eastern Province where the proportion of children not stunted is less than 80 percent. The Southern and Western Provinces have the highest proportion of children not stunted, although the value of about 86 percent shows that the problem exists even in these provinces.

54. **The problem of stunting is lower among girls compared to boys, although the difference is not large.** The variations in stunting between girls and boys are shown in Table 2.9. The proportion of boys not stunted is lower than the proportion of girls not stunted in six of the provinces—Western, North-Western, Northern, North-Central, Uva, and Sabaragamuwa. However, in the Central, Southern, and Eastern Provinces, the proportion of girls not stunted is lower than the proportion of boys not stunted. The reasons behind the different patterns of stunting between boys and girls are not immediately evident from the table; the three provinces with greater stunting prevalence among females do not seem to share similar characteristics.

Map 2.6: Percentage of Children Not stunted, by Province, 2016/17



Source: DCS 2017; World Bank team calculations.

Table 2.9: Fraction of Children Under-Five Not Stunted by Province and Gender, 2016/17 (Percentage)

Province	Fraction of Children Under-Five Not Stunted (Males and Females)	Fraction of Children Under-Five Not Stunted (Males)	Fraction of Children Under-Five Not Stunted (Females)
Western	86.1	84.8	87.3
Central	74.9	75.9	74.1
Southern	86.2	86.7	85.6
North-Western	84.2	84.0	84.3
Northern	83.6	81.1	85.8
Eastern	79.5	80.5	78.5
North-Central	84.1	81.5	86.6
Uva	81.8	80.7	82.9
Sabaragamuwa	80.4	76.4	84.2
National	82.9	82.0	83.7

Source: World Bank team calculations.

2.4 CONCLUSIONS

55. **The analysis of provincial variations in human capital provides several interesting and important findings for future policy.** There is a high degree of regional equity in two of the five HCI indicators in which Sri Lanka performs well at the global level: child survival and expected years of schooling. The child survival rates vary between 98 percent and 99 percent among all provinces. Expected years of schooling range from 12.8 years in the lowest performing province, Sabaragamuwa, to 13.1 years in the highest performing province, Western. This clearly shows that if there is high and equitable development in human capital in all regions, the country will score well at the international level, too. In the third HCI outcome in which Sri Lanka performs well in global terms, adult survival, there is a high degree of parity among eight of the nine provinces, where the range is between 86 percent and 88 percent. However, one province, the Northern Province, falls behind with an adult survival rate of 81 percent, which is still a high rate, especially given that this province was the main theater of the secessionist conflict over a long period of time.

56. **There are major regional disparities in the HCI outcomes in which Sri Lanka performs poorly at the global level, child stunting and learning adjusted years of schooling.** Child stunting rates vary between 75 percent in the Central Province, which is the lowest performing province, and 86 percent in the Southern and Western Provinces, which are the best performing provinces. Learning adjusted years of schooling range between 6.8 years in the Eastern Province, the lowest performing province, and 9.2 years in the Southern Province, the highest performing province. These are substantial differences. The findings suggest that programs to improve HCI outcomes require a targeted approach, with special attention devoted to the low-performing provinces.

57. **There is a high degree of consistency in the performance of provinces in the components of HCIs.** For instance, the Southern Province, which has the highest overall HCI score, also performs best on mathematics harmonized test scores, mathematics learning adjusted

years of schooling, child survival, stunting, and adult survival rates. The Western Province, which has the second highest HCI score, has the highest number of years of schooling and performs close to the Southern Province in the other components of the HCI. Provinces that score relatively poorly on the HCI, such as the Eastern, Central, Northern, and Uva Provinces, show comparatively weak performance on mathematics learning adjusted years of schooling and stunting.

58. Human capital outcomes are nearly always higher for girls and women than for boys and men. Child survival rates for girls exceed the survival rates for boys in all provinces. Expected years of schooling are either equal between girls and boys, or greater for girls, in eight of the nine provinces, with the exception being the Sabaragamuwa Province. Learning adjusted years of schooling are higher for girls in all provinces when education quality is measured by mathematics achievement. Learning adjusted years of schooling are also higher for girls in eight of the provinces, when education quality is measured by English language learning, and equal with boys in the Eastern Province. Child stunting rates are lower for girls in seven of the nine provinces. Female stunting rates exceed male stunting rates only in the Central and Eastern Provinces. Adult survival rates are considerably higher for women than men in all provinces, and by a considerable margin. In four provinces—North-Western, North-Central, Northern, Eastern—the gender gap is between 14 percent and 16 percent in favor of women. Overall, these findings suggest that policies to increase human capital also need to target boys and men.

59. The component of the HCI which shows the highest degree of regional variation is learning outcomes. This applies to harmonized test scores in mathematics and in English language, as well as to learning adjusted years of schooling in these two subjects. Learning is also the component of the HCI in which the country performs weakest in international comparisons. In addition, the largest gender gap among the variables of the HCI is also in learning. It is also notable that learning outcomes do not seem to be correlated with economic status. Southern Province has the highest score, though the per capita GDP is well below the national average (see Tables 1.1 and 2.3). Sabaragamuwa and North-Western Provinces have the lowest per capita GDP level, yet the test scores are higher than other more affluent provinces. Further, the HCI rankings of provinces exactly follow those for the learning outcomes (compare Tables 1.1 and 2.3). Overall, improving learning outcomes is the most important challenge to address for the development of human capital in the country.

60. The component of the HCI which shows the second highest degree of regional variation is stunting. Stunting is also the component of the HCI in which the country performs weakest in international comparisons after learning. This suggests that levels of undernutrition vary significantly among provinces and need to be addressed urgently to improve the overall level of nutrition in future generations.

CHAPTER 3. KEY ACHIEVEMENTS AND CHALLENGES FOR HUMAN CAPITAL DEVELOPMENT: CHILD AND ADULT SURVIVAL AND STUNTING

3.1 INTRODUCTION

61. **Health and nutrition are critically important for the human capital development.** The inclusion of health and nutrition outcomes in the HCI reflects this importance. Health is not just a component of human capital; it also contributes to other elements of human capital. Being unhealthy at any given stage of the life cycle hinders productivity with impacts on human capital. This chapter undertakes an analysis of the policy framework of the health care system in relation to the variables of the HCI: stunting, child survival, and adult survival. Special attention is paid to stunting and the underlying causes of undernutrition, which has been a long-standing issue for the country. Based on the analyses, a set of recommendations are made for the future development of human capital.

62. **Sri Lanka has a track record of providing effective health services that have resulted in relatively strong health care indicators.** Life expectancy at birth, which stood at 75 years as of 2016, was higher than the South Asian average of 69 years. In terms of MCH indicators, Sri Lanka's neonatal, infant, and under-five mortality rates in 2018 were 6.5, 9.1, and 10.6 per 1,000 live births, respectively, and the maternal mortality ratio was 39.3 per 100,000 live births in 2017 (FHB 2019). Sri Lanka was certified by the World Health Organization (WHO) as having eradicated polio (in 2014) and malaria (in 2016). Public health care services are provided through a network of 1,118 government institutions operating at three levels. The primary level includes the primary medical care units and divisional hospitals, the secondary level includes the district general hospitals and base hospitals, and the tertiary level includes the national hospitals, teaching hospitals, and provincial general hospitals. Specialized care is provided by secondary- and tertiary-level institutions, and a unique feature of the Sri Lankan health care system is that patients can opt to bypass primary-level institutions and obtain services directly from secondary- and tertiary-level institutions.

63. **Although public health care services in Sri Lanka have been provided free of charge to the population, a significant portion of health services are provided by the private sector.** The private sector accounts for over 50 percent of the total health spending of the country (Amarasinghe, Dalpatadu, and Rannan-Eliya 2018). Out-of-pocket (OOP) funding is the predominant source of private funding and comprises 87 percent of private health spending (that is, approximately 45 percent of total health spending) while the contribution of insurance to private funding remains low at 5 percent, although this has increased from 1 percent in 1990. While inpatient, preventive, and public health services are primarily provided by the public sector, outpatient care, investigation, and drugs/supplies for outpatients are predominantly financed by the private sector. This holds true regardless of the income levels, albeit with a notable exception among the highest income quintile who spends a sizable portion on private hospitals. There are potentially multiple factors associated with the low utilization of public services, despite being provided free of charge, which may include lack of essential equipment and drugs, long waiting time, less personalized services, and inconvenience of opening hours, among others. The private

sector has grown substantially over the years in meeting the demands of patients for more convenient services (for example, shorter waiting time, after-hours services).

64. **In consequence, age-related health and nutrition issues, such as geriatric ailments and degenerative diseases, are rising and will become the key challenge to the health and nutrition profile of the population.** The country is in urgent need to prepare for this emerging challenge. This chapter proceeds to a discussion of this vital challenge for the future human capital development. The discussion closes with potential policy options to reform the health system to meet the rapidly emerging needs of an ageing population.

3.2 CHALLENGE OF STUNTING AND UNDERNUTRITION

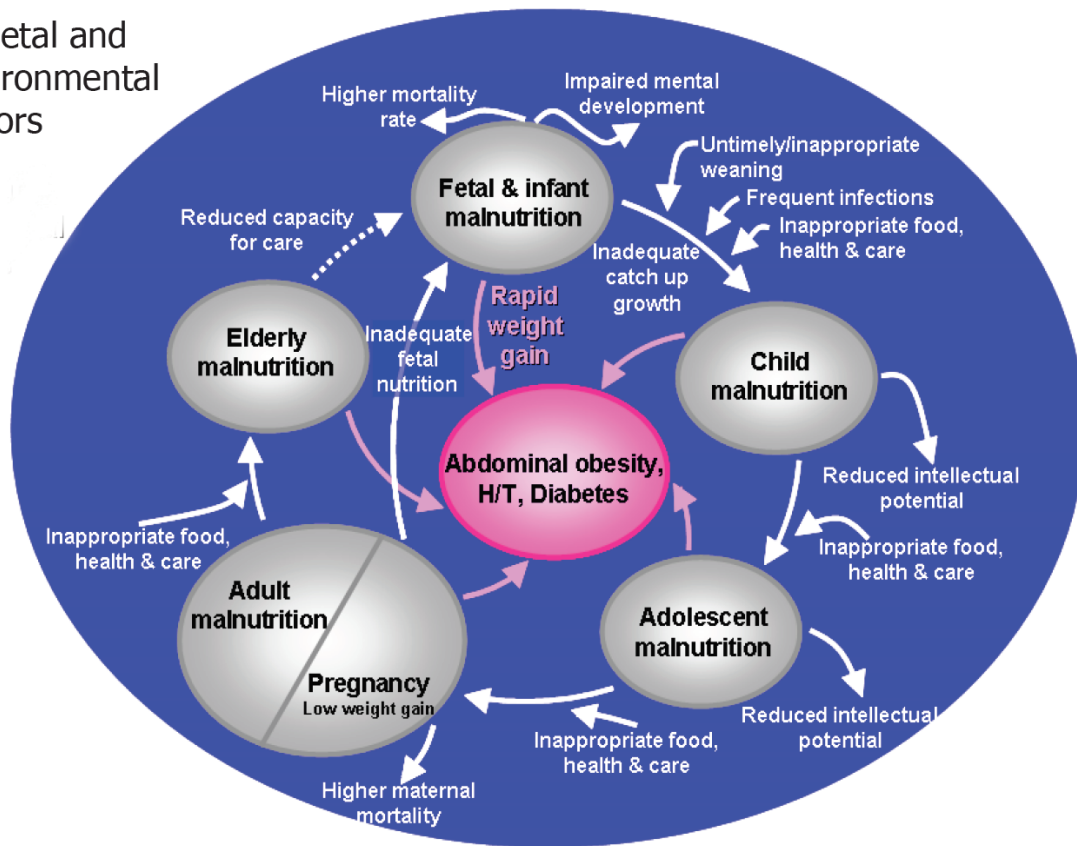
65. **Stunting is a well-established risk marker of poor child development.** Early childhood stunting is associated with poor psychological functioning in late adolescence (Walker et al. 2007). In particular, stunting before the age of 2 predicts poorer cognitive and educational outcomes in later childhood and adolescence, which has significant educational and economic consequences at the individual, household, and community levels (WHO 2014). Economists estimate that stunting can reduce a country's GDP by 7 percent and thus is an enormous drain on economic productivity and growth (Galasso and Wagstaff 2018).

66. **The UNICEF Conceptual Framework of Malnutrition (UNICEF 1990) and the FAO food security concepts (FAO 2003) illustrated causal pathways for malnutrition.** The causes of malnutrition are multisectoral—inadequate access to food, inadequate care for mothers and children, inadequate health care services, insufficient health services, and an unhealthy environment. Malnutrition pervades the whole life cycle (Figure 3.1). Emerging evidence on the role of intergenerational effects in determining maternal preconceptional nutritional status indicates the need for continued investment in strategies that improve women's nutrition and health throughout the life cycle, especially during the early years. Intrauterine growth of the fetus is critical, as much of the evidence suggests that a child's growth pattern is set during this time. There is a plethora of research available to prove that the foundation for adult health is formulated in utero and in early childhood, and one of the most prominent risk factors for stunting is low birth weight (LBW). LBW is defined as a birth weight less than 2,500 g. Undernutrition is generally expressed as stunted growth, and thinness is a result of intrauterine growth retardation during a mother's pregnancy in addition to improper care after birth. It has an intergenerational impact on human development and the economy.

Figure 3.1: Intergenerational Cycle of Growth Failure

Lifecourse approach: the proposed causal links

Societal and environmental factors



Source: Darnton-Hill, Nishida, and James 2004.

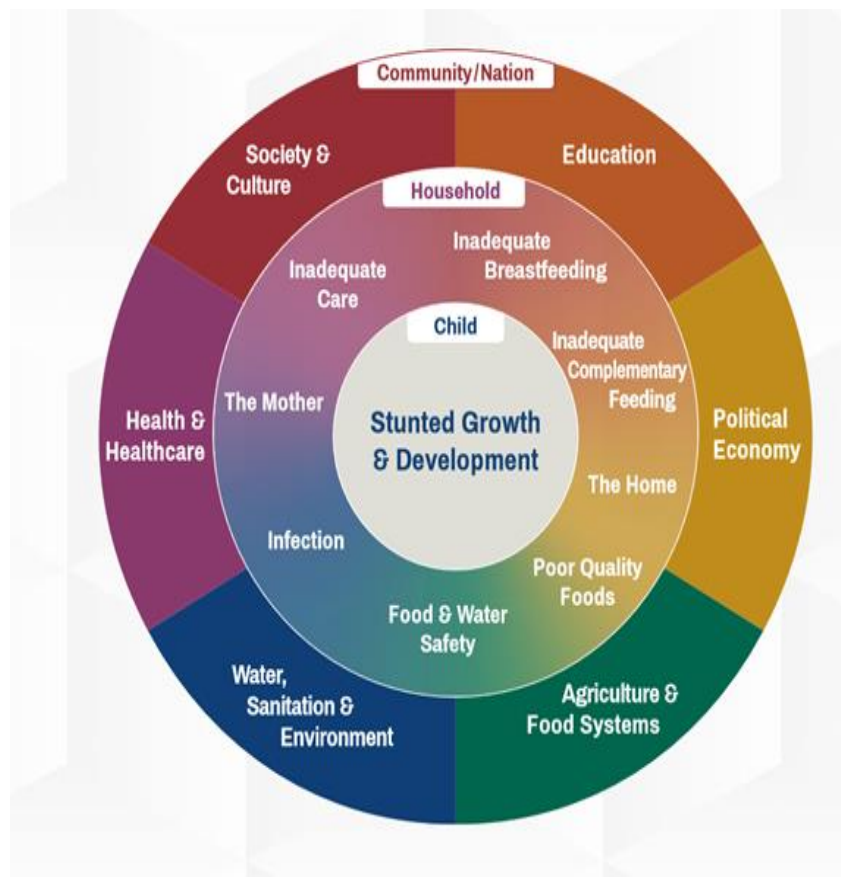
67. **Impact on the transgenerational cycle of human development needs to be challenged in the context of the life cycle rather than in discrete compartments.** Malnutrition needs to be viewed as one important dimension of a larger development problem that spreads across multiple sectors and health, social, political, economic, and cultural institutions.

68. **Food security is linked closely with malnutrition and is often one of the main underlying causes.** The most widely used definition reads, “food security exists when all people at all times, have physical, social, and economic access to sufficient, safe, and nutritious food, which meets their dietary needs and food preferences for an active and healthy life.” (FAO 2003). This definition provides the basis of the four pillars of food security widely adopted today: availability at the national level, accessibility and utilization at the household level, and stability at all levels.

69. **Childhood stunting has a lasting effect on health and educational attainment.** Stunting is defined as the percentage of children, ages 0 to 59 months, whose height for age is below minus two standard deviations (moderate and severe stunting) and minus three standard deviations (severe stunting) from the median of the WHO Child Growth Standards. Stunting reflects chronic undernutrition during the most critical periods of growth and development in early life. Linear

growth in early life is considered a strong predictor of a healthy life. Impaired linear growth or stunting is associated with childhood risk of infections, childhood mortalities, cognitive and motor development, and school performance. In later life, stunting affects productivity, wages, reproductive health, and nutrition-related chronic disease such as diabetes and heart disease and can have a significant negative impact on an individual’s human capital (Barker 2007; Shekar 2006). The WHO conceptual framework on childhood stunting (Figure 3.2) builds on the UNICEF conceptual framework on causes of malnutrition. Stunted growth and development are central to this framework. This expands the context layer of community and societal factors of malnutrition illustrated in the UNICEF framework (UNICEF 1990). Immediate causes of stunting include poor breastfeeding and complementary feeding practices. Some maternal factors with possible transgenerational or direct impacts on offspring growth and development in the first 1,000 days include low pre-pregnancy weight, maternal infections, short stature, and short birth spacing. Sectors highlighted in Figure 3.2 are home to the stakeholders responsible for nutrition-sensitive programs, which also have a critical role to play in stunting reduction. Facilitating positive behavior change and increased energy and nutrient intake, improving the quality of child caring and rearing practices, identifying the nutritional needs of adolescents and the elderly, and making available a clean, safe, supportive, and stimulating home environment also contribute to the reduction of stunting among children.

Figure 3.2: Conceptual Framework on Childhood Stunting

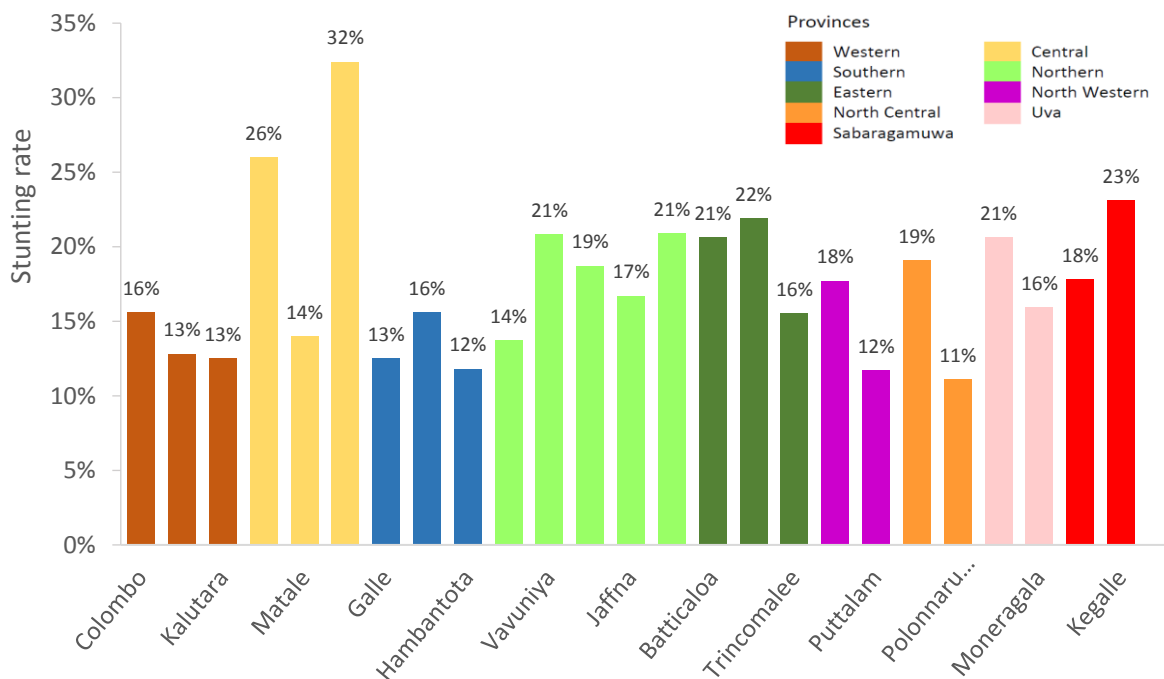


Source: WHO Conceptual Framework Leaflet on Childhood Stunting (WHO 2017).

3.2.1 Current Status of Stunting at the Subprovincial Level

70. Sri Lanka's stunting prevalence is classified as medium level and is not equally distributed between different segments of the population. Data from the latest Demographic and Health Survey (DHS 2016) revealed that 17 percent of Sri Lankan children under the age of 5 are stunted (4 percent severely stunted), 15 percent wasted, 21 percent underweight, and 16 percent LBW (DCS 2017). There are generally high correlations between these factors. For instance, a study conducted in three state foster care institutions in Sri Lanka found that 81 percent of children with LBW were stunted compared to 40% in those with appropriate birthweight. As reported by DHS 2016, the levels of stunting according to the age of the child follow the traditional pattern of increase with age, peaking at the ages 24–35 months (22 percent), and then slowly declining to 14 percent among older children between the ages 48 and 59 months. The survey also reflected a marked variation in stunting with respect to the places of residence, with higher levels of stunting in children from the estate sector (32 percent) compared to children from urban and rural sectors (15 percent). Moreover, there is a significant variation in stunting rates among different districts in the country (Figure 3.3). The highest levels of stunting were observed in the Nuwara Eliya District (32 percent), followed by Kandy District (26 percent), Kegalle District (23 percent), Ampara District (22 percent), and Batticaloa, Vavuniya, Kilinochchi, and Badulla Districts (21 percent). The lowest prevalence of stunting was observed in the Polonnaruwa District (11 percent), followed by the Puttalam and Hambantota Districts (12 percent each). In the Sri Lankan context, the primary factors that determine stunting include maternal height, maternal education, wealth, household food insecurity, poor care practices, and poor access to environmental and health services. It was also observed that cultural norms and beliefs have major implications on stunting among children (World Bank 2018c).

Figure 3.3: Variations in Stunting Rates of Children Under-Five by District, 2016

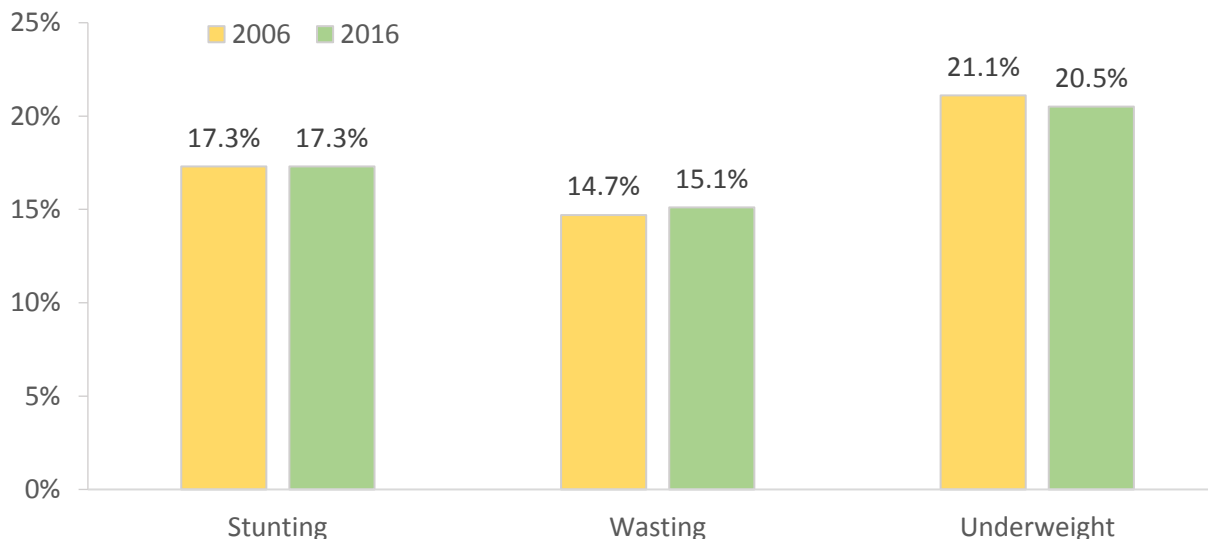


Source: DHS 2016 (DCS 2017).

3.2.2 Historical Trends of Stunting Rates

71. **The stunting rate in Sri Lanka has remained stagnant over the last decade.** While a significant improvement was once recorded in the period between 1980 and 2000, stunting in Sri Lanka has remained stagnant between 2006 and 2016 (Figure 3.4). The prevalence of stunting in Sri Lanka was recorded at 32.3 percent in 1987, which declined to 29.7, 18.4, 17.3, and 17.3 percent in the 1993, 2000, 2006, and 2016 DHSs, respectively (UNICEF-WHO-World Bank 2018). Despite the remarkable progress reported in 2000, the rate of stunting (around 17 percent) remained static since then, implying a resistance to the country’s socioeconomic development experienced during the last two decades. The reason behind this unique situation is not fully understood. LBW may partly explain this situation as prevalence of LBW has also not changed during the same period (17 percent to 16 percent between 2006 and 2016). Another factor may include the relatively poor complementary feeding practices, especially among children 6-8 months (45 percent). Given this situation, however, the country may not be able to reach the national target of 10.8 percent stunting rate among children under-five by 2025.

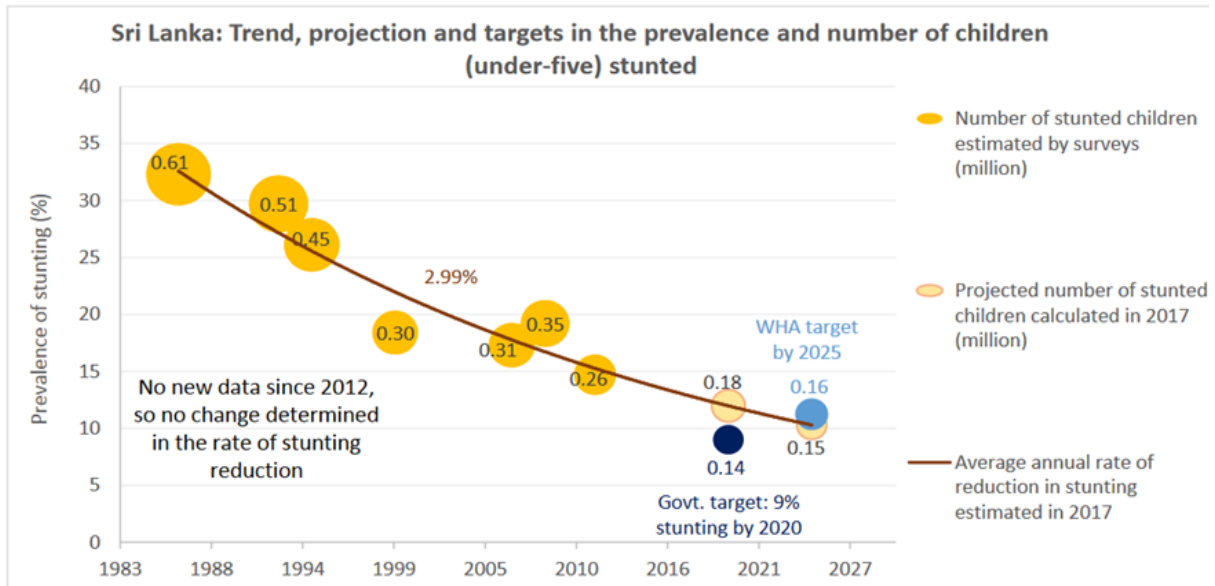
Figure 3.4: Trends in Nutritional Status of Children Under-Five in Sri Lanka



Source: DHS 2016 (excluding the Northern Province) (DCS 2017).

72. **The significant improvements in early years may be attributed to multiple initiatives.** The marked reduction in stunting experienced between 1980 and 2000 may be the result of many health service interventions, such as antenatal care programs, the expanded program on immunization, breastfeeding promotion at the grassroot level, family planning, and growth monitoring and promotion programs. Direct nutritional interventions such as the ‘Thriposha’ program and food subsidies may have also contributed to the reduction of stunting rates in the country. It is speculated that innovative interventions are required to further reduce stunting, as conventional interventions appear to have been exhausted. An earlier study conducted by the European Commission before the release of the DHS 2016 results projected a continued reduction of the childhood stunting rate, with an estimated stunting rate of 13 percent in 2016 (Figure 3.5). However, DHS 2016 reported a child stunting rate of 17.3 percent that has not changed since 2006.

Figure 3.5: Trends and Projections of Child Stunting Rate in Sri Lanka



Source: European Commission, International Cooperation and Development, Sri Lanka Country Profile on Nutrition and Child Stunting Trends (European Commission 2018).

3.2.3 Sri Lanka in Relation to Comparator Countries

73. **Albeit with stagnant improvements in the stunting rate, Sri Lanka continues to perform well in the South Asian region.** Regional comparisons set Sri Lanka apart from other countries in South Asia with respect to nutritional indicators, including rates of stunting. Sri Lanka has the lowest stunting rate in the South Asian region (UNICEF-WHO-World Bank 2018). Stunting rates in India, Pakistan, Bangladesh, and Afghanistan are recorded at 37.9 percent, 45.0 percent, 36.2 percent, and 40.9 percent, respectively. In the broader Asian region, Sri Lanka comes third after Thailand and China where stunting rates were recorded at 10.5 percent and 8.1 percent, respectively. Despite being an LMIC, Sri Lanka’s stunting rates are on par with rates in UMICs such as Gabon (17.0 percent), Lebanon (16.5 percent), and Malaysia (20.7 percent) (UNICEF-WHO-World Bank 2018).

74. **A well-established, free health care delivery system; free universal education; and high female literacy rate are cited as the main contributory factors for the better nutritional status relative to other South Asian countries.** To support nutritional services, the Sri Lankan government introduced a National Nutrition Policy in 1986, and the policy was updated in 2010 and 2013. With the implementation of the policy, the country made a major step toward mainstreaming nutritional interventions at all levels. Moreover, with the establishment of the National Nutrition Secretariat in 2013, the country was successful in developing a Multi-Sectoral Action Plan for Nutrition. The plan is a coordinated effort of many sectors—including agriculture, health, education, economy, and nongovernmental organizations—that sets targets and milestones to reduce the prevalence of undernutrition, anemia, and stunting among key population groups, as well as to improve food security and provide access to safe water, sanitation and hygiene (WASH)

to households at risk. Despite these efforts, the latest DHSs have identified several geographical pockets that do not appear to be benefitting from these nutritional interventions.

75. **The country is facing a double burden of malnutrition.** Both administrative data and surveys highlight the increasing problem of overweight and obesity in the country (NCD Risk Factor Survey 2015, DHS 2016, World Bank 2017a). The noncommunicable disease (NCD) risk factor survey (2015) identified that nearly one-fourth of males (24.6 percent) and one-third of females (34.3 percent) between the ages 18 and 69 were either overweight or obese (MoH and WHO 2017). Unhealthy eating practices and poor nutrition in childhood contribute to an early manifestation of heart disease, childhood diabetes, other NCDs, and ill health later in life. With the maternal body mass index (BMI) being a major determinant of LBW (Ramakrishnan 2004), it is important to note that undernutrition is also seen among women of the reproductive age group. The Reproductive Health Management Information System (RH MIS) reports that in the period between 2009 and 2015, one-fifth to a quarter of women who registered for antenatal care before 12 weeks had a BMI less than 18.5 (MoH 2018b). It has been shown that it is the quality of food rather than the quantity that appears to be correlated with malnutrition. Yet improvements in diet quality have not been high, and micronutrient intakes remain low. It has become increasingly difficult for the poor to have a diet rich in vegetables, dairy, and fish, as the cost of nutrition shows that many households are unable to provide themselves with a nutritious diet.

76. **Anemia has remained a persistent problem relating to micronutrient deficiencies.** Micronutrient deficiencies form the third arm of the triple burden of malnutrition alongside undernutrition and overweight and obesity. DHS 2006 found an estimated overall prevalence of anemia of 34 percent, with 20.7 percent categorized as mild anemia and 13.3 percent categorized as moderate to severe anemia (DCS 2009). Statistics show that the most common causes for anemia include iron deficiency. It is estimated that one in three children, and one in four adults in Sri Lanka suffer from iron deficiency anemia, making it the most critical micronutrient-related deficiency in the country. The Nutrition and Food Security Assessment carried out in 2009 found that the prevalence of anemia in children ages 6–59 months was 25.2 percent (MRI 2010). The highest prevalence was noted in the latter half of the first year (50.4 percent) and was observed to decline with increasing age, the lowest prevalence being 10.2 percent in the 48–59 months age group. The National Nutrition and Micronutrient Survey 2012 found a much lower percentage, that is, 15.1 percent of children in the same age group to be anemic (MRI 2012). Of the anemic children, 12.8 percent had haemoglobinopathies, 4.3 percent had evidence of acute infections, and 52.3 percent were iron deficient. This highlights the importance of establishing the causes of anemia in this age group.

77. **In developing countries, anemia affects about 40 percent of preschool children and one in two pregnant women, mainly due to iron deficiency.** In Sri Lanka, 35 percent of pregnant women, 33 percent of women at reproductive age and 26 percent of under-five children are anemic.⁹ Infants born of mothers with anemia often have LBW and face a higher risk of dying in infancy and childhood. Premature births, delayed growth and development, and delayed normal infant activity and movement are also associated with iron-deficiency anemia: “Children and adults with iron-deficiency anemia have poor memory or poor cognitive skills resulting in poor

⁹ WHO Global Health Observatory Data Repository

performance in school, work, and in recreational activities. Lower IQs have been linked to iron deficiency occurring during critical periods of growth.” (UNICEF 2014).

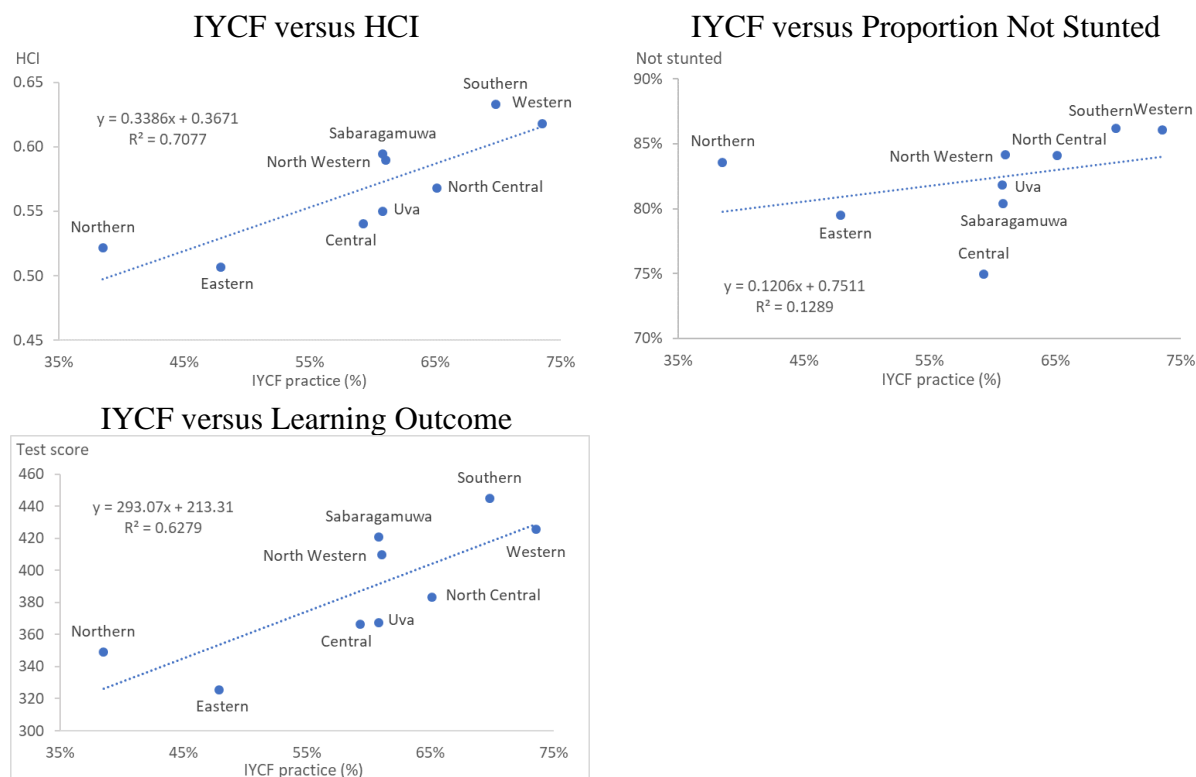
3.2.4 Multifaceted Strategies to Address Malnutrition

78. **It is widely acknowledged that the nutritional status of people is determined by multiple factors that go way beyond the health sector.** The UNICEF framework of malnutrition defines two immediate causes of undernutrition (inadequate dietary intake and diseases) and three clusters of underlying causes (inadequate health services and unhealthy environment, household food insecurity, and inadequate maternal and child care) (UNICEF 1990). Sri Lanka has been rigorously addressing the direct causes through a number of programs (see previous paragraphs), such as Thripasha (supplementary feeding targeting pregnant/lactating women and underweight infants), morning meal for preschoolers, micronutrient supplementation, breast feeding and complementary feeding promotion, and management of severe acute malnutrition. In addressing the underlying causes, the country has performed reasonably well in providing basic health services and maternal and child care as described earlier. Healthy environment has been improved by various WASH activities. Household food security has been addressed by various sectors including agriculture (for example, Food Production National Program and home gardening promotion), fisheries (for example, fingerlings stocking), and livestock (for example, financial support for improvement of animal breeder farms). However, the global food security index¹⁰ remains relatively low at 54.3, which ranks Sri Lanka 67 out of 113 countries where indices are calculated.

79. **Nutrition programs contribute to the human capital development through multiple causal pathways from different determinant factors.** For instance, Figure 3.6 provides the proportion of children in provinces with appropriate infant and young child feeding (IYCF) practices compared to HCIs, stunting status, and learning outcomes. Contrary to expectations, the relationship between IYCF practice and stunting is weak ($R^2 = 0.13$). This weak relationship may imply that many other factors have major roles in determining the nutritional status. On the other hand, the relationship between IYCF and the HCI is relatively strong ($R^2 = 0.71$) and the IYCF relationship with learning outcome is also rather strong ($R^2 = 0.63$). This may imply that the contribution of IYCF to the HCI is primarily mediated through its positive effect on cognitive development. Nonetheless, the causal pathways of malnutrition and its relationship to human capital development are complex and hence are not possible to conclude from these data alone.

¹⁰ The Economist Global Food Security Index Database (<https://foodsecurityindex.eiu.com/Downloads>).

Figure 3.6: Relationships between IYCF Practice, HCI, Stunting, and Learning Outcome



Source: DHS 2016 (DCS 2017); World bank team calculations.

80. **For some nutrition-related programs that have been in place, global evidence provides a mixed picture.** For instance, WASH has been widely recognized as an essential element to improve nutrition. There are six theoretical links between WASH and nutrition: (a) reduction in diarrheal diseases, (b) reduction of enteric infections, (c) reduced exposure to protozoa and helminth infection, (d) reduced anemia, (e) reduction in time spent fetching water by caregivers, and (f) direct links. Among them, reduction in diarrhea seems to be the primary pathway in linking WASH to nutritional outcome. Several observational studies suggested positive links between WASH and child growth/diseases. A meta-analysis conducted by Freeman et al. (2014) indicated that WASH interventions can reduce diarrheal diseases by 40 percent. However, findings from recent randomized controlled studies in three countries (Bangladesh, Kenya, and Zimbabwe) suggested a different story. In Bangladesh, water, sanitation and hygiene interventions implemented stand-alone or all combined did not provide favorable evidence of improvements in growth, although diarrheal diseases reduced (Luby et al. 2018). The trial in Kenya found limited improvements of growth with WASH interventions at one year post intervention but no effects at two years, and no effects on diarrheal diseases (Stewart et al. 2018). Similarly, the study in Zimbabwe did not demonstrate any effect of WASH on diarrheal diseases or growth (Humphrey et al. 2019). Multiple interpretations of the negative results from the trials are possible. However, one that likely stands is that the WASH intervention alone was not sufficient to reduce fecal contamination. The strategies of interventions warrant further investigations including household versus community coverage, stand-alone versus combined implementation, and various intensities of interventions. In Sri Lanka, diarrhea accounts for only 1.73% of under-five DALYs and 0.49% of under-five deaths, so the reduction in diarrhea may anyway not yield substantial gains in

nutrition. Such an epidemiological profile is rather unique in the region, and more evidence is needed on nutrition-sensitive programs to identify strategies that cater to the situation in Sri Lanka.

3.2.5 Summary of Nutritional Status and the Way Forward

81. **Sri Lanka has made significant progress in improving the health status of the population but reducing malnutrition remains a challenge.** Poor nutrition also affects the developmental agenda of the country. Achievements in combating malnutrition over the last few decades have been modest. It is recognized as an unfinished public health agenda with profound and irreversible consequences on child survival and development. The Sustainable Development Goal 2 (SDG 2) ‘End hunger, achieve food security and improved nutrition, and promote sustainable agriculture’ is of utmost importance for a country to achieve overall sustainable development.

82. **About 15–17 percent of children are wasted or stunted in Sri Lanka and LBW remains at 16 percent in recent years.** This level has been constant for the last decade. Stunting is a reflection of chronic undernutrition. The effects of stunting last a lifetime and can lead to impaired brain development, lower intelligence quotients (IQs), weakened immune systems, and greater risks of diseases later in life. Stunted children have lower productivity and as adults earn up to 20 percent lower than the average wage. Stunting can also reduce a country’s GDP by as much as 7 percent.

83. **The importance of adequate nutrition and care in the first 1,000 days of life cannot be overstressed.** The first 1,000 days of life —between a woman’s pregnancy and her child’s second birthday—is a unique period of opportunity when the foundations for optimum health and development across the child’s life span can be established. The appropriate nutrition and care during the 1,000 day window influences the child’s ability to survive, grow, learn, and rise out of poverty. As such, it contributes to society’s long-term health, stability, and prosperity. The multifaceted nature of food and nutrition insecurity highlights the necessity of addressing this challenge through a comprehensive and multisectoral approach. Undernutrition passes from one generation to another as a circle of grim inheritance. It is thus crucial for mothers and babies to receive adequate care and nutrition during the critical 1,000 day period.

84. **Strategies to improve the nutrition of girls and women of reproductive age need to go beyond the conventional approach of providing services to pregnant women through the traditional MCH care programs.** This means that greater effort needs to be placed on nutrition-related behavior changes that can be integrated with other health and non-health programs. Key strategies for improved nutrition would include the following:

- Improving women and girls’ nutrition throughout their life facilitating positive behavior change and increased energy and nutrient intake
- Improving the quality of IYCF programs
- Improving evidence-based food fortification programs
- Improving integration of health services and programs within the health sector

- Promoting intersectoral collaboration that results in improving food safety and security
- Improving the quality of care and services provided
- Improving availability of information with disaggregated outcome data by gender
- Addressing the nutritional needs of feeding during illnesses, for adolescents, and for the elderly

85. **More knowledge and evidence are critically needed to maximize the impact of various nutrition programs.** Nutrition requires a multisectoral approach including interventions that target the underlying causes of malnutrition such as agriculture, food safety, and water and sanitation. Nonetheless, their impact on nutrition has not been well evaluated and likely needs revisiting strategies and implementation. The country needs a sound evidence base for prioritizing resources to be allocated to different geographies, sectors, and programs. At the time of writing, a World Bank study is under way in Sri Lanka that evaluates the effectiveness of selected nutrition programs including IYCF, food supplementation, and cash transfer. Nonetheless, the full spectrum of nutrition programs is not covered by the study. It is therefore of critical importance to examine the effectiveness and efficiency of different nutrition strategies, particularly those that target the underlying causes of undernutrition.

86. **Recognizing the vital and synergistic relationship between health and education early on, Sri Lanka has been a pioneer in school health programming.** Sri Lanka's School Health Promotion Program (SHPP) is now recognized as one of the best among its peers and has served as a model of best practice for other countries. The main aim of the SHPP is to ensure that the school platform is optimized to promote the health and well-being of school children. To this end, the SHPP has four main objectives: (a) to ensure a safe, healthy environment—both physical and psychosocial—that facilitates learning, (b) to provide skills-based health education for schoolchildren, (c) to ensure access to health services for schoolchildren, and (d) to empower schoolchildren to be change agents to improve the health of their families and communities. These elements of the program have been designed to work together to promote the health, well-being, and learning potential of Sri Lanka's school children. In 2018, the GoSL expanded the SHPP to include mental health programming. This was in response to a growing urgency to secure the mental health and well-being of school children, recognizing that mental health has an impact on the physical, socio-emotional, and cognitive development of children. Like the broader SHPP, the School Mental Health Program is a pioneering program, which attempts to promote mental health in schools through the establishment of school counselling centers and school mental health focal points to support the mental health and well-being of school children. Over the years, the SHPP has supported stronger health outcomes for school children such as a low prevalence of worm infection and has also greatly improved the quality of the water and sanitation facilities in schools.

87. **While Sri Lanka has many achievements in school health promotion, there is still room for further improvement of the program, particularly as the country undergoes a nutrition and epidemiological transition.** Sri Lanka, like many of its middle-income counterparts, is facing a nutrition and epidemiological transition. While poorer parts of the country are still facing the persistent challenge of communicable disease and undernutrition, wealthier parts of the country are facing new challenges of NCDs such as obesity and diabetes. To respond

to these nuanced challenges, the SHPP requires more sophisticated capacity and a more developed information management system. To this end, the GoSL should focus on building greater capacity at all levels of the SHPP, from the national level to the school level. At the national level, further capacity building will allow for better data management and analysis, so that the program can be implemented in a more targeted manner. At the school level, further capacity building for teachers will enable them to become better advocates for school health and thereby maximize the program's capacity to be more responsive to student needs and to create healthy behavior change. Ultimately, greater capacity will allow leaders at all levels, from policy makers and program planners to teachers to be more responsive to the needs of students and provide more targeted and relevant programming to address specific health challenges. The SHPP would also benefit from a more comprehensive system for data collection and information management to ensure that a child's health is seamlessly monitored throughout his/her school years. A more comprehensive system such as this would allow program planners to make more informed decisions on targeted school health programming. Finally, the SHPP can improve upon the school meal program so as to make it a useful tool for educating students and communities on healthy eating and healthy and cooperative living. Many countries have used the school meal program as an opportunity to educate students and through them the wider community on good nutrition practices. Sri Lanka can also make a more intentional effort to use the school meal program for this purpose. Moreover, countries such as Japan have used the meal program to go beyond just providing a nutritional meal and to teach students other practical skills for life, such as cooperation and team work (in preparing and serving the meal). Sri Lanka may want to consider exploring such models to maximize the various impacts of the SHPP.

3.3 UNDER-FIVE MORTALITY IN SRI LANKA

88. **The under-five mortality rate is one of the most widely used health-related indicators.** Poor health in childhood diminishes the formation of human capital. Evidence shows that much of a person's physiological and cognitive development happens in childhood, and economic theories show that human capital investments should be made early in life. Under-five mortality refers to deaths among children from birth until the age of 5. Deaths that occur during the first five years of life can be categorized according to the time of death. As such, under-five mortality includes (a) early neonatal deaths (deaths in first 7 days of life), (b) neonatal deaths (deaths in first 28 days of life), (c) post neonatal deaths (deaths between 7 and 28 days), and (d) infant deaths (deaths in the first year of life).

3.3.1 Current Status of Under-Five Mortality in Sri Lanka

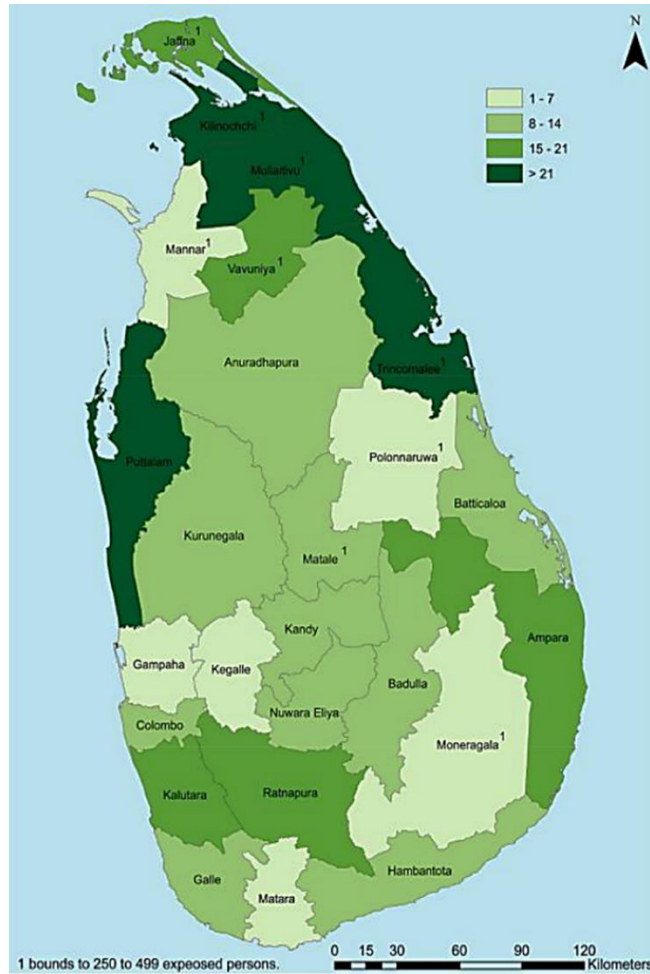
89. **Neonatal deaths dominate under-five mortality in Sri Lanka.** The latest DHS (2016) reports that the under-five mortality rate in Sri Lanka is 11 per 1,000 live births (DCS 2017). According to the Family Health Bureau 2016 Annual Report, however, the under-five mortality rate in the country is 9.3 per 1,000 live births (MoH 2018a). Most under-five mortalities in the country occur within the first year of life, particularly during the neonatal period. The infant mortality rate (IMR) was reported at 10 per 1,000 live births, of which 7 per 1,000 live births correspond to neonatal mortality (MoH 2018b). Around 68 percent of infant mortalities occur during the neonatal period. It is observed that a relatively lower percentage of deaths occur between the ages 1 and 5, reflecting improvements in external factors such as infections and nutrition that determine child survival. Immediate causes of under-five mortality are categorized according to

the infant period and the one to four-year period. In both periods the primary cause of death was congenital abnormalities (54.5 percent and 35 percent, respectively, for infant deaths and one to four year deaths). Though Sri Lanka has the potential to control many of the external determinants of childhood survival, the high percentage of neonatal deaths highlights the need for further improvement in obstetric care and proper management of perinatal and early neonatal complications.

90. **Under-five mortality is not equally distributed between different geographic areas.** As provided in Figure 3.5, substantial geographical variation was noted in the under-five mortality rate, with the highest rate reported from the Kilinochchi District (44 per 1,000 live births) and the lowest from the Polonnaruwa District (3 per 1,000 live births) (DCS 2017). High rates were also reported from the Trincomalee (26 per 1,000 live births) and Mullaitivu (22 per 1,000 live births) Districts. Similar to stunting, a significant variation in the under-five mortality rate was observed according to the place of residence. Estate dwellers had the highest rates (15 per 1,000 live births) and lower rates were recorded among urban populations (11 per 1,000 live births).

91. **Under-five mortality is not equally distributed between different segments of the population.** Among the social determinants of child survival, maternal education and wealth of the family have been identified as the main factors that have a significant impact on under-five mortality. DHS 2016 reported that an under-five mortality rate of 14 per 1,000 live births was recorded among mothers who did not have a formal education (DCS 2017). In contrast, the under-five mortality rate among mothers who had a degree-level education was only 6 per 1,000 live births. Similarly, a higher under-five mortality rate was recorded among children from the poorest households when compared to those from the richest quintile (17 versus 9 per 1,000, respectively). Other determinants of under-five mortality in Sri Lanka include the mother's age, birth order, birth interval, and the sex of the child. Geographical disparities are provided in Figure 3.7.

Figure 3.7: Under-Five Mortality Rates in Sri Lanka by District



Source: DCS 2017.

3.3.2 Historical Trends in Under-Five Mortality in Sri Lanka

92. **Under-five mortality has been significantly reduced over the last five decades.** During the last five decades Sri Lanka has been successful in its efforts to reduce under-five mortalities, and the country was able to achieve its millennium development goal (MDG) targets on under-five mortality. There was over 40 percent reduction in the under-five mortality rate during the last 15 years (IGME 2017). The highest reported under-five mortality rate in Sri Lanka was 123.3 per 1,000 live births in 1951. Since then, a steady decline was experienced during each decade, and the under-five mortality rate was recorded at 71.7 (1970), 50.1 (1980), 21.3 (1990), 16.5 (2000), and 11.6 (2010) per 1,000 live births.

3.3.3 Sri Lanka in Relation to Comparator Countries

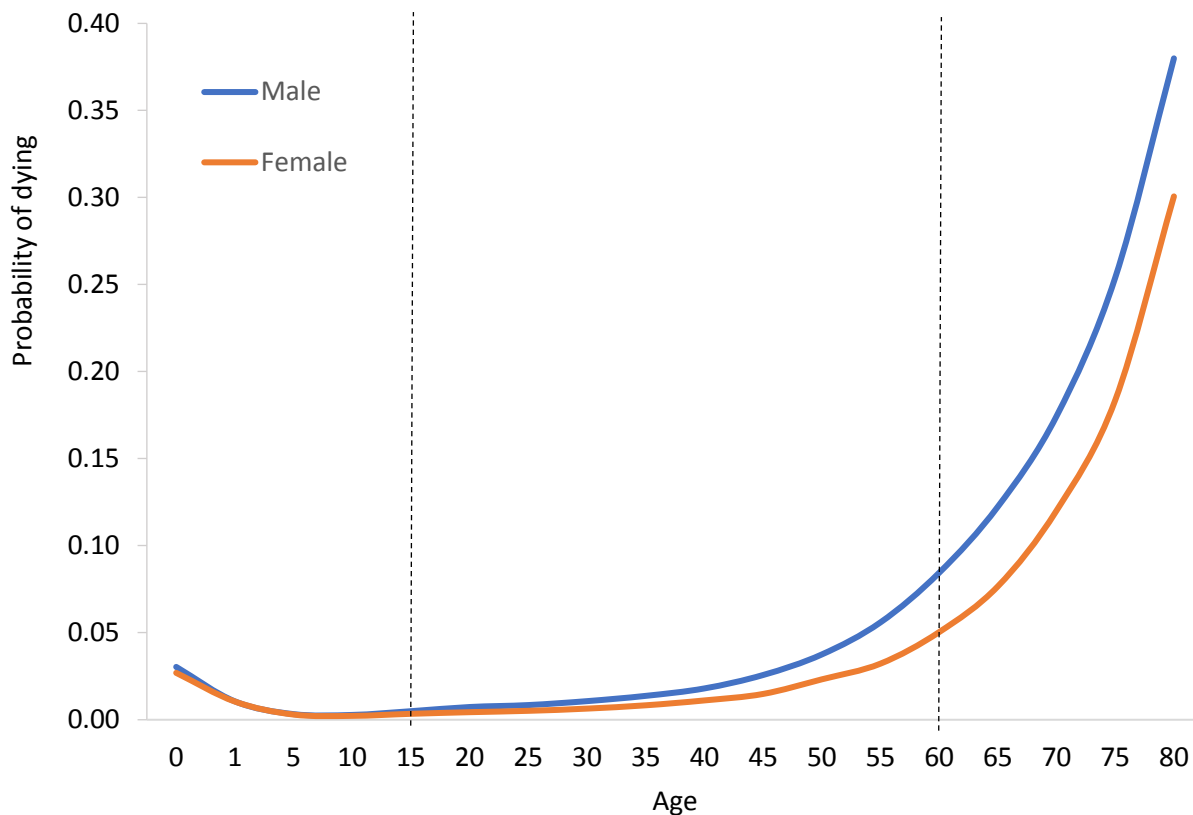
93. **Sri Lanka has performed well in bringing down under-five mortality in the South Asian region.** Sri Lanka has shown impressive achievements in the reduction of all types of childhood mortality. The country has the lowest under-five mortality rate in the South Asian region, compared to countries such as India (39 per 1,000 live births), Bangladesh (32 per 1,000

live births), Afghanistan (68 per 1,000 live births), and Pakistan (75 per 1,000 live births) (IGME 2017). Similar to its nutritional indicators, Sri Lanka's under-five mortality rate is comparable to rates of UMICs in the Asian region such as Thailand (10 per 1,000 live births), China (9 per 1,000 live births), and Malaysia (8 per 1,000 live births). Moreover, Sri Lanka has surpassed some high-income countries including Panama (16 per 1,000 live births) and Oman (11 per 1,000 live births) with regard to under-five mortality rate. While many factors have contributed to this success rate, a well-established MCH service delivery model, a high rate of institutional deliveries, a high level of health literacy, and a free health service have been the key drivers behind Sri Lanka's commendable achievements in reducing childhood mortality.

3.4 ADULT MORTALITY IN SRI LANKA

94. **Adult mortality has immediate implications on the country's economic productivity.** Adult mortality refers to deaths among the population between ages 15 and 60. In many countries, this group of population comprises the majority of the workforce. Generally, the probability of death of a person is higher right after birth, and then decreases with age until the person reaches around age 10 years. Mortality then gradually increases with age in an exponential shape (Figure 3.8). Although the probability of death becomes prominent after the age of retirement, a sizable portion of the population will die before reaching the age of 60. Further, Jayachandran and Lleras-Muney (2009) examined the declines in maternal mortality in Sri Lanka, and estimated that time in school rises 0.11 year per one year of additional expected adult life. Therefore, adult mortality has an immediate effect on the economic productivity of a country.

Figure 3.8: Probability of Dying by Age, Global Average

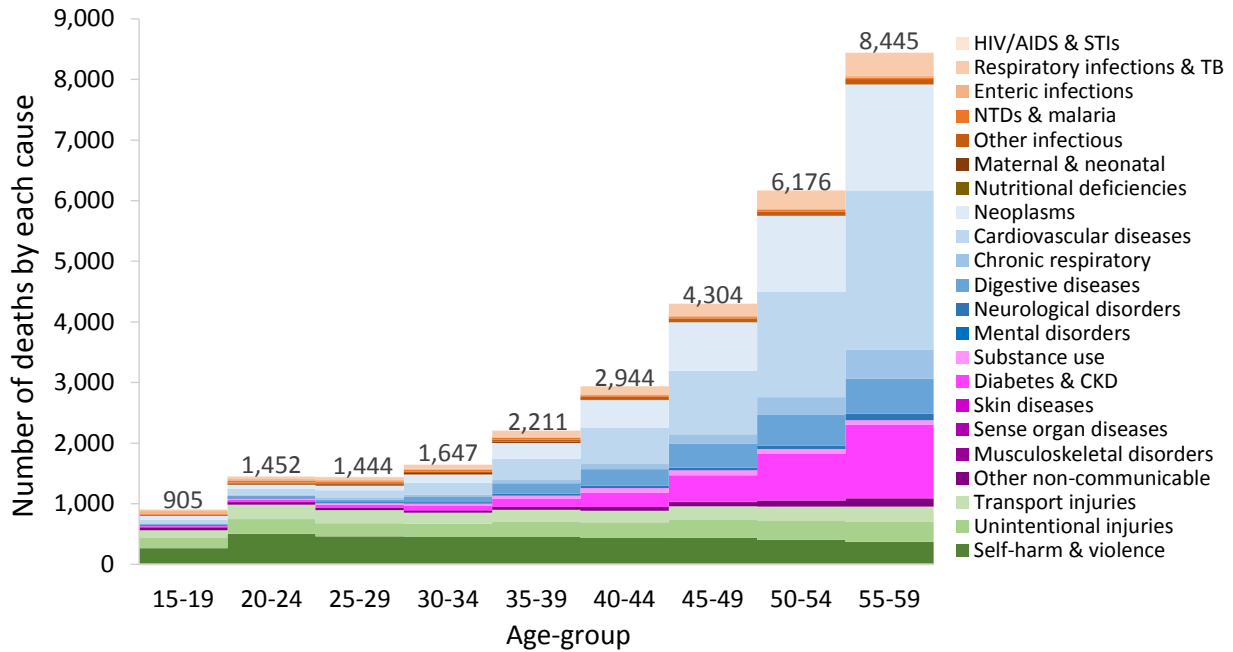


Source: IHME 2018a.

3.4.1 Current Status of Adult Mortality in Sri Lanka

95. **Adult mortality is dominated by NCDs and injuries.** Historically, Sri Lanka has demonstrated a remarkable achievement in bringing down the burden of communicable diseases and improvements in MCH outcomes. As a result, the population's life expectancy has increased (75 years in 2016) leading Sri Lanka to have one of the fastest ageing populations in the world. Due to the rapid demographic change, the country has been facing a major epidemiological transition over the last decades, with an increasing burden of NCDs. NCDs include diseases that are not caused by pathogens, and include ischemic heart disease, stroke, diabetes mellitus, chronic kidney diseases, cancer, and musculoskeletal disorders, among others. Figure 3.9 provides the number of deaths due to 22 causes for each adult age group in 2017. During early adulthood, deaths are caused primarily by injuries (green), especially by self-harm and violence. Although, the number of deaths is not large compared to the elderly population, the lost opportunity on the economy will be enormous given the amount of potential years of productivity that were lost due to premature deaths. The number of deaths start to increase from the mid-30s onward where NCDs (purple and blue) dominate the causes—of these three causes stand out: diabetes mellitus and kidney diseases, cardiovascular diseases, and neoplasms.

Figure 3.9: Causes of Deaths of Population ages 15–59 in Sri Lanka, 2017

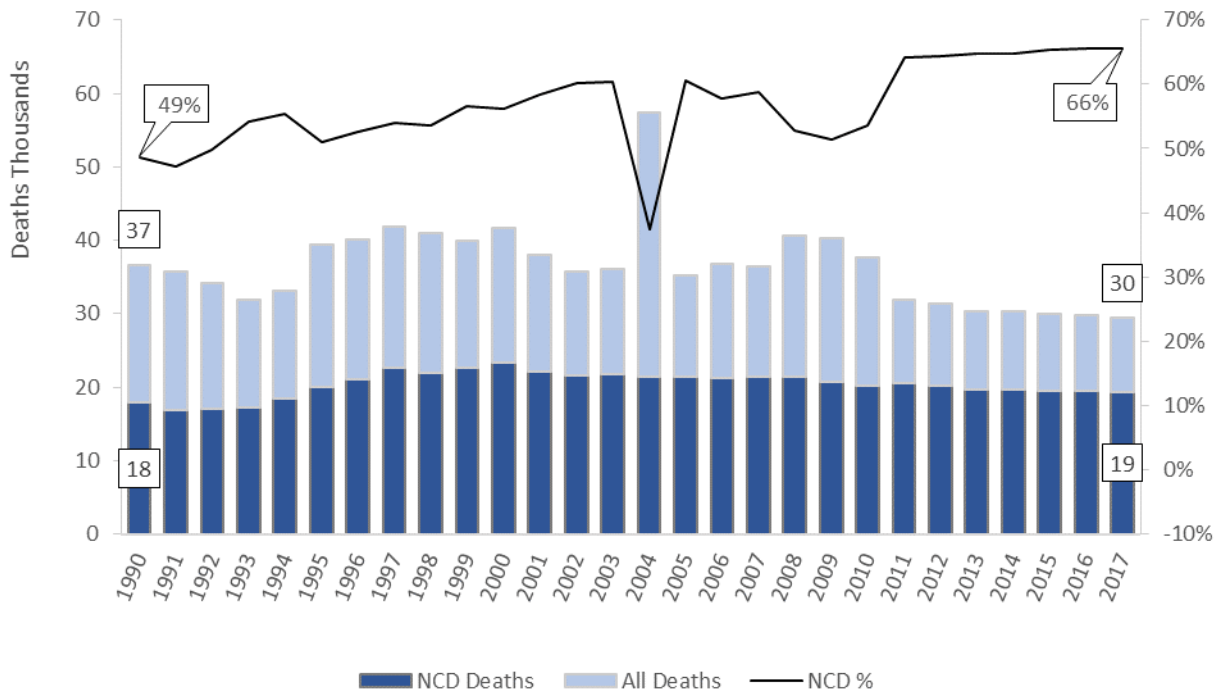


Source: IHME 2018b.

3.4.2 Historical Trends in Adult Mortality in Sri Lanka

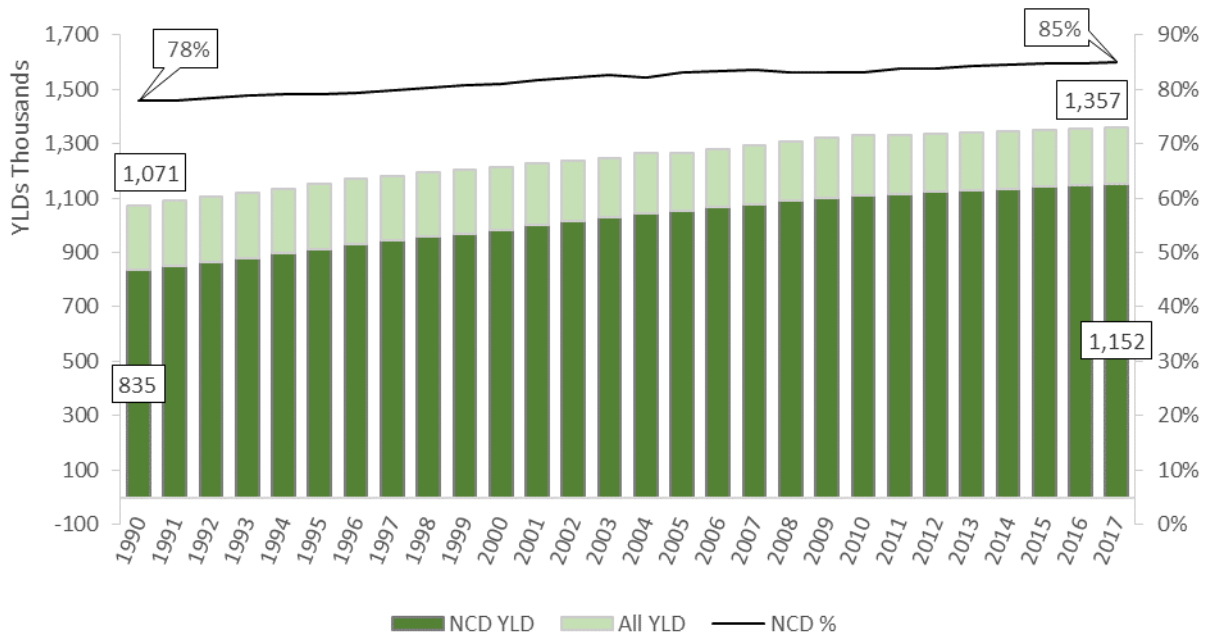
96. **Overall, the number of deaths among the working-age population is decreasing, but the share of NCDs as causes of death and morbidity is increasing.** The overall number of deaths among the adult population between the ages 15 and 59 has generally been decreasing in Sri Lanka, particularly after the war ended in 2009. This is a potentially favorable situation from a productivity perspective as the working-age population is growing. However, the health system faces new challenges from the demographic, epidemiological, and social transitions that the country is experiencing. NCDs accounted for 81 percent of deaths for all ages (IHME 2018b) and 66 percent of adult deaths, increasing over time (Figure 3.10). It is a major contributor to disability-adjusted life years (DALYs). The same source shows that ischemic heart disease and stroke are the leading contributors to DALYs, followed by diabetes mellitus, chronic kidney diseases, and various types of cancer. The major risk factors for NCDs in the country include those of behavioral nature (for example, smoking, alcohol use, inadequate dietary intake), metabolic nature (for example, high blood pressure, high body-mass index, and high fasting plasma glucose), and environmental nature (air pollution, especially within the home). Further, a critical consequence of the advancement of NCDs is that many conditions lead to sustained or chronic morbidities. It is this aspect of NCDs that can severely compromise the potential of human capital in terms of productivity. Figure 3.11 provides the trend of years lived with disabilities among the adult population, which reflect the suffering from nonfatal morbidity. The morbidity experienced among the working-age population has been in a constant rise over time, with NCDs increasing their share. Despite the decreasing number of deaths, the increasing morbidity among the working-age population due to NCDs seems to offset some, if not all, of the benefit from the growing workforce.

Figure 3.10: Number of Deaths among Adult Population (15–59) in Sri Lanka, 1990–2017



Source: IHME 2018b.

Figure 3.11: Morbidity among Adult Population (15–59) in Sri Lanka, 1990–2017

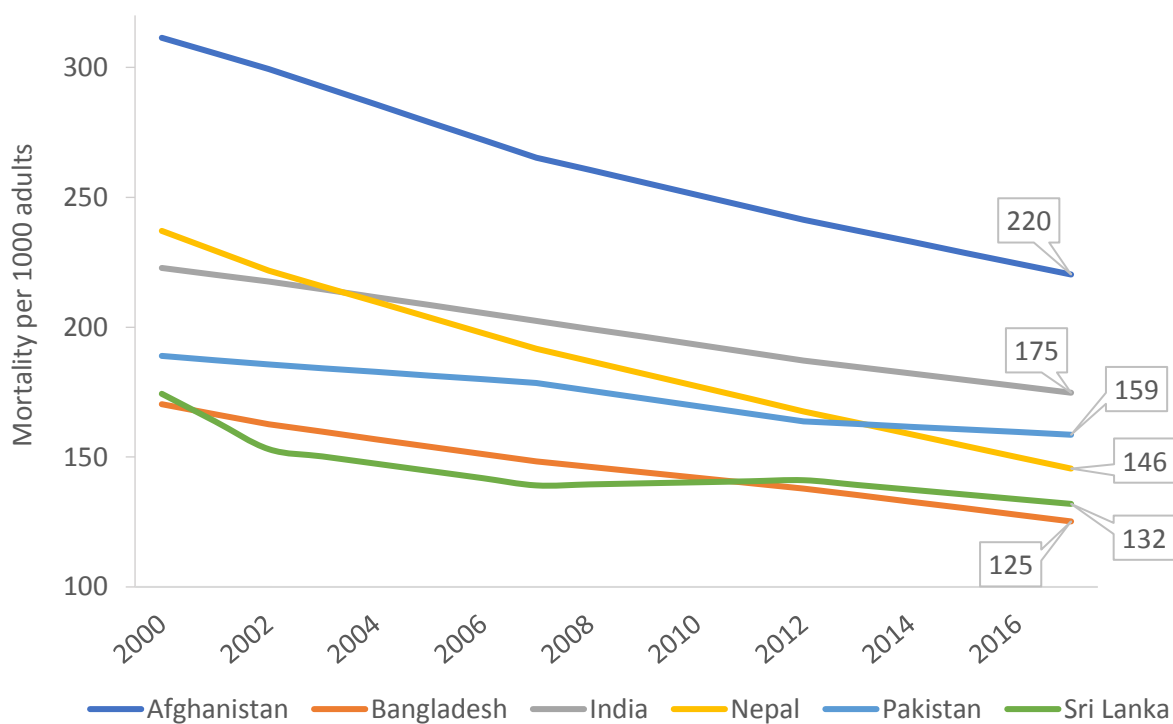


Source: IHME 2018b.

3.4.3 Sri Lanka in Relation to Comparator Countries

97. **Similar to childhood mortality, Sri Lanka has performed well in adult mortality in the South Asian region.** Figure 3.12 provides the adult mortality rates among the six countries in South Asia. The country had the second lowest adult mortality rate (132 per 1,000) in 2017 after Bangladesh. Similar to the under-five mortality rate, Sri Lanka's adult mortality rate is comparable to (or better than some) UMICs such as Thailand (145 per 1,000), Brazil (141 per 1,000), Bulgaria (133 per 1,000), and Jamaica (130 per 1,000). Further, Sri Lanka performed even better in adult mortality rates than some high-income countries such as Trinidad and Tobago (167 per 1,000) and Seychelles (160 per 1,000). Nevertheless, compared to the outstanding achievement in childhood mortality indicators, adult mortality could be further improved by investing in the prevention and treatment of NCDs.

Figure 3.12: Mortality Rate among Adult Population (15–59) in South Asia, 2000–2017



Source: UN Population Division 2017 (UN 2017).

3.5 SRI LANKA'S POLICY FRAMEWORK FOR PROMOTING ADULT HEALTH AND THE WAY FORWARD

98. **The National Multi-Sectoral Action Plan targets the pressing needs for the improvement of adult health.** Following the endorsement of the WHO Global Action Plan for the Prevention and Control of Non-Communicable Diseases 2013–2020 at the 66th World Health Assembly in 2013, the MoH of Sri Lanka launched the National Multi-Sectoral Action Plan for the Prevention and Control of Non-Communicable Diseases 2016–2020. To date, this action plan serves as the guiding principle in combatting the growing burden of NCDs in the country. The

plan comprises four strategic areas: (a) advocacy, partnership, and leadership; (b) health promotion and risk reduction; (c) health system strengthening for early detection and management of NCDs and their risk factors, and (d) surveillance, monitoring, evaluation, and research. Specific interventions that have been prioritized are summarized in Table 3.1.

Table 3.1: Prioritized Specific Interventions in the Multisectoral Action Plan for NCDs

Health promotion and risk reduction strategies	
<ul style="list-style-type: none"> • Reduce tobacco use <ul style="list-style-type: none"> ○ Raise excise ○ Governance and legal framework (smoking ban, and so on) ○ Smoking cessation services • Reduce alcohol use <ul style="list-style-type: none"> ○ Strategy to reduce drinking ○ Strategy for excise ○ Update guideline on drink driving • Promote physical activities <ul style="list-style-type: none"> ○ Availability of facilities at schools, workplaces, communities, and so on ○ Promote healthy lifestyle among school children 	<ul style="list-style-type: none"> • Promote healthy diet <ul style="list-style-type: none"> ○ Policies and guidelines to promote healthy diet ○ Salt reduction strategy ○ Strategy for excise ○ Traffic light labeling for unhealthy items ○ Subsidize fruits and vegetables ○ Strategy to address trans fats • Promote healthy behaviors <ul style="list-style-type: none"> ○ Mass media campaign for NCD risks ○ Community-based multisectoral health promotion activities • Reduce household air pollution <ul style="list-style-type: none"> ○ Improved cook stove in households ○ Subsidize clean fuel for cooking
Health system strengthening for early detection and management of NCDs and risk factors	
<ul style="list-style-type: none"> • Access to health services <ul style="list-style-type: none"> ○ Review and improve strategies for early detection of NCDs and risk factors (healthy lifestyle centers, and so on) ○ Review and improve strategies for management of NCDs (integrate NCD management to primary health care [PHC] system) • Health workforce <ul style="list-style-type: none"> ○ Improve knowledge and skills on NCDs and risk factors 	<ul style="list-style-type: none"> ○ Review update NCD management guidelines ○ Establish quality assurance mechanisms for NCD management ○ Develop palliative care protocols for NCDs ○ Improve access to drugs and technologies ○ Improve information system for NCD management

99. **Promotional and preventive measures have been put in place to address behavioral risks.** The government has been taking measures to discourage unhealthy behaviors such as smoking, drinking of alcohol and sugar-sweetened beverages, the consumption of unhealthy diets, and sedentary lifestyles as listed in Table 3.1. Most of these behaviors are key risk factors for NCDs in Sri Lanka as discussed earlier, and indoor air pollution is also addressed. Cigarette excise in Sri Lanka is one of the highest in the world and alcoholic drinks are also taxed—both were proposed for increase in 2019. Given the increasing prevalence of overweight and obesity, sugar-sweetened beverages have also been taxed since 2017 and a unique traffic light labeling on bottles has been introduced, which classifies the sugar concentration in three colors

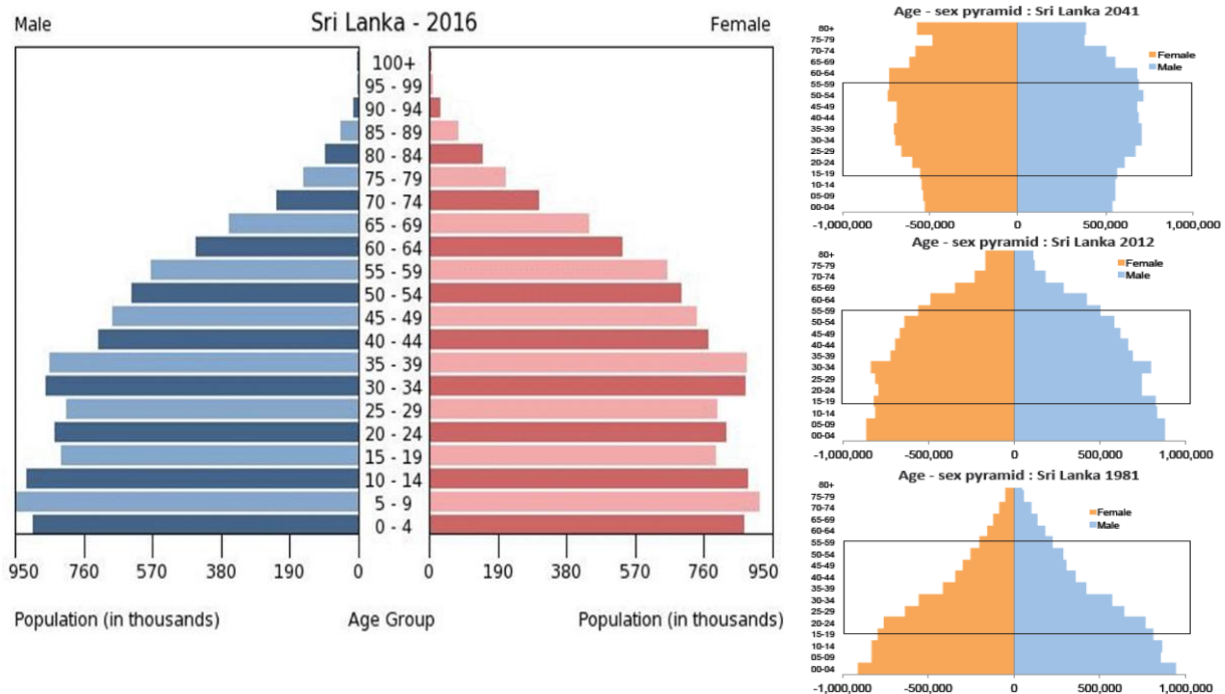
100. **Sri Lanka’s PHC system needs to be reorganized to better respond to the emerging burden of NCDs.** According to Figure 3.9: , a sizable proportion of working-age adults lose their lives from NCDs. Further, a large portion of working-age adults suffer from the nonfatal burden of NCDs that undermine the productivity of the workforce. It is therefore imperative for the government to invest in NCD prevention and treatment to maintain and maximize the potential of human capital in this age group. In addition to promotional and preventive measures, it is also critical to strengthen the health system to enable early detection of risk markers and diseases

followed by adequate therapies and treatments to mitigate the NCD burden. Table 3.1 lists the strategies to address this issue. Early detection of NCDs and related risk factors have been scaled up since the establishment of healthy lifestyle centers in 2011 (Mallawaarachchi et al. 2016). The NCD screening was supported by the Second Health Sector Development Program (SHSDP), through which the adult screening rate for hypertension has increased from a baseline of 3 percent to 27 percent in 2017 (World Bank 2019b). However, a study done in the Western Province revealed that patients who were successfully controlled for blood pressure among those identified as being hypertensive was less the 50 percent (World Bank 2017b). This poses a question on the quality of care in managing NCDs among those identified as high risk. The successor of the SHSDP ‘the Primary Health Care System Strengthening Project (PSSP)’ that commenced in 2018 has a focus on strengthening NCD services at the PHC level that builds on the government’s position paper on reorganizing the PHC system (MoH 2017; World Bank 2018d). Its activities cover most of the strategies listed in the health system strengthening component of Table 3.1.

3.6 POPULATION AGEING AND ITS IMPLICATIONS ON HEALTH CARE AND DEVELOPMENT

101. **The challenges of addressing the NCD burden are exacerbated by a rapidly ageing population.** Sri Lanka is ageing at a faster rate than the average for South Asian and other LMICs. Figure 3.13 shows the recent population pyramid and the changing shape over time. Although life expectancy at birth is high (75.3 both sexes) in Sri Lanka, the gap of 8.5 years between this and healthy life expectancy (66.8 years) shows that an increasing number of adults is surviving with morbidity and disability. These together with the pressure from social influences and changing expectations of the people have called for a revisiting of the current health service delivery model in Sri Lanka.

Figure 3.13: Population Pyramid Sri Lanka, 2016



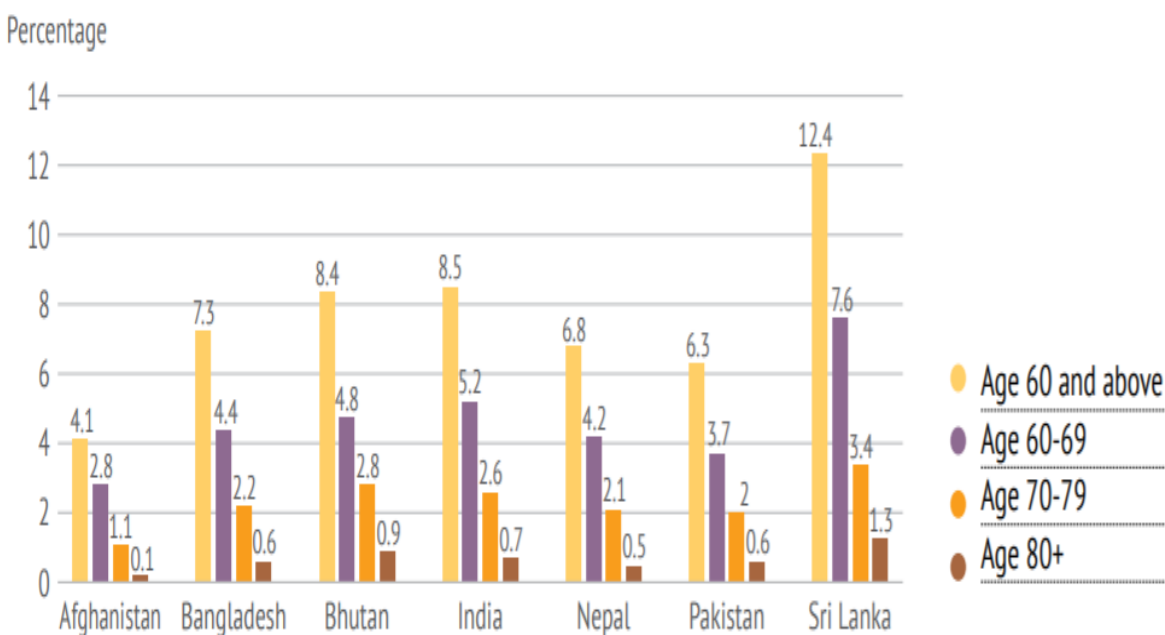
Source: Left: UN Population Division 2017 (UN 2017); Right: Annual Health Bulletin 2016 (MoH 2018a).

3.6.1 Trends in Population Ageing

102. **Population ageing is a key demographic challenge experienced in the 21st century by high-income, low-income, and middle-income countries.** An ageing population results from a rapid demographic transition, a process involving decreasing mortality and fertility combined with increasing life expectancy. Population ageing has been a central theme in the post 2015 development agenda, and countries have begun reforming national policies to promote healthy ageing and economic well-being and to create supportive environments for aged populations. Globally, the percentage of aged persons increased from 9.2 percent in 1990 to 12.5 percent in 2015. It is expected to reach 21.1 percent by 2050. A large majority of aged persons live in low and middle-income countries, and it is projected that by 2050, 8 out of 10 aged persons will live in those regions.

103. **During the last three decades Sri Lanka has been experiencing a rapid demographic transition, and population ageing has been one of its most significant consequences.** The decline in birth and death rates and the increase in life expectancy has resulted in significant changes in the age structure within the country. Ageing in Sri Lanka is accelerating more rapidly than in any other country in South Asia (Figures 3.14 and 3.15). Between 1981 and 2012, the proportion of the population above 60 years¹¹ increased from 6.6 percent to 12.4 percent (UNFPA 2017).

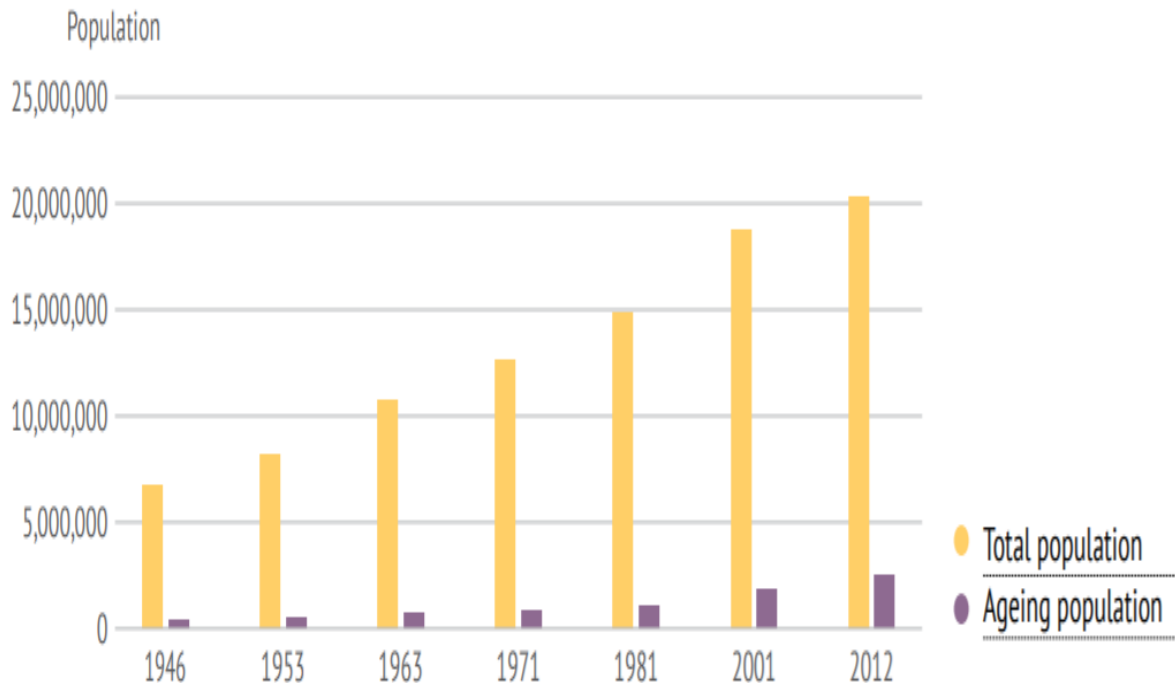
Figure 3.14: Ageing Population in South Asian Countries - 2012



Source: Ageing Population of Sri Lanka (UNFPA 2017).

¹¹ The term 'elderly' in Sri Lanka is defined as people above the age of 60, since the age of retirement in both the government and private sector is between 55 and 60 years.

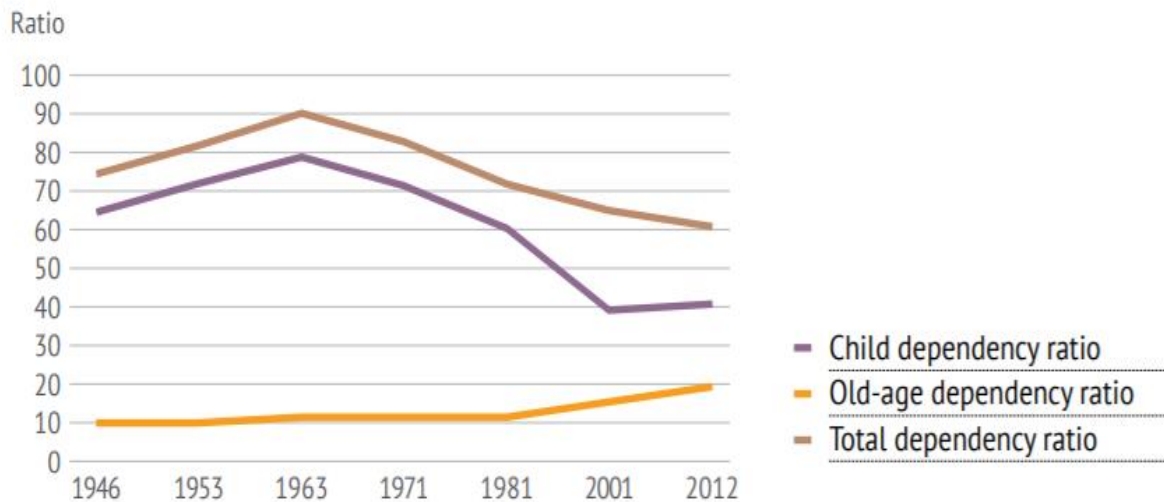
Figure 3.15: Ageing Population in Sri Lanka



Source: Ageing Population of Sri Lanka (UNFPA 2017).

104. **Rapid ageing has had an effect on the dependency ratio of the country.** During the 1981–2012 period, the median age of the Sri Lankan population increased from 21.4 years to 31 years, which is the highest median age among South Asian countries (UNFPA 2017). In 2012, 25.2 percent of the population were children under age 15 and 62.4 percent were working-age persons between the ages 15 and 59 (UNFPA 2017). Sri Lanka’s ageing index in 2012 was 47 — meaning that there were 47 old people per 100 children (UNFPA 2017). The changes in age structure have affected the dependency ratio in the country. As of 1981, there were 61 child dependents and 11 aged dependents (72 dependents in total) for every 100 working people. By 2012, the total dependents had decreased to 60—comprising 40 child dependents and 20 aged dependents for every 100 working persons (Figure 3.16). The decrease in the number of child dependents and the increase in the number of aged dependents will have major health and social consequences for the country. It is projected that the old age dependency ratio will continue to increase faster than the child dependency ratio, and by the mid-21st century 25 percent of the population (6.2 million people) will be over the age of 60 (UNFPA 2017). This situation is exacerbated by the shrinking support base for elderly people in the country. The number of people (ages 20–59) to provide support for old people decreased from seven in 1981 to four in 2012.

Figure 3.16: Trends in the Dependency Ratio in Sri Lanka



Source: Ageing Population of Sri Lanka (UNFPA 2017).

3.6.2 Socioeconomic Implications of Population Ageing

105. Population ageing will result in several social and economic implications for the country. The growing number of older people will have an impact on labor force participation. In certain sectors, employee productivity will begin to deteriorate with age, and a larger number of workers will exit the work force following compulsory retirement. On a macroeconomic level, the shrinking workforce will affect the national output of the country, when compared to countries with prime working-age populations. In addition, financing social security schemes—in the Sri Lankan context, the Public Sector Pension Scheme for government employees and the Employee Provident Fund for private sector employees—for increasing numbers will be a major burden to the state. From a human capital standpoint, increasing resources would need to be allocated to care for the elderly population, which in turn could crowd out resources for investing in the current and future workforces.

106. From a social perspective, a rising number of old people will increase the burden on families and pose a challenge to traditional social structures. Culturally, elderlies in Sri Lanka are cared for by extended family, particularly the women in the household. As of 2012, 99 percent of old people lived in households, while only 1 percent were institutionalized (UNFPA 2017). With the rising number of aged people and increasing employment pressures, and with many women working outside the home, the city, and even the country, this system is becoming less and less sustainable. As the number grows, elderly care will become a strain on the traditional support system, giving rise to an urgent need for affordable, high-quality elderly care facilities outside home. Global evidence suggests that the levels of family support in other Asian countries such as China, India, Japan, and Korea have been declining, and it is possible that Sri Lanka will face a similar situation (World Bank 2008). Elderly care institutions—including nursing homes, elder's homes, and day-care centers—must be strengthened and their quality must be improved in terms of physical infrastructure, equipment, and facilities so as to supplement family support with formal support, without damaging the traditional support structure.

107. **In light of the rapid population ageing process, Sri Lanka needs to revisit and reform policies and processes to cater to the specific needs of a growing elderly population.** Policy interventions will be required to address the consequences of population ageing and the increasing dependency ratio, and policy makers will need to consider strategies to reduce the old age burden on the working population. This involves reallocating resources and planning and developing the country's physical and social infrastructure at all levels. Well-developed health care and social services will play an integral role in developing aged-friendly societies that can support the needs of a changing population.

3.6.3 Population Ageing and Challenges to Health Care

108. **Ageing involves a natural deterioration of the body, which affects the physical, mental, and cognitive abilities of elderly persons.** In Sri Lanka, more than half of the elderly population reported physical or mental difficulties—21.8 percent had problems with their eyesight, 11.3 percent had difficulty hearing, 19.4 percent had difficulty walking, and 8.3 percent had difficulty related to cognition (UNFPA 2017). From a health care perspective, Sri Lanka requires sufficient geriatric care facilities to cater to illnesses and conditions that occur naturally as a part of ageing. Proper geriatric care can promote healthy ageing, which in turn can improve the quality of life, and prevent premature morbidity, disability, and death.

109. **NCDs are also a major cause of disability and death among the aged population.** Cardiovascular diseases, cancers, diabetes, chronic kidney diseases, arthritis, and musculoskeletal disorders are some NCDs most commonly associated with old age. In Sri Lanka, NCDs account for 88 percent of total deaths and 89 percent of DALYs among the aged population (IHME 2018b).

110. **Nutrition has a major impact on elderly health.** Elderly people are more susceptible to nutritional problems arising from issues with the body's digestion and absorption mechanisms, which deteriorate as part of the natural ageing process (HRCSL and Helpage Sri Lanka 2014). The elderly population is also more susceptible to malnutrition, and a recent study revealed that 30 percent of institutionalized elders in Sri Lanka were malnourished (De Silva et al. 2017). Overweight or obesity in elders is also a concern, and obesity in elderly women was recorded at 60 percent while obesity in elderly men was 43.8 percent (De Silva et al. 2017). According to the WHO, this dual burden of nutrition has a major impact on the ageing process, and on the morbidity and mortality of the aged population. Despite its importance, elderly nutrition is a relatively neglected area that needs to be given due attention.

3.6.4 Elderly Health Care Services

111. **In Sri Lanka, curative care health services for the elderly are delivered primarily through public hospitals, with some contribution from the private sector.** Preventive care services are implemented on the ground level through Medical Officers of Health and their field staff. A World Bank survey conducted in 2006 revealed that elderly people rely substantially more on the public sector health services than non-elderly people. About 70 percent of health care visits made by elderly people were to government hospitals (Samaraweera and Maduwage 2016). Despite this, a 2008 World Bank report noted a lack of organization in public health services, and an inability to provide integrated, continuing care for elderly patients at the primary care level (Samaraweera and Maduwage 2016). The absence of general/family practitioners at the primary

care level has been identified as a weakness in Sri Lanka's public health system. The importance of a general practitioner/family doctor in providing elderly health care has been recognized in Japan, another country dealing with a rapidly ageing population. Japan encourages its population to register with *Kakaritsuke* physicians, essentially family doctors practicing at the community level. The role of *Kakaritsuke* physicians is to provide basic health care needed to keep elderly people active and healthy, and to refer patients to specialists when necessary. These physicians follow a holistic, patient-centric approach and attend to patients during different periods of their life from early years to old age.

112. The growing requirement for long-term care and trained caregivers is a challenge to the health care system. Long-term care in Sri Lanka is currently not provided through the public health system, and is usually provided by the family or by private caregivers, leading to high OOP spending. Long-term care has been identified as a priority in the draft National Elderly Health Policy, which proposes the establishment of at least two long-term care institutions per province (Institute of Policy Studies 2017). In addition, a health care system catering to an elderly population must also be equipped to provide palliative care for terminally ill patients (particularly among the oldest old—above 80 years) aimed at improving a patient's quality of life.

113. Sri Lanka's health care system will require strengthening, reorientation, and coordination to meet the needs of the growing elderly population. Responding to the requirements of an ageing population will involve changes in health care service delivery. Dedicated geriatric care units with specialized medical and nursing staff will be necessary to cater to the physical and mental conditions, and long-term care of older people. Skilled health care personnel, including medical officers, nurses, and caregivers, must be trained to ensure adequate human resources in the geriatric sector. Elderly patients may suffer from several conditions, requiring different types of medical attention. A holistic approach to elderly health care has proven benefits over compartmentalized care, and evidence from other countries has demonstrated the need for a multidisciplinary service in geriatric wards. Collaboration between different members of a primary care team with clear referral pathways is essential for comprehensive geriatric care. Considering their role in supporting elderly care within the community, it is also important to include social workers in the multidisciplinary approach to elderly care. The lack of health personnel trained in geriatric care is one of the primary challenges to developing this field.

114. Several initiatives have already been planned to make Sri Lanka's public health care system more elderly friendly. Health clinics for the elderly and elderly-friendly wards for district-level hospitals have been planned, and stroke units are being established in many public health institutions (Samaraweera and Maduwage 2016). In terms of preventive care, in 2011 the MoH introduced healthy lifestyle centers to provide screening for NCDs at the community level. A primary aim of these centers is to reduce the risk of NCDs in the 40–65 year age group through early detection and specialized care as needed. In terms of infrastructure and equipment, a state-of-the-art tertiary care geriatric hospital is being constructed and will play an integral role in facilitating geriatric medicine programs and increasing the number of trained medical staff (Institute of Policy Studies 2017). The Sri Lanka Association for Geriatric Medicine was established in 2014 with a mission to promote geriatric education within the medical community and the general public.

3.6.5 Developments in Policy and Practice

115. **The provision of elderly-oriented services in the health care and social care sectors is one of the biggest concerns for a country dealing with a rapidly ageing population.** In the recent past, the GoSL has initiated several measures to respond to the changing population dynamics, and several policies formulated in the last decade have recognized elderly health care as a national priority. A National Elderly Health Policy, which is currently in the draft stage, lays out the health care needs of the country's elderly population and the government's plan to meet these needs. The enactment of the Protection of the Rights of Elders Act in 2000, the establishment of the National Council for Elders, and the introduction of the National Policy for Senior Citizens in 2011 have also helped promote the rights and needs of elders, and have set the stage to create better social networks and elderly care facilities. Sri Lanka has also taken steps to establish its first aged-friendly city in Wellawaya, in the Monaragala District (MSS et al. 2014). As a first step in this process, a baseline assessment of PHC facilities was conducted to assess aged-friendly design, signage, human resources, tools and technologies, and interventions available to prevent and control NCDs.

116. **It is often argued that employees' productivity reduces as they age, and organizations often refrain from investing in aged workers, assuming that there will be little or no return on investing in that age group.** According to Mincer (1996), however, improved population health and rising life expectancy are associated with a longer investment payback period which helps ensure greater return on investment in people. Aaltio, Salminen, and Koponen (2014) stress that the assumption that human abilities and skills decline with age has been rejected. Scientific literature notes that human capital development in the context of population ageing concentrates not only on the older people but it also highlights the potential of young people. Older, less educated workers will be replaced by younger, more educated people.

117. **It could be said that population ageing opens up new opportunities for human capital development.** On the one hand, due to changing societal values, young people today are more focused on education and are interested in quickly developing new technologies. On the other hand, the increasing number of older persons allows them to use their accumulated knowledge and experience longer. As such, this context of population ageing increases the importance of investment in human capital.

3.6.6 Recommendations to Address Population Ageing

118. **Sri Lanka is currently in a period of demographic bonus.** Sri Lanka's demographic structure is at a stage where the working-age population is significantly larger than the dependent population—which can be considered a window of opportunity to align policies and services with future needs (Samaraweera and Maduwage 2016). A multipronged strategy is needed to combat the health and nutrition challenges of an ageing population, and six key recommendations as provided below should be considered when formulating a strategy in this regard.

119. **First, the population need to be better informed of major diseases and risk factors that predominantly affect elderlies.** Diseases that dominate the burden among the aged population are predominantly NCDs. A significant portion of burden of NCDs can be prevented, delayed, or mitigated by reducing exposure to lifestyle-related risk factors, early detection of risk

markers and diseases followed by adequate care. The population need to be communicated the various options that are available to reduce the burden of relevant diseases to become more capable of making informed decisions.

120. **Second, the information will need to be complemented with an adequate enabling environment.** It is well acknowledged that knowledge of healthier options alone does not readily translate into healthier practice of the population. The population need to be supported by an enabling and supporting environment such as opportunities for physical exercise, access to healthier and affordable diet, support for abstaining from unhealthy behaviors, or access to screening and routine health examinations. Activities that prevent isolation and encourage inclusion to the society is of particular importance to the aged population in maintaining mental well-being. As the issues of elderlies are multifaceted and will cut across different sectors, a multidisciplinary/sectoral coordination mechanism needs to be in place to ensure that culturally and age-appropriate supporting programs are available at all levels. In fostering a sound enabling environment, research and evidence-generating activities need to be promoted.

121. **Third, long-term health care provision will need to be upgraded.** Long-term care will need to include both home-based and institution-based care. Such care will also require an expansion in staff trained to care for elderly patients, including meeting their nutrition needs. The community can play a critical role to fill the gap that may exist in home- and institution-based care, particularly in maintaining mental well-being among the aged population. An example from Thailand that involves the community as an essential element of long-term care is provided in Box 3.1. On institution-based care, optimal resources need to be allocated to facilities to ensure provision of equitable, integrated curative, preventive, and rehabilitative services at all levels. Along the line, the government needs to establish a mechanism to strengthen policy guidelines and service delivery measures for comprehensive health services for elderlies.

Box 3.1: Meeting the Health Care Needs of an Ageing Population: Example from Thailand

Developing Support Systems for Elderly Care: The Thai Experience

In Thailand, steps have been taken to build a strong social security network and to create conditions for a better quality of life for elderly people. The Thai approach to providing long-term care for elders has been to rely on a combination of family assistance and supportive health care and social care systems within local communities. Community and local administrative organizations play a central role in implementing and financing this system. This community-based long-term care system involves several components including databases on elderly persons, elderly clubs, and volunteers to provide home-based care and care for those who are home or bed bound. In 2003, Thailand launched a program 'Home Care Service Volunteers for the Elderly'. As of 2013, 51,000 volunteers had been enlisted and were providing care to nearly 800,000 elderly people (Knodel et al. 2015).

122. **Fourth, inpatient services need to be strengthened and expanded.** The demand for inpatient care at hospitals will rise as the aged population grows over time. Apart from investing in constructions of new buildings, it would be important to maximize the use of existing hospital capacities. The current bed occupancy is tight in higher-level hospitals while the beds are not fully used to their potentials in lower-level hospitals. Building the capacity of first-level hospitals to become more capable of accommodating less severe cases will free up spaces from secondary and tertiary hospitals to care for more severe patients who are anticipated to increase with the ageing

population. Network of hospitals will need to be strengthened to cope with such an increase in demand and usage. The government needs to establish a mechanism to build capacity of health and other relevant service providers for care of elderlies.

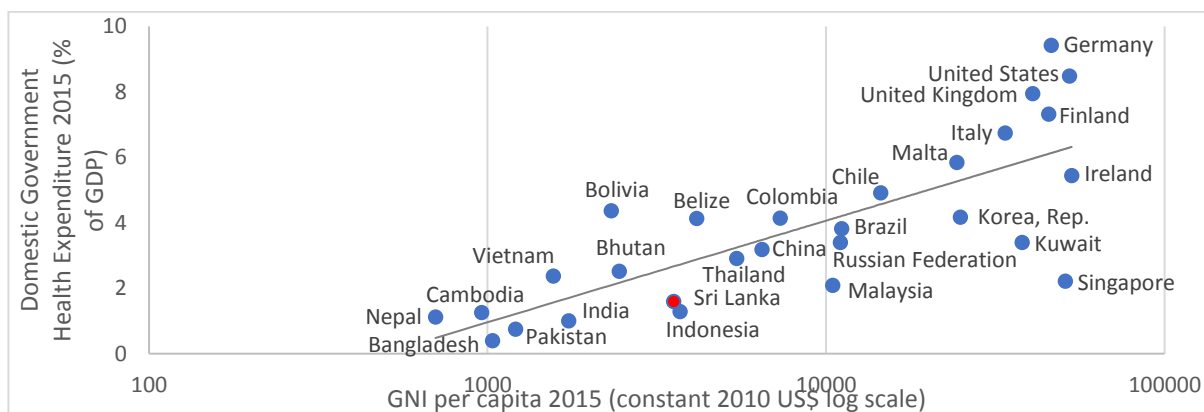
123. Fifth, human resources need to be expanded in terms of both number and specialties.

As part of the expansion of long-term and inpatient care, the demand for health care personnel will increase at various levels, including medical specialists and nurses trained in health care related to geriatric diseases and their management and treatment. Older people usually develop issues that are unique and are a direct result of ageing, in addition to having medical conditions such as hypertension and diabetes. These can include difficulties in walking and problems with balance, making them vulnerable to falls; special dietary needs; constipation and incontinence; psychological issues such as problems with memory, dementia, loneliness, and bereavement; bone fragility; and chronic debilitating illnesses such as Parkinson’s Disease. Managing the health and wellness of an older person usually means managing varying combinations of these issues. This requires specialist knowledge, in coordination with other services and systems for care coordination, for the best outcomes.

124. Sixth, a sustainable financing mechanism needs to be developed to meet the costs of health care that will rise with the ageing population.

Public financing of health services has been low, particularly in recent years. In 2016 Sri Lanka’s government health expenditure amounted to 1.68 percent of the country’s GDP and 8.56 percent of total government expenditure¹² (WHO 2018). Sri Lanka’s government health expenditure as a share of the GDP was relatively low for a middle-income country, well below China, Malaysia, and Thailand, although higher than some LMICs such as India, Pakistan, and Bangladesh (Figure 3.17). Public health care is financed through general tax revenue, and is managed by the MoH and its nine provincial counterparts. Despite the provision of free health care, public spending on health has constituted only 40–45 percent of the country’s total current health expenditure, while OOP health payments have contributed around 50 percent of the total current health expenditure (Figure 3.18). A sound health financing mechanism will need to be developed to enable the country to meet the health care needs of an aged population. Box 3.2 provides an experience from Japan in its effort to meet the increasing financing needs by introducing an extra insurance scheme for elderlies.

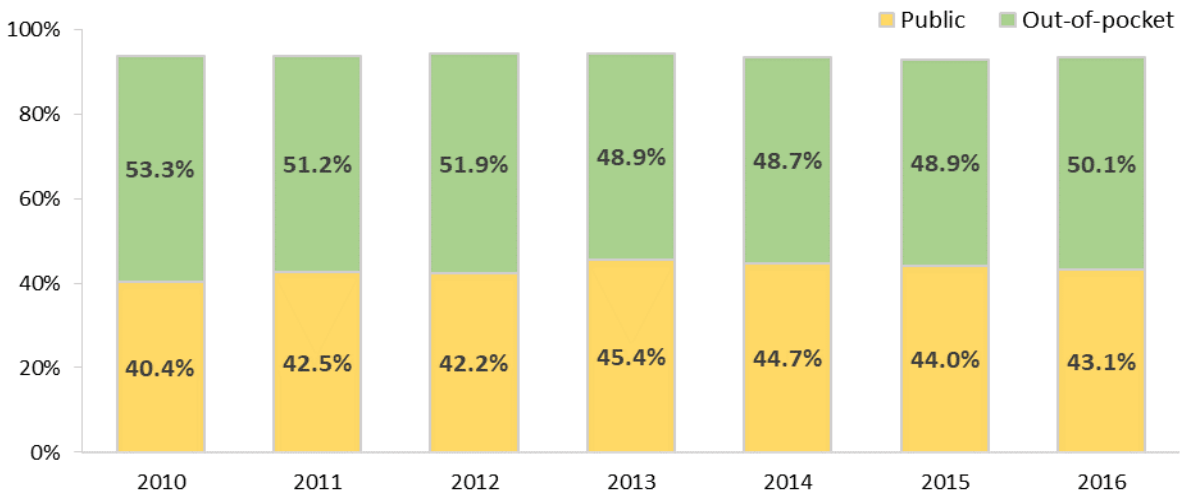
Figure 3.17: Domestic General Government Health Expenditure (% of GDP)



Source: World Development Indicators.

¹² WHO Global Health Expenditure Database (<http://apps.who.int/nha/database/Select/Indicators/en>)

Figure 3.18: Share of Public Funding and OOP Payment 2010–2016



Source: WHO Global Health Expenditure Database

Box 3.2: Meeting the Health Financing Needs: Example from Japan

Japan’s Efforts to Meet the Financial Burdens of an Ageing Population
 Japan has taken great strides toward creating a more aged-friendly society. Japan’s Long Term Care Insurance scheme functions on a need basis and provides social care to people over 65 years of age. Funded partly by taxation and partly by a compulsory premium paid by those over 40 years of age, the insurance covers a range of services including home services, day care and nursing homes, and health care service facilities. Though it has some issues, this scheme has gained popularity in Japan and has helped reduce the burden on the elderly and their families.

3.7 Conclusions and Recommendations for Sri Lanka’s Health Care Sector

125. Given the persistent issues and prevailing challenges surrounding health as described in this chapter, Sri Lanka needs to make a move forward in addressing those issues and challenges in advancing the country’s human capital development agenda. The following paragraphs provide some recommendations derived from the above discussions. (a summary of recommendations is provided in Annex A)

126. **Sri Lanka needs to revisit the nutrition strategies and refocus to address the transgenerational transmission of malnutrition from a life cycle perspective.** As was shown by the two rounds of DHSs in 2006 and 2016, the country has not progressed in reducing stunting during the 10 years. This is a worrying situation even if the rate is more favorable than other countries in the region. Although the exact nature of this stagnant progress remains unclear, undernutrition is known to be passed on to the next generation (for example, a child born to an undernourished mother is likely to face the same issue in the life course). Therefore, a life cycle perspective becomes critical in addressing the issue. Nutrition interventions should not just target the children. The nutritional status of mothers is a critical determinant of newly born babies, and so intergenerational targeting is crucial in preventing undernutrition of the offspring. Second, in addition to the biological factors of mothers that can affect the nutrition of their children, the caregivers’ behaviors have critical roles in determining the child’s nutritional profile. The caregivers of well-nourished children share common behaviors that have positive implications on

the child's nutrition (that is, positive deviance). Alongside the more direct clinical interventions, such as supplementary feeding, there is a major potential for child's nutritional improvement by changing the behaviors of caregivers. This kind of intervention has been less rigorously implemented in the country. Given the stagnant progress in nutrition despite the wide provision of many other nutrition interventions, behavioral change interventions warrant due consideration.

127. Improving nutrition requires a multisectoral approach that goes way beyond the health sector. While the direct causes of undernutrition may be addressed by health care services, the underlying causes may not. Food security and safety, maternal and child practices, agriculture, education, WASH, and other sectors have major bearings on nutrition. Although the National Nutrition Policy covers a wide spectrum of approaches that span across sectors, the degree of those interventions being regarded as relating to nutrition can vary. Mainstreaming nutrition interventions in the policy of all sectors at all levels would be critical in pushing the agenda of multisectoral nutrition strategies forward. Further, the critical knowledge gap in those interventions is a major limitation that can hinder adequate resources being allocated to those interventions. Developing the knowledge base on the effectiveness and efficiency of interventions would be highly recommended. Along this line, the information management of nutrition-related data needs to be strengthened to foster timely data-informed decision making, including data on investment and spending. At the time of writing this report, the World Bank was reviewing the past budget and expenditure on nutrition programs that would provide critical intelligence on how effectively resources had been used and how allocation could be improved.

128. Sri Lanka needs to strengthen and reorganize the health systems and programs to respond to the increasing demand for emerging health challenges such as NCDs among the working-age population and elderly care. A growing demand for health care is anticipated with the rapidly ageing population and rising burden of NCDs. The immediate priority would include preventive strategies by reducing exposure to major risk factors for NCDs such as smoking, alcohol use, unhealthy diet, and lifestyle. A number of policy-level interventions are under way such as excise taxes, labels on products that alert consumers from potential harms from consumption (cigarette packs and sugar-sweetened beverages), and banning sales to minors. While policies and regulations may be in place, enforcement can be strengthened alongside further tightening of the regulations. This would require intersectoral initiatives with adequate resources allocated to relevant authorities. On the promotive aspects, investment in facilities for physical exercise and mental well-being should be scaled up which are currently not widely available to the adult and older population. Early detection and management of risk factors and NCDs is another area that warrants due attention. The provision of public health services is mostly limited from 8 a.m. to 4 p.m. when the working population do not have access, particularly for screening services for NCDs at healthy lifestyle centers. The system should be scaled up which would involve reorganizing the service delivery mechanisms. One such strategy may include collaboration with the private sector. As discussed previously, the majority of outpatient services are provided by the private sector which operates after-hours. Leveraging the existing private sector with public financing mechanism could be considered in various services including diagnostic investigation and drug provisions. For NCD treatment, the capacity of primary medical care institutions should be developed by adequate staffing and equipment so that nonsevere cases can be confidently managed at this level. Concurrently, a clear referral pathway should be defined to avoid overburdening the higher-level institutions due to patients bypassing the primary level.

129. **Special arrangements are needed to provide holistic support to elderlies.** Elderly care requires a multidisciplinary approach, for which health care is a critical element. This is an emerging area that needs to be addressed by multiple factors. First, the policies and services need to be aligned with the future needs in establishing a network of supportive activities provided by different sectors and entities, including the community. The leading ministry may not be the MoH, although the MoH will play the key role in providing geriatric care. Nonetheless, not all health care providers may have the sufficient skills and experiences to play the role. This is an area that needs investment. In some institutions, specialized geriatric care units may be established to cater for the special needs of elderlies. Further, a crucial aspect of elderly care is its long-term nature. Addressing this nature would necessitate organization of a combination of facility-based and home-based care (including community-based care). These new arrangements certainly come at a cost. In providing the services for elderly care, sustainable financing mechanisms need to be established that is appropriate for the context of Sri Lanka. Finally, appropriate opportunities for elderlies for extended years of services will likely translate into healthier population, although it should be balanced with the opportunities for younger generations who may be equipped with novel technologies and skills.

CHAPTER 4. KEY CHALLENGES FOR HUMAN CAPITAL DEVELOPMENT: IMPROVING LEARNING OUTCOMES

4.1 INTRODUCTION

130. **The key education challenge under the framework of the HCP is to improve learning.** This is especially important for Sri Lanka as it seeks to develop the human capital required for an internationally competitive upper-middle-income economy. This chapter discusses a set of priority policies to increase learning, drawing on the framework of the Promise of Education (WDR 2018). The chapter begins with a new area that is becoming increasingly important for human capital policy. It is the development of socio-emotional skills, which play a vital role in successful employment performance in labor markets and in enhancing learning outcomes in the education system. Socio-emotional skills are also extremely important for the promotion of a peaceful and cohesive society. The second policy priority is the importance of early learning. Children who fail to learn early face a cumulative deficit which makes it extremely difficult to catch up later. A high-quality education system needs to have a sound foundation for learning in the early years. The third policy priority is the new and changing role of teachers in the learning process. The pedagogical methods that address the learning needs of modern children are rapidly evolving. This in turn is transforming teacher development and teacher management. The fourth policy priority is the use of technology in education. Rapidly evolving technologies are transforming the learning environment. Sri Lanka needs to be able to obtain the benefits of technology to promote learning. The fifth policy priority is the measurement of cognitive and socio-emotional skills and the use of information in developing programs to increase these skills. The sixth and final section of the chapter discusses gender differences in learning, which need to be addressed as a priority in the future.

4.2 INVESTING IN SOCIO-EMOTIONAL SKILLS FOR SUCCESS

131. **Socio-emotional skills are now widely acknowledged to be critical for success in today's workplace, as well as in fostering a stable and prosperous society.** These skills are generally defined as “the learned competencies that help us understand ourselves, help us get along with others, and help us solve important social problems and resolve conflicts” (Guerra 2015). They are important not only for relating in the social and work context but are increasingly recognized as important to the development and use of cognitive skills (OECD 2018a). One of the most widely used frameworks for socio-emotional skills is the Big Five model. This model categorizes socio-emotional skills into five broad traits: (a) openness to experience (open-mindedness), (b) conscientiousness (task performance), (c) emotional stability (emotional regulation), (d) extraversion (engaging with others), and (e) agreeableness (collaboration) (OECD 2015b). Under each of these categories, there is a cluster of mutually related social and emotional skills (OECD 2015b). Box 4.1 describes the Big Five model in greater detail. In addition, ‘grit’, also known as persistence or determination, is another widely acknowledge socio-emotional skill that does neatly fit into the Big Five categories. Together these skills form the bedrock of the discussion around socio-emotional skills and their value in 21st century life and workplace.

Box 4.1: The Big Five Factors

‘The Big Five Factors’ is a classification system of personality that distinguishes five basic dimensions: extraversion, agreeableness, conscientiousness, emotional stability (also known as neuroticism), and openness to experience.

Extraversion: Gregariousness, assertiveness, activity, adventurousness, enthusiasm, warmth

Agreeableness: Trust, straightforwardness, altruism, compliance, modesty, sympathy

Conscientiousness: Efficiency, organization, dutifulness, achievement striving, self-discipline, deliberation

Emotional stability: Anxiety, irritability, depression, self-consciousness, impulsiveness, vulnerability

Openness: Curiosity, imagination, aesthetics, actions (wide interests), excitability, unconventionality

Extraversion is perhaps the most widely used and most familiar factor. Agreeableness may be characterized by traits such as being caring, modest, and trusting. Conscientiousness denotes dutifulness, striving to achieve, and acting in a goal-directed manner. Emotional stability refers to the ability to deal with negative emotional experiences and stressors and is central to managing emotions. Finally, openness refers to the ability to be open to new experiences.

Source: OECD 2015b.

132. **A subset of these social-emotional skills (known as the PRACTICE skills) are considered especially important to employers.** The skills that employers’ value have been categorized into eight skills groups, summarized in the acronym PRACTICE (Guerra, Modecki, and Cunningham 2014). The eight skills identified within the PRACTICE framework are as follows: Problem-solving, Resilience, Achievement motivations, Control, Teamwork, Initiative, Confidence, and Ethics. The PRACTICE framework draws on and is consistent with frameworks such as the Big Five model. However, the PRACTICE framework was specifically designed to provide guidance for labor-market-oriented skill-building policies and programs and to frame the socio-emotional skills dialogue in a language that is consistent with intervention programs to promote job-oriented noncognitive skills. Table 4.1 shows how these skills relate to the Big Five personality traits and presents their neurobiological foundations as well.

Table 4.1: PRACTICE Skills, Sub-skills, Big Five Traits, and Biological Foundations

PRACTICE: Skills for Success	Sub-skills (Skills, Attitudes, Beliefs, Behaviors) Identified by Employers	Related Big Five Personality Traits	Neurobiological Foundations
Problem-solving	<ul style="list-style-type: none"> • Social information processing skills • Decision making • Planning skills 	<ul style="list-style-type: none"> • Conscientiousness 	<ul style="list-style-type: none"> • Executive attention systems—ability to focus attention and to inhibit negative emotionality
Resilience	<ul style="list-style-type: none"> • Stress resistance • Perseverance • Optimism • Adaptability 	<ul style="list-style-type: none"> • Conscientiousness (grit) • Neuroticism 	<ul style="list-style-type: none"> • Biological system focused on preventing harm

PRACTICE: Skills for Success	Sub-skills (Skills, Attitudes, Beliefs, Behaviors) Identified by Employers	Related Big Five Personality Traits	Neurobiological Foundations
Achievement motivation	<ul style="list-style-type: none"> • Mastery orientation • Sense of purpose • Motivation to learn 	<ul style="list-style-type: none"> • Conscientiousness (grit) • Openness to experience 	<ul style="list-style-type: none"> • Biological tendency to seek out new environments • Orienting sensitivity—tendency to respond to sensory stimulation
Control	<ul style="list-style-type: none"> • Delay of gratification • Impulse control • Attentional focus • Self-management 	<ul style="list-style-type: none"> • Conscientiousness 	<ul style="list-style-type: none"> • Executive attention systems—ability to focus attention and to inhibit negative emotionality • Self-regulatory system—delay of gratification
Teamwork	<ul style="list-style-type: none"> • Empathy/prosocial • Low aggression • Communication skills • Relationship skills 	<ul style="list-style-type: none"> • Extraversion • Agreeableness 	<ul style="list-style-type: none"> • Biological system promoting active approach and exploration—tendency to enjoy social interaction and positive moods
Initiative	<ul style="list-style-type: none"> • Agency • Internal locus of control • Leadership 	<ul style="list-style-type: none"> • Conscientiousness • Openness to experience 	<ul style="list-style-type: none"> • Biological tendency to seek out new environments • Orienting sensitivity—tendency to respond to sensory stimulation
Confidence	<ul style="list-style-type: none"> • Self-efficacy • Self-esteem • Positive identity 	<ul style="list-style-type: none"> • Neuroticism 	<ul style="list-style-type: none"> • Biological system that is focused on preventing harm
Ethics	<ul style="list-style-type: none"> • Honesty • Fairness orientation • Moral reasoning 	<ul style="list-style-type: none"> • Conscientiousness 	<ul style="list-style-type: none"> • Biological system promoting active approach and exploration—tendency to enjoy social interaction and positive moods

Source: Guerra et al. 2014.

133. **Although socio-emotional skills are developed from early childhood through early adulthood, research suggests that middle childhood is the optimal time to invest in the development of the PRACTICE skills.** Science informs us that there are key markers of neurobiological and psychosocial readiness (for the development of socio-emotional skills) at different stages of childhood and early adulthood (Guerra, Modecki, and Cunningham 2014). As such, the PRACTICE skills are developed at different stages of a person’s life, from early childhood through adulthood—and any effective investment in socio-emotional skills enhancement policies and programs requires a sound understanding of developmentally appropriate interventions. Table 4.2 shows the optimal stages of development for the PRACTICE skills. While these skills are cultivated through adulthood, the evidence base suggests that the

optimal stage for development of PRACTICE skills is during middle childhood (Durlak et al. 2011). As Table 4.2 indicates, this is the optimal age for the development of all eight PRACTICE skills.

Table 4.2: Stages of Development for Social-emotional Skills

	Early-Childhood (0–5 Years Old)	Middle Childhood (6–11 Years Old)	Adolescence (12–18 Years Old)	Emerging Adulthood (19–29 Years Old)
Problem-solving	Foundational	Optimal	Optimal	Reinforce
Resilience	Optimal	Optimal	Reinforce	
Achievement motivations	Optimal	Optimal	Reinforce	
Confidence	Optimal	Optimal	Optimal	Reinforce
Teamwork	Optimal	Optimal	Reinforce	
Initiative	Optimal	Optimal	Optimal	Optimal
Communication	Foundational	Optimal	Optimal	Reinforce
Ethics	Foundational	Optimal	Optimal	

Source: Guerra 2015.

134. **Schools and, more importantly, teachers have an important role to play in cultivating these skills.** Clearly, since middle childhood is a critical stage in the development of socio-emotional skills, schools and teachers particularly have a vital role in developing these skills. There are a range of programs to develop these skills for the middle-childhood age group, in the school context. These include (a) training of teachers to possess social-emotional skills that they can model in the classroom, (b) classroom lessons and activities to improve the classroom climate, (c) social-emotional skills curriculum taught as a school subject, (d) teaching practices that incorporate social-emotional learning into the methodology for teaching academic content, and (e) after-school enrichment programs (Guerra, Modecki, and Cunningham 2014). Programs such as Peru’s *Escuela Amiga* have developed a model to target the social-emotional learning course for teachers and principals as they need to have these skills if they are to transfer them to students (World Bank 2012). Peru has also developed a two-year program for K-11 to develop socio-emotional skills of students through the curriculum (World Bank 2015). Other countries have explored options to integrate socio-emotional skills development initiatives into other programs. Regardless of whether they are separate programs or integrated into other programs, teachers have an important role in developing and implementing the programs that will foster these skills.

135. **At present, most assessments of socio-emotional skills are school based and conducted by teachers, and large-scale international assessments of these skills have been quite limited.** Most countries have not adopted formal standardized assessments of students’ socio-emotional skills, but many do provide guidelines to assess the skills. Many of these assessments are formative and countries include the evaluation of these socio-emotional skills as part of an end-of-term student assessment (OECD 2015b). In some countries, such as in Canada (Ontario province), a report cards include a template in which ‘learning skills and work habits’ are evaluated separately from marks for subjects (OECD 2015b). These kinds of assessments are likely to be based on teachers’ observations and their judgement of students’ daily behavior in school. Some countries

have developed specific tools for teachers to design their assessment as Boxes 4.2 and 4.3 show. In some countries, self-assessment is used to enhance the student’s self-awareness. For example, in Ireland, self-assessment is incorporated into the curriculum subject of Social, Personal and Health Education (OECD 2015b). While school-based assessments are plentiful, large-scale, international efforts to measure these skills are limited. The OECD has initiated a longitudinal study to measure these skills in the age group of 10–15 years— using the theoretical framework of the Big Five model. The study began in mid-2017 and will be carried out over a three-year period, with the main fieldwork taking place in 2019 and the findings being released later in 2020 (OECD 2018a). Although data from large-scale assessments are limited, there are a variety of local and national-level assessment models to consider for the assessment of socio-emotional skills.

Box 4.2: Tools for Assessing Social and Emotional Skills in Schools: An Example from Canada

“In British Columbia, Canada, “social responsibility” performance standards have been developed by the Ministry of Education for voluntary use in schools. The standards involve four assessment criteria: 1) contributing to the classroom and school community; 2) solving problems in peaceful ways; 3) valuing diversity and defending human rights; and 4) exercising democratic rights and responsibilities. There are four scales for different grade groups (kindergarten to 3rd grade, 4th to 5th grade, 6th to 8th grade, and 8th to 10th grade). The assessment is based on accumulated teacher observations over time, both in the classroom and in the playground.”

Source: OECD 2015b.

136. **Moving forward, it would be useful for Sri Lanka to explore how schools can further promote socio-emotional skills and how these skills can be assessed in the school context.** Sri Lanka recognizes the importance of cultivating socio-emotional skills, and its ‘World of Work’ curriculum is a strong step forward in promoting the development of these skills, particularly for the labor market. However, it is unclear whether there has been enough of a focus on preparing teachers to promote these skills in the classroom context. As discussed earlier, for teachers to effectively cultivate these skills in their students, they themselves need to possess the skills to some degree and have a strong understanding of pedagogical practices that will enhance these skills. Sri Lanka’s teaching cadre may benefit from further training in this area. Likewise, school leadership may also benefit from further training and development in this area. To understand whether socio-emotional skills promotion efforts are effective, they must be assessed. As Sri Lanka explores avenues to develop the socio-emotional skills of its students, it should also develop a system to assess these skills—to ensure that its students develop the socio-emotional skills needed for the future of work.

Box 4.3: Tools for Assessing Social and Emotional Skills in Schools: An Example from Belgium

“In Flemish Belgium, tools are available to measure primary school students’ involvement and well-being in the classroom. The most commonly known and used tool has been developed by the Centre for Experience-based Education (CEGO). Schools can use the CEGO scale to assess various behaviors of primary school students; these include acting spontaneously, having an open mind and self-confidence.”

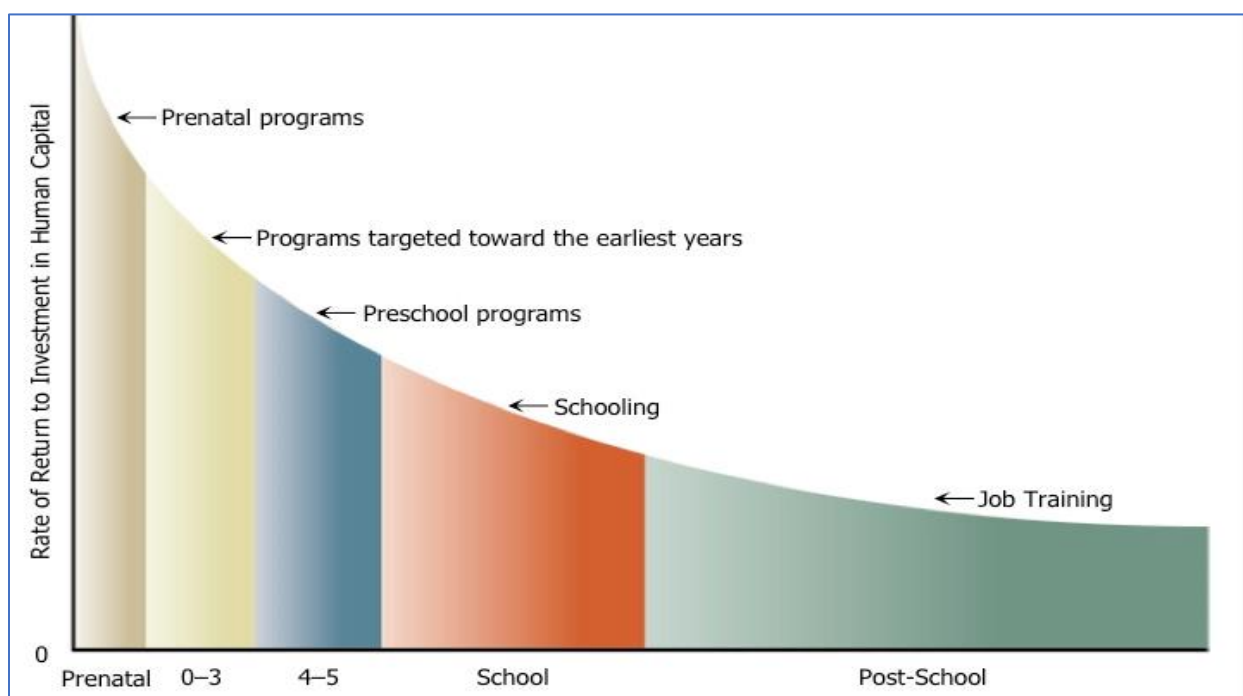
Source: OECD 2015b.

4.3 INVESTING IN THE EARLY YEARS

137. **Early childhood care and education (ECCE) establishes the foundation for human capital development.** Early childhood is typically considered to be the period from conception till the transition into primary school, at age 6 or 7. It is now well established that investing in a child

at this early stage has high returns (see Figure 4.1). Investment in early childhood is not only one of the most efficient strategies for building human capital, but also one of the most equitable—with the highest returns for the most disadvantaged children (Heckman and Masterov 2007). This is because early childhood is one of the most potent periods of human development, with approximately 85 percent of brain development taking place in the first five years of a child’s life (Shonkoff and Phillips 2000). During this time, the foundations of a human being’s physical, cognitive, linguistic, and socio-emotional skills are developed. As such, this period offers a critical window of opportunity, where early investments can set a child (particularly a disadvantaged one) on the right trajectory for human capital development. Conversely, disadvantages at this stage can leave children struggling later in life. Not surprisingly, investing early is the key to efficient and effective investment in human capital development.

Figure 4.1: Rates of Return to Human Capital Investment

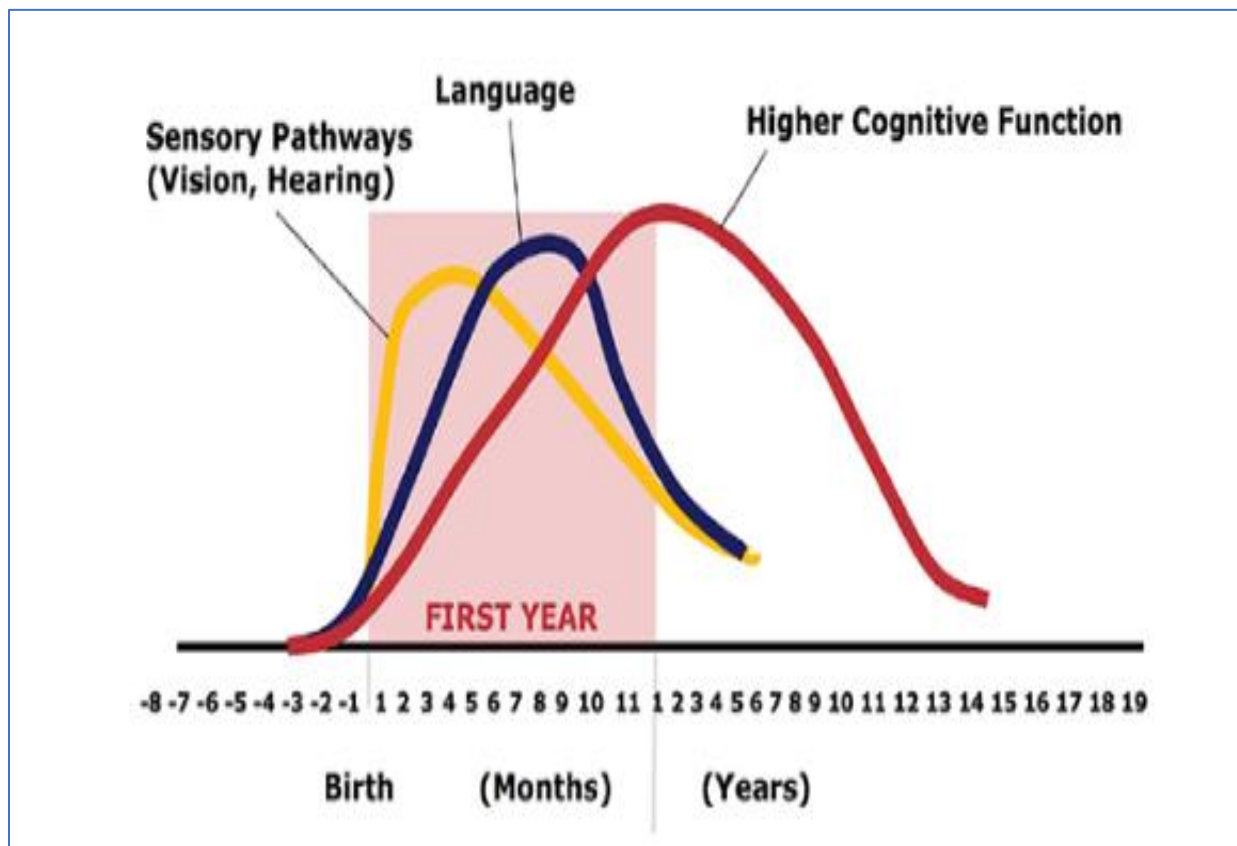


Source: Heckman 2017.

138. The first ‘1,000 days’ of a child’s life is particularly critical for brain development. It is now well established that first 1,000 days of a child’s life, roughly spanning the period from conception to age 2, is critical for brain development. The most rapid period of brain growth and its period of highest plasticity is in the last trimester of pregnancy and the first two years of life. At birth, the brain continues to develop rapidly, particularly areas such as the hippocampus and the visual and auditory cortices (CDC 2007). As Figure 4.2 indicates, in the first year after birth, there is rapid growth of the language processing areas as well as early development of the prefrontal cortex that controls ‘higher processing’ such as attention, inhibition, and flexibility (CDC 2007). Research shows that disparities in vocabulary between children with different socioeconomic backgrounds begin to appear around 18 months. This period—the first 1,000 days—is a potent period in which providing optimal nutrition ensures healthy and normal brain development; likewise, it also the period when the brain is most vulnerable to any nutritional deficits. In particular, toxic stress at this stage weakens the architecture of the developing brain,

which can lead to lifelong problems in learning, behavior, and physical and mental health (CDC 2007). Interventions, not only for the child but also for the mother during pregnancy, are crucial to the optimal development of a child’s brain development and ultimately to the child’s learning outcomes.

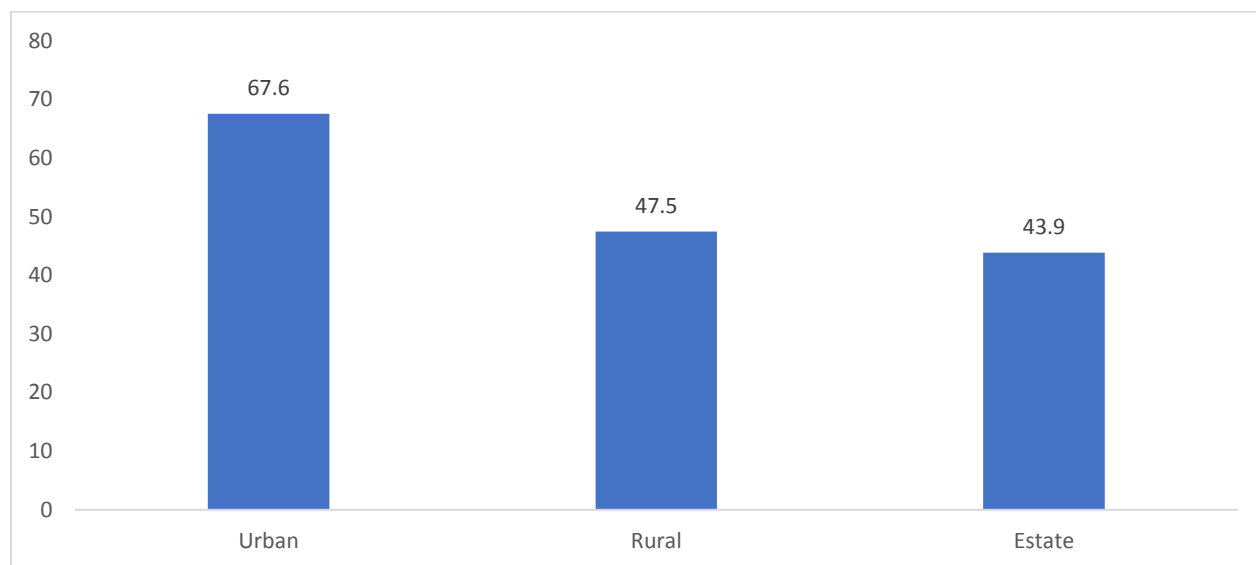
Figure 4.2: Human Brain Development



Source: C.A. Nelson (2000) from CDC 2007.

139. **The GoSL has made significant efforts to invest in early childhood development.** Sri Lanka has a well-established program for maternal and child health, which boasts near universal coverage. This program covers the range of interventions to address the health and development needs of children in the first 1,000 days of life. In contrast, the government does not provide free preprimary education to children in Sri Lanka. Still, in recent years, the GoSL has made it a priority to increase access to preprimary education—and the Cabinet just recently approved a national policy on ECCE. The GoSL is now pursuing a strategy of public-private partnerships to expand access to ECCE services. The majority (70 percent) of all ECCE centers are managed and operated by the private sector (individuals, families), while the remaining are public sector ECCE centers (GoSL 2016). The government supports both private and public centers equally, that is, investing in upgrading early childhood development centers and quality improvements regardless of whether they are public or private. However, differences in the country’s geography and other subregional factors present unique challenges for investment and require nuanced reforms and investments. The GoSL is keenly aware of these challenges and is exploring various strategies for achieving equitable access to early childhood development services for all children.

Figure 4.3: ECCE Net Enrollment Rates Disaggregated by Location 2016, (Percent)



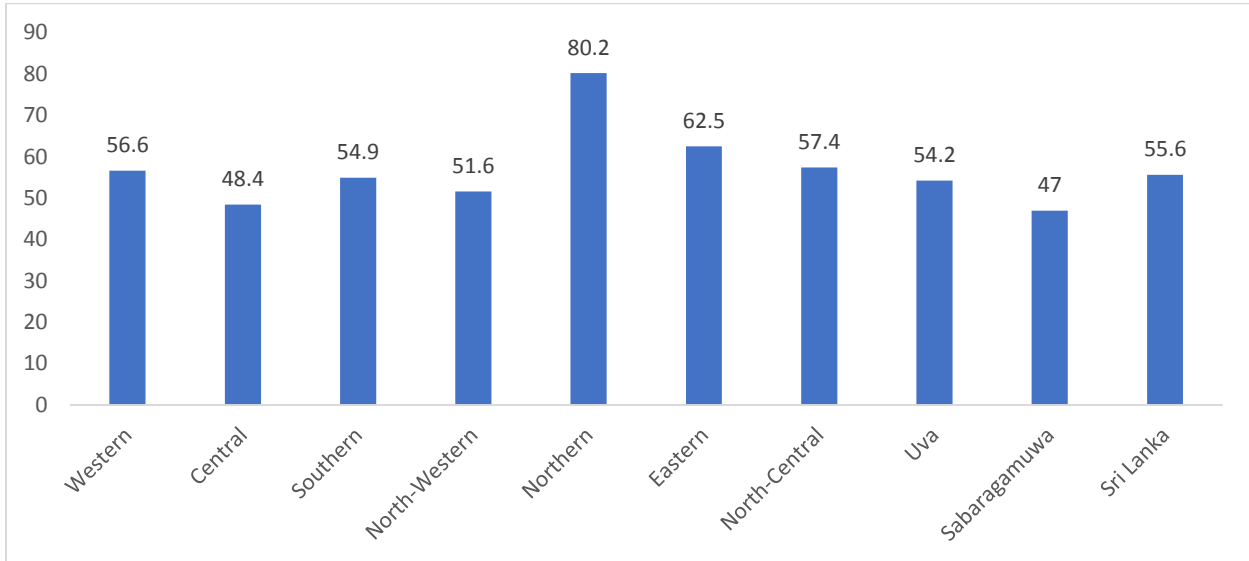
Source: Authors based on GoSL ECD National Census 2016.

140. **In terms of early learning, access to preprimary education is not yet universal, and there are stark disparities in enrollment, based on income and location.** The government’s efforts to improve access to ECCE are at a nascent stage and the result of these efforts are yet to be seen. At present, access to preprimary education is still relatively low—with a little over half (56 percent) of 3–5-year-olds attending preschool (HIES 2016). Moreover, there are clear disparities in access, based on income and location. For example, 67.6 percent of the urban children are enrolled in preschool, as compared to 43.9 percent of the estate sector children (see Figure 4.3). These disparities also exist by region, with 80.2 percent of children in the Northern Province enrolled in preschool, as compared to 47 percent of children in Sabaragamuwa (see Figure 4.4). Clearly, while the GoSL is making a significant effort to improve access to ECCE, much remains to be done to achieve the goal of universal access to preprimary education for children in the 3–5 age group.

141. **As a consequence of historically low policy oversight for ECCE, the quality of preprimary education is a concern.** Although the GoSL has had relatively low involvement in ECCE in the past, the country is now invested in improving the quality of ECCE services. To date, the GoSL has provided facility grants for teaching and learning materials to approximately 6,000 centers across the island. However, much remains to be done to improve the quality of these services. According to a recent census, a large percentage of ECCE centers in Sri Lanka lack adequate resources for teaching and learning (GoSL 2016). Many also lack access to drinking water (GoSL 2016). The quality of the ECCE staff has improved in recent years, with the majority of teachers having at least an advanced-level (A-level) or ordinary-level (O-level) qualification as Figure 4.5 indicates. The government’s latest early childhood development census data (2016) also indicate that the vast majority (83 percent) have some sort of professional training to teach at ECCE centers (GoSL 2016). Still, there remains room for improvement in this area—as the best systems in the world ensure that ECCE lead teachers have advanced degrees with some form of specialization in early childhood development (this is discussed in greater detail later in this chapter). Moreover, Sri Lanka has not adopted a formal ECCE curriculum. Therefore, although

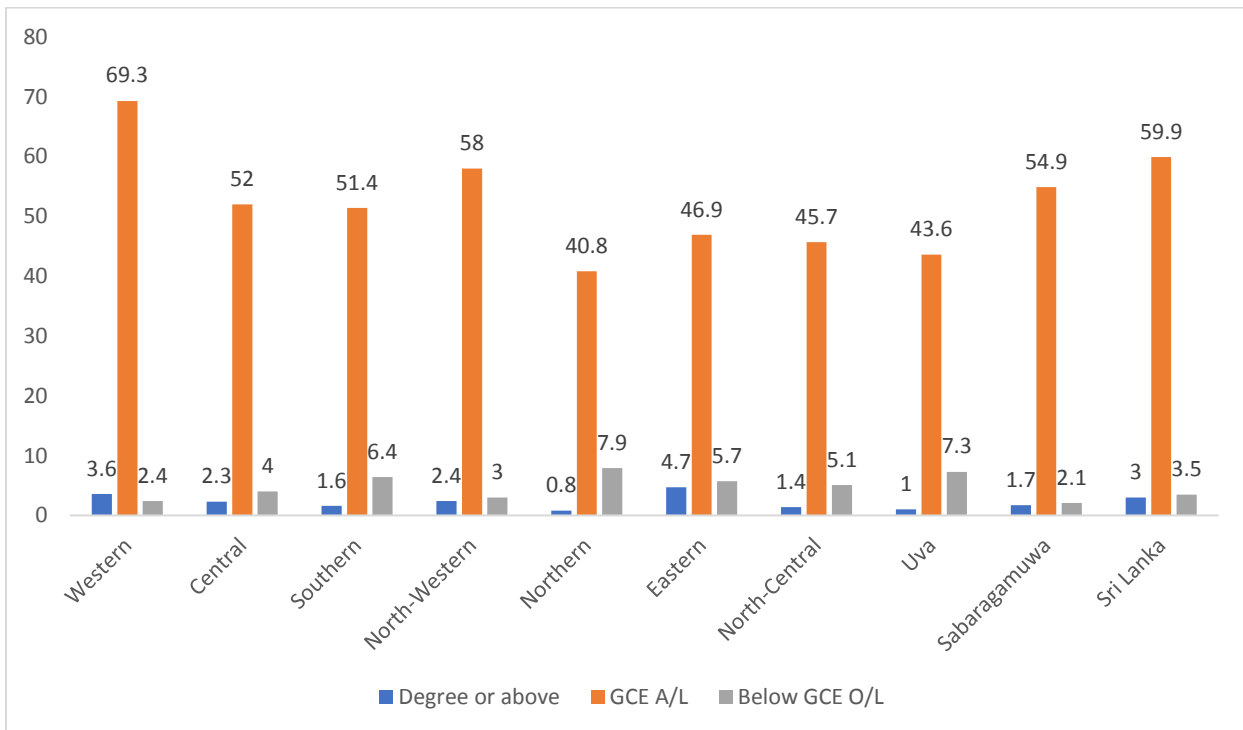
about half of children in the 3–5 age group have access to ECCE, it is unclear what this access entails and whether a basic standard for service delivery is maintained across service providers.

Figure 4.4: ECCE Net Enrollment Rates Disaggregated by Province, 2016 (Percent)



Source: Authors based on GoSL ECD National Census 2016.

Figure 4.5: Teacher Qualifications by Province, 2016 (Percent)



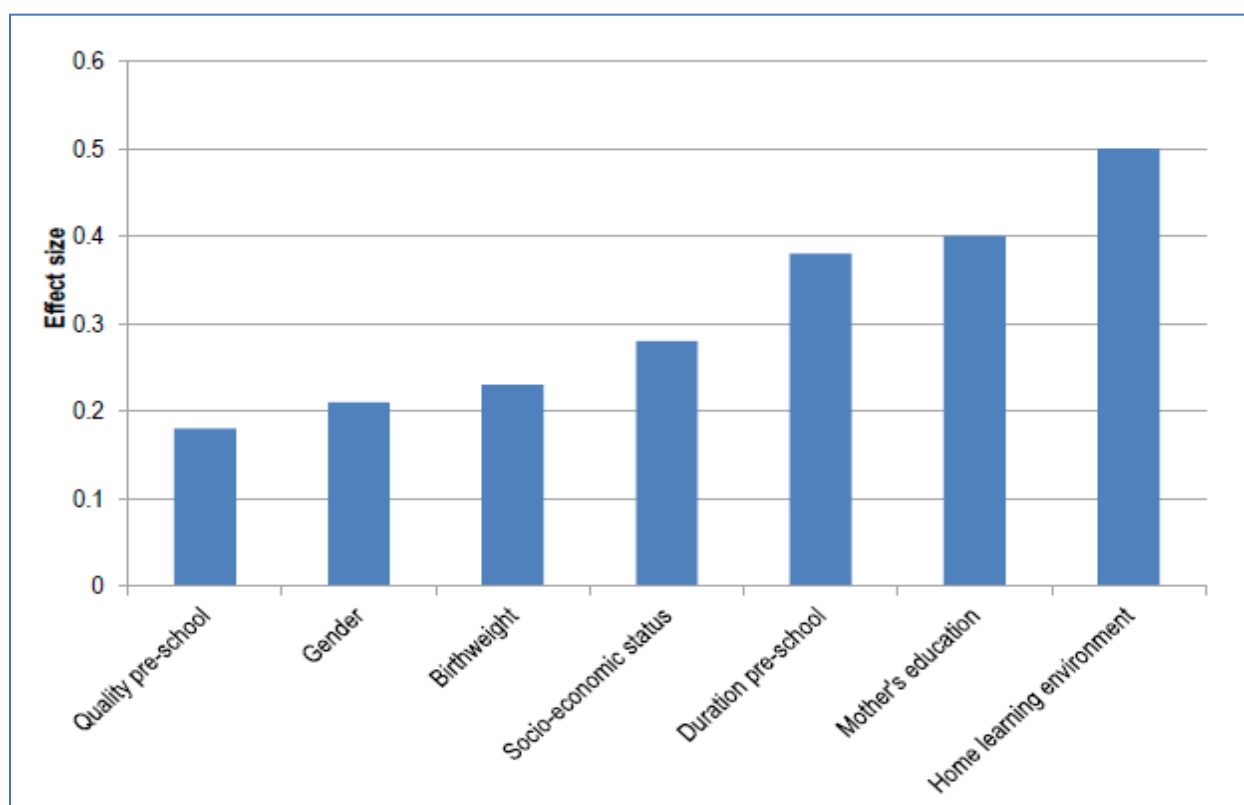
Source: GoSL ECD National Census 2016.

Policy Options for Improving Access to ECCE

142. **Sri Lanka should invest in center-based platforms to improve the health and nutritional status of young children.** Given the prevalence of stunting and malnutrition among preschool-aged children in some provinces of Sri Lanka, it is important that the GoSL takes every opportunity to improve the health and nutritional status of young children. The MoH has implemented several targeted programs to improve the nutritional status of vulnerable preschool children. However, much more needs to be done to address the issue—particularly initiatives that capitalize on the preschool platform. The ECCE centers can be a key entry point to address malnutrition by providing a platform for educating all members of the ECCE community on health and nutrition. Moreover, a modest investment here can help promote significant change in a child's nutritional status, encourage school attendance, and improve learning among children. To this end, the government may want to explore the possibility of developing ECCE center-based kitchen gardens. These could be managed by the community (the parent committees) and designed to provide vegetables, grains, fruit, and so on for the meals cooked and served to the children at the ECCE centers. This combined with a nominal contribution from parents toward a revolving nutrition fund (with a declining contribution from the project over the project period) could be a practical sustainable approach for continuity of balanced cooked meals for children. Moreover, the ECCE centers could also serve as an entry point to educate parents and the community on how to promote the health and nutritional status of young children.

143. **Increasing the frequency and quality of stimulation and opportunities for home learning can be a highly cost-effective strategy for improving childhood learning outcomes.** The home learning environment and family background have a critical role in children's development (Shuey and Kankaras 2018). Research suggests that the home environment has the potential to have much greater impact on a child's early learning outcomes than other factors such as parental education, duration of preschool, and so on. A study from the United Kingdom demonstrates this (see Figure 4.6). Moreover, these programs have been shown to have an impact, not only on early learning outcomes, but on longer-term learning outcomes as well (see Figure 4.7). Also, center-based programming for children under age 3 is costly because it requires heavy structural investment, such as lower staff-to-child ratios. As such, programs to build parenting/caregiver capacity may be a cost-effective option, but the best option is a combination of center-based care plus parental involvement (World Bank 2018a).

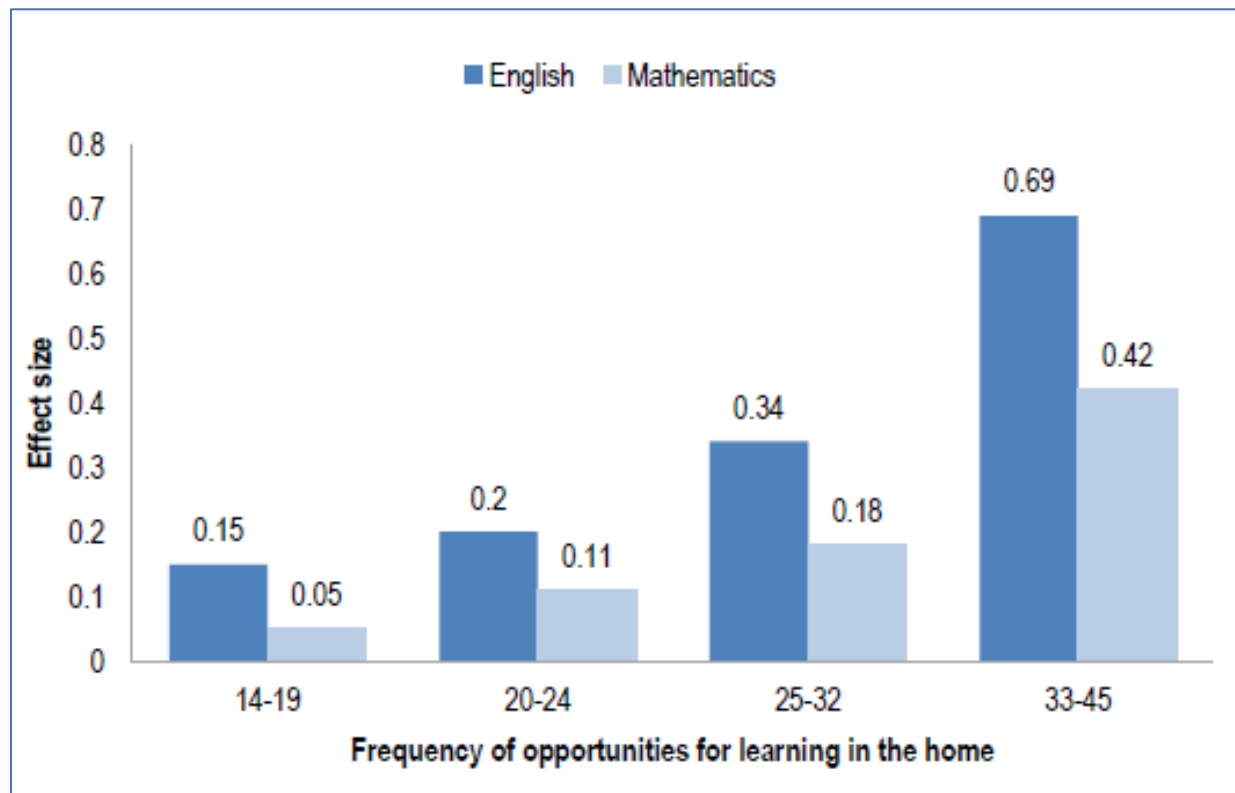
Figure 4.6: Impact of Contextual Factors on a Child’s Literacy Performance at Age 5 in the United Kingdom



Source: Shuey and Kankaras 2018.

144. **Sri Lanka should consider investing in programs to improve the quality and frequency of home learning opportunities for young children.** There are a number of programs that can improve the frequency and quality of stimulation and early learning opportunities for young children at home. Home visiting programs have proven to be effective in improving parental practices and ultimately improving early and long-term learning outcomes for children. These programs involve assessing family needs, providing education and support to parents, and connecting them with resources in the community (Michalopoulos et al. 2017; Sama-Miller, Akers, and Mraz-Esposito 2018; Shuey and Kankaras 2018). Other interventions that target home learning activities around early language and literacy skills have also been shown to be effective, but these require carefully designed program implementation (Moran, Ghate, and Van Der Merwe 2004; Shuey and Kankaras 2018). Still other interventions use a two-tiered approach, targeting both parents and children. Some of these programs use community-based approaches, while others such as the Turkish Early Enrichment Project mix home- and center-based programs for optimal impact (Dundar et al. 2017). Some are intensive, small-scale, and targeted at high-risk children, such as the High Scope Perry Preschool Project in the United States, while others such as Head Start, also in the United States, are large-scale programs that provide both center- and home-based interventions (Dundar et al. 2017). Regardless of which approach is used, research suggests that the quality of these interventions and targeting of parents/caregivers as early as possible in the parenting process are important dimensions of effective programming (Shuey and Kankaras 2018; World Bank 2018a).

Figure 4.7: Impact of Early Childhood Home Learning Environment on English and Mathematics Attainment at Age 11 in the United Kingdom



Source: Shuey and Kankaras 2018.

145. **Expanding child day-care centers, in addition to preprimary education centers, is of primary importance.** In addition to preprimary education centers for 3–5-year-old children, there is a need to expand child day-care services for children below age 3. The limited availability of day-care services in Sri Lanka may not only be affecting young children but also the female labor force participation in the country. Many working mothers find it challenging to continue working once they have children and tend to leave the workforce to stay at home and care for their children. This is reflected in the lower female labor force participation rate in Sri Lanka (at approximately 36 percent) (Solotaroff, George, and Kuriakose 2018). The GoSL is keen to increase the female labor force participation rate and has set a target of developing 10,000 female caregivers for child day-care centers trained with the National Vocational Qualifications Level 4 certificate. In light of the government’s interest in establishing child day-care centers, it will be important for the country to explore the best means of achieving this goal. Many countries have followed an integrated model for ECCE, where both child day-care services (for children under 3) and early childhood education (for children between ages 3 and 5) are established and managed in an integrated system, often under one government agency or body. Box 4.4 presents the case of Japan, which has developed an integrated model for childcare and early childhood education. Ultimately, Sri Lanka will have to decide whether to expand child day-care services under an integrated model or in a differentiated model.

Box 4.4: Integrating Early Childhood Day Care and Early Childhood Education in Japan

Since World War II, kindergartens and day-care centers have emerged and existed as two distinctly separate entities in Japan. Each has a different history and trajectory of growth, and until very recently unifying the two was not considered an option. In the recent past, however, the declining birthrate in Japan coupled with the increase in the number of working mothers reduced the demand for kindergartens and increased the demand for day-care centers.

In response to societal needs, Japan began taking steps to integrate ECCE. In 2006, a joint review conference was held between Japan's Ministry of Education, Culture, Sports, Science, and Technology and the Ministry of Health, Labor, and Welfare, and the Act on Advancement of Comprehensive Service Related to Education, Child Care, etc. of Preschool Children was enacted. The act facilitated the establishment of certified 'Kodomoen' or 'day care - kindergarten' facilities. According to the act, these facilities could be divided into four main categories: (a) day care-kindergarten collaborations: an authorized kindergarten and an authorized day-care center that collaborate to manage comprehensive operations; (b) kindergarten type: an authorized kindergarten with day-care functions; (c) day-care center type: an authorized day-care center with kindergarten functions; and (d) local discretion type.

By August 2007, there was 105 certified Kodomoen in Japan, and by 2009 it had only increased to 358. Some experts felt that this initial effort did not yield expected results. "This educational reform has failed to achieve groundbreaking results, and ended up merely adding a third facility to the traditional dual systems despite the enormous efforts that both Ministries had devoted to the legislation in the Diet session... The reason that the number of this new type of facility shows sluggish growth is that in the end, there is not much support from the government, except for the collaboration day care – kindergarten type, which receives a small amount of financial aid. There then seems no advantage to changing an existing facility to create a certified Kodomeon. Both Ministries are currently making an all-out effort to review the Kodomeon system" (Shirakawa 2010).

The Act on Child and Childcare Support, which was enacted in 2012, aimed at resolving some of the issues with the Kodomeon system. Following this act, the Comprehensive Support System for Children and Child Rearing came into effect in April 2015. This system has three primary aims:

- (a) To provide high-quality education and care: Measures taken in this regard include increasing the spread of ECCE centers. These centers combine the features of kindergartens and day-care centers and can be used by children irrespective of whether they have working parents.
- (b) To eliminate children on waiting lists: This will be done by utilizing all types of facilities including small-scale local childcare facilities, day cares, kindergartens, and ECCE centers.
- (c) To support childcare within the local community.

As such, Japan's integration methodology has been to actively take steps to introduce ECCE centers to supplement the existing system of kindergartens and day-care centers. Currently, four main types of facilities provide early childhood services: kindergartens, day-care centers, ECCE centers, and local childcare facilities. Under the new system, parents are required to get approval for the type of facility they would like to use. The newly introduced ECCE centers embody the integrated system and provide education and care in the same facility. These centers accept children from ages 0 to 5 years, have flexible hours of service, and are open to children of working and nonworking parents.

Source: Wanasuriya 2018.

146. **All ECCE centers should use curricula with common goals and approaches.** A strong ECCE curriculum, which cultivates core pre-academic abilities such as emotional security, curiosity, language, and self-regulation, is a core component of effective ECCE programming (World Bank 2018a). Experts agree that such a curriculum should have clear purpose, goals, and approaches (Bertrand 2007; OECD 2013). A well-defined curriculum can promote better and more

consistent quality across ECCE centers (OECD 2013). Although there is a lot of variation in preschool curricula, they can be divided into two broad categories. The first, labeled the ‘global’ curriculum, tends to be wider in scope, implementing activities to promote socio-emotional, language, literacy, and mathematics skills as well as subject-specific knowledge about science, arts, and social studies (Yoshikawa et al. 2013). The other main type, the ‘developmentally focused’ curriculum, aims to give more focused exposure to a specific content/subject area. This is based on the assumption that skills can be better fostered with a more focused scope (Yoshikawa et al. 2013). While curriculum approaches may vary, experts generally agree that a high-quality curriculum is based on early learning standards that address multiple domains of development—academic, social-emotional, and physical. They also emphasize the importance of guided learning opportunities that are language rich and hands-on (Wechsler et al. 2016). Moving forward, it is important that Sri Lanka reviews its ECCE curriculum to ensure that the content and quality are in line with international best practice.

147. Sri Lanka must also continue to focus on improving the quality of its ECCE workforce. Teacher quality is one of the most vital elements in determining the effectiveness of early education programs. A high-quality curriculum must be well implemented if it is to be effective—and strong implementation requires high-quality teachers. Research suggests that teachers with special knowledge of early childhood development are particularly important to the implementation of successful ECCE programming (Bueno, Darling-Hammond, and Gonzales 2010). Many successful ECCE programs, such as those in the United States, require their lead teachers to have a bachelor’s degree with a specialization in early childhood education (Bueno, Darling-Hammond, and Gonzales 2010; Wechsler et al. 2016). Many studies suggest that a higher level of education is generally associated with higher pedagogic quality in ECCE (OECD 2012a). Still, the relationship between qualification and ECCE outcomes is complex, and it is not entirely clear that a degree or a high level of specialization in early childhood development is a prerequisite for a high-quality ECCE teacher (OECD 2012a). What is clear, however, is that teachers with specialized training are able to provide a more nurturing, interactive environment for children (Bueno, Darling-Hammond, and Gonzales 2010). The GoSL recognizes the importance of the quality of the ECCE workforce and, to this end, has initiated a range of short-term programs to improve the quality of ECCE teachers. This includes providing professional training (that is, diploma/certificate training) in plantation and non-plantation areas, in partnership with the Open University of Sri Lanka and the National Institute of Education (NIE). However, in the long term, to address teacher quality, the country will have to focus on improving its strategy for recruiting and retaining high-quality teachers, particularly those with degrees and/or specializations in the early childhood development to raise the bar of ECCE teacher quality in Sri Lanka.

148. Improving the professional development system for ECCE staff will be important if Sri Lanka is to develop and maintain high-quality ECCE programming. Some experts argue that raising the effectiveness of early childhood education will require a broad range of professional development activities and support for staff’s interactions with children (OECD 2012a). As such, preservice teacher preparation must be complemented by in-service teacher training and coaching as in-service coaching for teachers increases the likelihood that curricula will be used effectively; and has also been shown to improve teacher student interaction, reduce burnout, and increase teacher retention (Wechsler et al. 2016). This is particularly important because evidence from countries as varied as the United States, Indonesia, and Mozambique suggests the quality of the teacher/caregiver and child interaction is an important determinant of

the quality of ECCE programming (World Bank 2018a). Many of the top-performing systems, in countries such as Korea, Australia, and the United Kingdom, greatly emphasize having highly trained teachers for preprimary education (see Box 4.5). The GoSL has already made significant efforts to improve the opportunities for in-service teacher training, including the development of short-term training modules for current ECCE teachers. Moving forward, it will be important for Sri Lanka to continue to expand for high-quality professional development opportunities for its ECCE teaching cadre.

Box 4.5: ECCE in Korea

The ECCE system in Korea is considered among the best in the world. They have a comprehensive system covering children in the 0–5 age range. Compulsory schooling begins at age 6. Overall enrollment rates in ECCE services are high in Korea: 15.9 percent of children under 1, to 70.1 percent of 1-year-olds, 85.8 percent of 2-year-olds, 89.5 percent of 3-year-olds, 90.8 percent of 4-year-olds, and 91.1 percent of 5-year-olds.

The governance of the ECCE system is divided between the Ministry of Education, which oversees kindergartens for 3–5-year-olds, and the Ministry of Health and Welfare, which oversees all childcare centers and family day cares for 0–3-year-olds. Since 2011, both the ministries have collaboratively developed and implemented the Nuri Initiative, a project that represents the core of early childhood education policies for children ages 3–5 years, including a common curriculum, a common government-provided subsidy, and a common in-service teacher training program (TTP).

Preschool teachers in Korea are highly trained. Like primary school teachers, prospective preschool teachers graduate from an early childhood education department at a two-, three-, or four-year college or university with a ‘second-level’ teacher license and then acquire a ‘first-level’ teacher license after three years of field experience and in-service training. Teachers are required to pass a national exam to become a public kindergarten teacher, and their status and salary standing are equivalent to those of elementary school teachers.

Source: Kagan 2018.

4.4 TEACHER DEVELOPMENT

149. **Teachers are the single-most important factor in improving student learning.** There is ample evidence that teacher quality is one of the most important determinants of student learning (Bruns and Luque 2015). Compelling student assessment data, particularly from the United States, has allowed researchers to measure the ‘value added’ of individual teachers over the course of a single school year. This research suggests that students with a weak teacher may master about 50 percent or less of the curriculum for that grade, students with a good teacher get an average gain of one year, and students with great teachers advance 1.5 grade levels or more (Hanushek and Rivkin 2010; Rockoff 2004). Other research also shows students who are exposed to highly effective, value-added teachers, are more likely to attend college and earn a higher income (Chetty, Friedman, and Rockoff 2014). Moreover, replacing a teacher whose value added is in the bottom 5 percent with an average teacher increases the present value of students' lifetime income by approximately US\$250,000 per classroom. No other single factor in the education system has such an impact on learning (Bruns and Luque 2015).

Table 4.3: Teacher Qualification by Province in Sri Lanka

Province	Graduate ^a	Trained ^b	Untrained	Trainee	Other	Total
Western	24,263	20,103	261	50	148	45,825
Central	13,548	19,424	690	352	44	34,058
Southern	13,614	16,252	285	113	32	30,296
Northern	7,258	10,482	91	6	104	17,941
Eastern	7,631	13,843	242	50	44	21,810
North-Western	12,251	15,345	515	73	55	28,239
North-Central	7,597	9,542	186	46	69	17,440
Uva	7,949	11,658	664	478	94	20,843
Sabaragamuwa	11,645	12,989	377	125	3	25,139
Sri Lanka	106,756	129,638	3,311	1,293	593	241,591
%	44.2	53.7	1.4	0.54	0.25	100

Source: GoSL School Census 2017.

Note: a. Graduates are those who have an undergraduate or postgraduate degree or a teaching diploma or are trained graduates.

b. Trained teachers are those who have received teacher training certificates from the National Colleges of Education or have a two-year diploma in science/mathematics.

150. **The teacher management system has made strides, but challenges that may affect the quality of the country's teacher cadre remain.** There are about 242,000 teachers serving in Sri Lanka's network of government schools (MoE 2017). In terms of teacher qualifications, approximately 98 percent of these teachers are either trained teachers or graduates. Table 4.3 presents a more detailed picture of teacher qualifications across the country's nine provinces. The MoE and provinces are responsible for recruiting and managing this cadre. The system includes a network of preservice teacher training institutions (the National Colleges of Education), in-service teacher development programs conducted by the NIE of Sri Lanka, and school-based teacher development programs. In terms of teacher compensation, the current pay level for public school teachers appears to be low relative to other countries in South and Southeast Asia (Raju 2017). It also appears compressed relative to other countries (Aturupane et al. 2011).

151. **The system for teacher deployment is a particular challenge.** Although the 2017 school census suggests that government schools in Sri Lanka have an adequate number of teachers, many schools do not have the right mix of teachers (Dundar et al. 2017). Rural and plantation schools, in particular, find it challenging to attract and retain teachers in key subject areas such as English, Mathematics, and Science (Aturupane et al. 2011). Moreover, although there is a system in place for recruitment of teachers, the rules guiding this process have been relaxed at various points in time, either to address the need in disadvantaged areas or for political expediency. In some cases, this has affected the quality of teachers, or lead to over-recruitment in certain subjects and under-recruitment in others (for example, science, math, English, and computer literacy) Balasooriya 2012; Pillay et al. 2015; Dundar et al. 2017). The country also faces a shortage of English, mathematics, and science GCE A/L¹³ teachers, which is partly due to low teacher salaries. Overall, the system for recruiting, developing, compensating, evaluating, and promoting teachers in Sri Lanka does not appear to be as well-developed as it is in most high-performing countries. In effect,

¹³ General Certificate of Education (Advanced Level).

although Sri Lanka has a system in place for teacher management, there are systemic gaps, which may undermine the quality of its teaching cadre.

Policy Options for Improving Teacher Quality in Sri Lanka

Investing in High-quality Teacher Training

Box 4.6: Singapore Model of Partnership between the MoE, Teacher Education Providers, and Schools

Like many of the world's high-performing teacher education providers, Singapore's NIE has embraced a university-based teacher education model characterized by classroom-based courses and a school-based practicum. During the practicum, student teachers are mentored and guided by their School Coordinating Mentors (SCMs), Cooperating Teachers (CTs), and NIE Supervisors (NIES) through systematic observations, assistance, and advice. They are given opportunities to get involved with, and actively participate in, all aspects of the school's activities. These experiences are designed to help them link theory and practice and to acquire the skills necessary for teaching effectively in a range of classroom situations. The school-based practicum is an example of the partnership that Singapore's NIE shares with the Singapore MoE and schools and with all stakeholders working together to help student teachers make effective transitions from campus learning to classroom teaching. The robust partnership between Singapore's NIE, MoE, and schools is a key driver of the country's internationally recognized teacher education programs.

To strengthen the relationship along the whole continuum and reinforce the theory-practice nexus, the Singapore NIE has adopted an 'Enhanced Partnership Model'. The model provides the necessary collaborative framework of shared values and goals in the interest of teacher learning and education research, while recognizing the need for mutual respect for each partner's roles, beliefs, perspectives, experiences, expertise, and knowledge. The NIE-schools partnership is particularly important to reinforcing the theory-practice nexus. The gap between theory and practice has been widely acknowledged as one of the main shortcomings of teacher education worldwide. Under the Enhanced Partnership Model, schools take on a bigger, more active role in the practicum, school attachments, and other in situ collaborative platforms that facilitate professional development and bridge the gap between theoretical learning and real classroom experience.

Source: Singapore National Institute of Education 2019¹⁴.

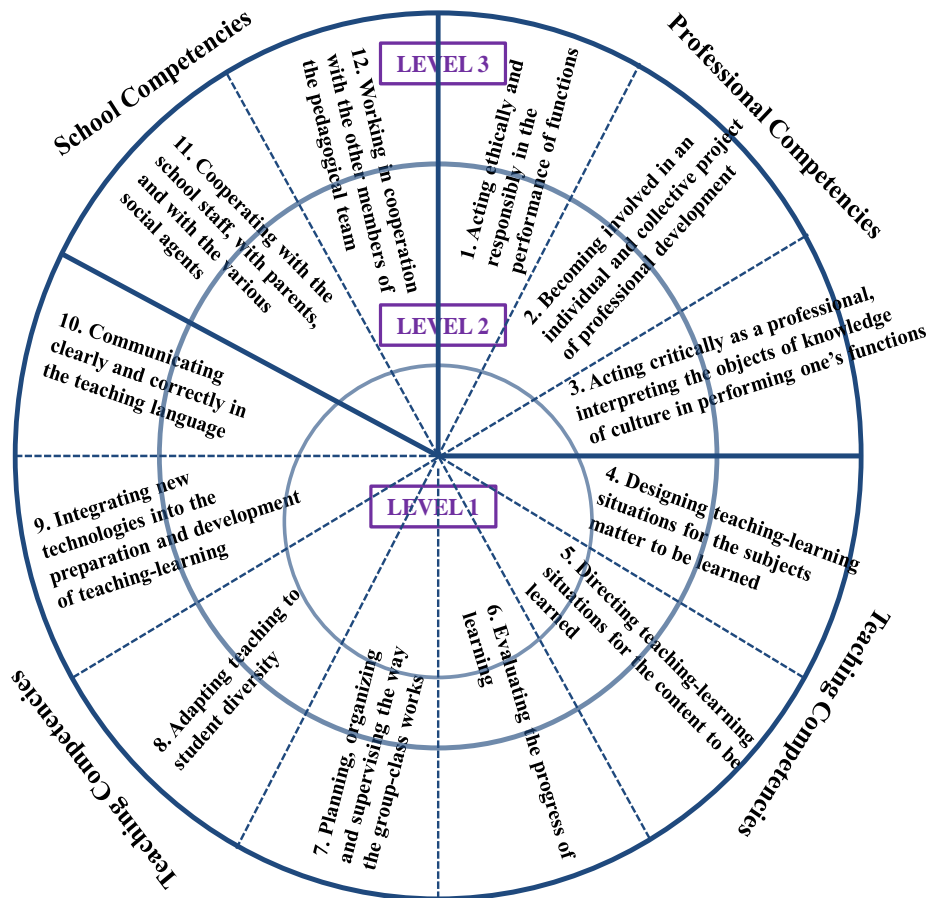
152. **To improve teacher quality, closer attention should be paid to the quality of preservice TTPs.** The performance of teachers depends on a variety of factors, beginning with the quality of their preservice training (Little, Aturupane, and Shojo 2013). A three-level model of teacher competencies is presented in Figure 4.8. The first level covers preservice teacher education. The second level consists of teacher induction. The third level is professional development. A well-structured preservice TTP with strong coursework and a strong practical component is vital for developing a high-quality teacher cadre (UNESCO 2018). Experts agree that high-quality TTPs share a set of common objectives, with perhaps the most critical being the development of subject matter knowledge for teachers (Lim et al. 2009). This is important because there is substantial evidence that the subject knowledge of teachers has an impact on student performance (Bramwell, Anderson, and Mundy 2014; UNESCO 2013). The best preservice programs also emphasize 'pedagogical content knowledge', which deals with the question of 'how to organize and present the content in a way that makes it accessible for a diverse group of learners'

¹⁴ This is sourced from the Singapore National Institute of Education website. Accessed July 1, 2019.

(UNESCO 2018). Another key feature of strong TTPs is that they effectively connect pedagogical theory and practice. Singapore has created an effective model of collaboration between teacher education institutions and schools, to bridge this gap between theory and practice (see Box 4.6). Finally, TTPs are increasingly seen to have a role in developing the tools to study teaching (Lim et al. 2009). This is particularly salient as many of today's high-performing systems are aiming to develop a cadre of teachers who view themselves as professionals with agency, reflective capacities, and a role to play in shaping education reform (Schleicher 2011). It will be important for Sri Lanka to review the quality of its preservice TTPs and improve them in line with best practices in preservice teacher development.

153. **Continuous professional development has proved to be an effective tool for improving teacher quality and ultimately student learning.** There is a growing body of evidence that in-service teacher training is an effective tool for improving teacher quality. Moreover, unlike preservice teacher training, there is more conclusive evidence that continuous in-service professional development programs have a positive impact on student learning. Programs in countries ranging from the United States to Africa and India have shown this to be true (Banerjee et al. 2007; Conn 2017; Yoon et al. 2007). The continuous professional development of teachers is important for a number of reasons. In a rapidly changing world, professional development provides an opportunity to keep teachers' subject knowledge up-to-date as well as to update and apply skills and new teaching methods. It also enables schools to develop and apply new strategies and implement new teaching practice. The best-performing education systems, such as that of Shanghai (China), have strong in-service training programs, to ensure that the teaching and subject content skills of their teachers are developed throughout their teaching career (see Box 4.7). Evidence from China as well as several other countries suggests that in-service TTPs that are designed with these elements are effective in improving student learning, with the largest gains for the weakest students (World Bank 2018a).

Figure 4.8: Teacher Competencies



Source: Cuadra et al. 2005 based on Martinet et al. 2001.

Note: Level 1: Initial Teacher Education. Level 2: Teacher Induction. Level 3: Professional Development.

Box 4.7: School-based Professional Development in China

In China, teachers' school-based development is a high priority. The Shanghai Municipal Education Commissions states that, "School shall become the basis of teachers' professional development. Schools shall integrate the employment and use of teachers with the fostering of teachers and make the school a place for common growth of teachers and students and become a learning organization" (Shanghai Municipal Education Commission 2007). As such, it views the most important task of a headmaster as building a teaching team. The importance of school-based teacher training is reflected in regulations (from the Shanghai Municipal Education Commission) that stipulate that up to 50 percent of a teacher's required training hours should come through in-school training. There are at least three types of school-based professional development groups that operate in the school system: teaching and research groups (TRGs), lesson preparation groups (LPGs), and grade groups (GGs). TRGs are composed of teachers who teach the same or similar subjects. They discuss problems they encounter in teaching a particular subject and share their experiences. Schools usually also have GG. These are groups where teachers of the same grade gather to communicate. TRG activities typically include preparing lessons, sitting in on and evaluating colleagues' classes, sharing educational experiences, discussing teaching problems, conducting research, and learning new teaching technologies and skills. Each of these groups meet quite regularly: as a survey of junior secondary school principals in Shanghai indicates, school-based professionals professional development activities are organized once or twice a week in 44 and 52 percent of schools respectively.

Source: Zhang, Ding, and Xu 2016.

154. **Improving in-service (continuous) professional development programs for teachers, with a focus on making these programs practical, specific, and continuous, is of central importance.** The evidence from high-performing, high-income countries suggests that there are three keys to effective in-service teacher development programs: they are practical, specific, and continuous. Practical programs are those that use concrete classroom-based methods to train teachers. Specific programs are those that teach a pedagogy specific to the subject area. Continuous programs are those that are designed to provide significant continuous support to teachers, rather than one-off workshops (World Bank 2018a). Effective programs are ones where trainers are able to observe teachers in the classroom, provide individual feedback and pedagogical support, and offer continuous individual mentoring to teachers. In other words, to be effective, in-service teacher training must be individually targeted and repeated, with follow-up coaching around specific pedagogical techniques (World Bank 2018a). Sri Lanka should evaluate its in-service teacher training to ensure that they are practical, specific, and continuous. This will serve to improve not only teacher quality but ultimately student learning as well.

155. **Developing platforms to foster professional collaboration can further strengthen continuous professional development.** In the recent past, Sri Lanka has made progress in improving its in-service teacher development programs, particularly with the introduction of school-based professional teacher development (SBPTD) across all schools in the country (Aturupane, Kellaghan, and Shojo 2013). However, SBPTD in Sri Lanka needs to be further improved, especially in the area of teacher collaboration for professional development. The research on teacher collaboration is unequivocal. A review of the empirical evidence suggests that well-developed teacher collaboration is positively linked to increased teacher effectiveness and has a positive impact on student achievement (Vescio, Ross, and Adams 2008). However, fostering effective teacher collaboration requires proper planning and implementation. There are many different avenues to foster such collaboration, and Sri Lanka will need to examine the various approaches and adopt those that best suit it.

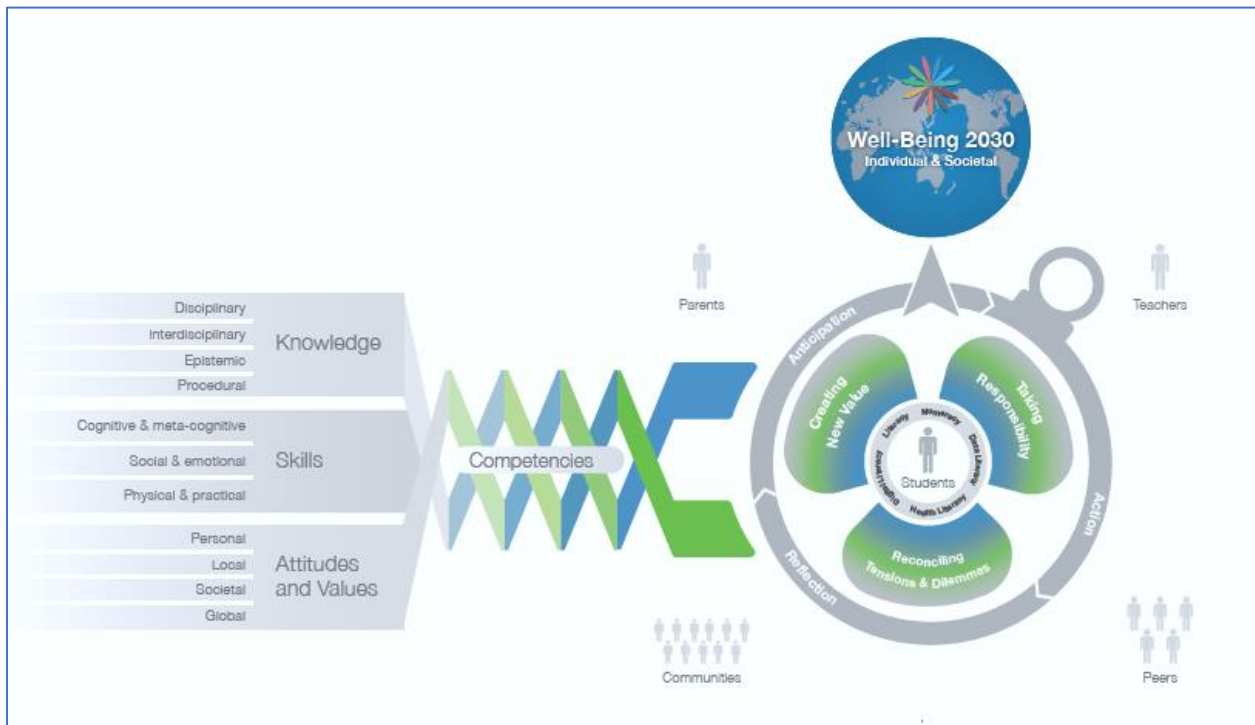
156. **Specifically, Sri Lanka may want to consider peer coaching as a means to promote professional collaboration and keep teachers motivated.** Peer coaching and mentoring is particularly important for new teachers and in the first year it provides teachers with an opportunity to learn how to translate their theoretical education into good classroom practice (Schleicher 2016). There is strong evidence to suggest that induction support for beginning teachers has a positive influence on teacher commitment and retention, as well as on student achievement (Ingersoll and Strong 2011; Wei et al. 2009). More importantly, research indicates that students taught by teachers who had strong induction support show higher achievement than students who are taught by teachers who had not received such support (Glazerman et al. 2010; Schleicher 2016). Research also suggests that there is a positive association between teachers' participation in induction programs and their likelihood of participation in future professional collaboration. As such, the teachers who have received peer mentoring during their induction phase may be more willing to serve as peer mentors in the future (Schleicher 2016). Sri Lanka may want to focus on expanding its in-service teacher programming to include a peer-mentoring induction program for new teachers. This may not only strengthen teacher quality but could also serve to mitigate the challenge of teacher shortages caused by teacher attrition.

157. **The development of intentional and well-designed professional learning communities (PLCs) can further enhance SBPTD programs.** PLCs are increasingly recognized as an

effective means of promoting teacher development and improving student achievement (Carroll, Fulton, and Doerr 2010; Vescio, Ross, and Adams 2008.) PLCs can be defined as schoolwide communities “aimed at continuous improvement of teaching practices by involving staff in in-depth, systematic, collaborative activities of professional development at the school level” (OECD 2013). They can be organized either by grade level, by specific subject, or around particular interdisciplinary issues (Pirtle and Tobia 2014). The Australian Council for Educational Research (ACER) has developed a framework for PLCs. The framework identifies five domains characteristic of a strong PLC. The first domain is ‘a professional culture’ and the second is ‘leadership’. A strong professional culture with strong school leadership is a necessary condition for developing strong PLCs—PLCs do not necessarily develop organically, and they have to be designed and fostered in a culture of professionalism (ACER 2019). The third domain is ‘student engagement, learning and well-being’. This means that professional communities give high priority to collecting evidence on student outcomes with a view to planning effectively to enhance student learning (ACER 2019). The fourth domain is ‘improving professional knowledge and practice’. This means that professional communities are focused on building their capacity to teach well. The last domain is ‘performance and development’. This means that a teacher in a professional community is willing to submit to a periodical performance review and engage with the necessary support to improve their practice (ACER 2019). Sri Lanka may want to consider instituting a framework for PLCs to further enhance its SBTPD.

Preparing Teachers for the Future of Education

Figure 4.9: Competency as the Integration of Knowledge, Skills, Attitudes, and Values



Source: OECD 2018.

158. Teachers need to be able to practice pedagogical approaches that are of relevance to the future of education. As education systems adapt to the rapidly changing world, the practice

of teaching must also adapt to address the unique needs and opportunities of current and future students. Experts agree on two key pedagogical approaches that will define education in the future. The first aims to strike the right balance between competency-based learning and knowledge-based learning (OECD 2018c). In recent years, the education pendulum has swung between these two theoretical approaches. Experts are increasingly in agreement that high-quality education of the future will be able to deliver the right balance between competency-based learning and knowledge-based learning (see Figure 4.9). Teachers will require strong training in the right pedagogical approach to effectively deliver knowledge while simultaneously fostering the right competencies. The second pedagogical approach involves ‘active learning’. Active learning may be defined as any teaching method that involves students actively participating and interacting with the learning process. There is growing evidence that active learning is associated with higher academic achievement and the development of higher-order skills (Freeman et al. 2004). As such, education experts expect this approach to become increasingly important in the future, particularly as education systems aim to foster higher-order thinking skills (OECD 2018c). Although many education systems have made attempts to foster active learning in their pedagogy, only a few have been successful in effectively utilizing it. Sri Lanka should review its teacher preparation programs to ensure that teachers are adequately prepared to use these pedagogical approaches to help students improve their learning.

159. Sri Lanka must ensure that its teachers are prepared for the challenge of integrating technology into teaching and learning. Technology is an inevitable force in the modern world, and education, like every other sector, is trying to understand the role that technology can and should play in fostering learning. Different education systems use different models for the integration of information and communication technology (ICT) in education. Irrespective of the model used, research has shown that a teachers’ belief and practices about technology, their teaching experience, and their personal use of computers have an impact on how students utilize technology (Kim and Bagaka 2005). This is particularly important in the context of the ‘digital divide’— which refers to the gap between people who have access to a computer and/or computer technology and people who do not. In the educational context, this often refers to the gap between students who have access to computers at home and those who do not. There is strong evidence that students’ access to ICT in the home environment has a strong impact on how they view and use technology. As such, providing physical access to computers in schools may be insufficient to close the digital divide (Kim and Bagaka 2005). In this scenario, the teacher becomes an even more critical factor in bridging the digital divide, especially for students in disadvantaged areas, who have little access to technology. While it is important to train teachers in basic ICT applications and skills, experts agree that for teachers to effectively use ICT, teacher training should focus on educational applications that are specific to a subject area, rather than on technology proficiency skills in isolation (Kim and Bagaka 2005). Ultimately, irrespective of the strategy Sri Lanka chooses to pursue in integrating ICT in education, teachers should receive strong initial training in ICT, as well as continued professional development, such as seminars, workshops, and sessions with experts, to increase their ability and confidence in using ICT in the classroom.

Training Teachers in Assessment

160. Assessment is a critical tool for ensuring high-quality learning for all, and Sri Lanka will need to ensure that its teachers are prepared to use assessments to ensure that all

learners are learning at high levels. A common feature of today's top-performing education systems is that they try to ensure that all learners learn at high levels. As such, many top-performing education systems have systematically linked assessment with teaching processes (Schleicher 2011). Effective teachers know how to integrate assessments into the teaching process, to ensure that they are teaching at the level of students (World Bank 2018a). This is particularly important when there is a variation in the abilities of students in the classroom. Formative assessments, in particular, can guide the teaching process as a means by which teachers can obtain continuous feedback on what students are learning. This, in turn, can be used to guide the instructional process. For teachers to be able to use formative assessments to guide the instructional process, they must first be trained in how to develop, interpret, and use the feedback in the instructional process. Top-performing systems include assessments (as a subject) in TTPs and provide guidance and monitoring on their use (Crawford, Hasan, and Bentaouet 2018). In Singapore, for example, to support assessment in the classroom, teacher assessment practices were first carefully studied, and a two-year professional teacher development program was designed to support teachers to use assessment in the instructional process (Ho 2012). Assessments can be a powerful diagnostic tool in supporting the teaching/learning process. However, for teachers in Sri Lanka to use them effectively, they will need to be trained on developing, integrating, and evaluating the results of these assessments to improve student learning.

Reinforcing the System for Teacher Management

161. **The educational ecosystem must provide teachers with the means to respond to student learning needs appropriately.** Having data on individual student ability does not support the student learning process, unless it is complemented by the tools and resources to provide students with the remedial interventions required to improve their learning (World Bank 2018a). Research has repeatedly confirmed that it is not sufficient for teachers to be able to integrate and use assessments (Aaronson, Barrow, and Sander 2007; Duflo et al. 2014; Muralidharan and Sundaraman 2010). Effective teachers are those who have tools at their disposal to respond to the needs of individual students and the motivation to do so. Formative assessment, as a tool to guide instruction, can only be effective if teachers have the tools to tailor instruction to the needs of individual students or student groups. New technologies, such as computer-assisted learning (CAL) programs, offer students a means to adjust the level of instruction based on initial screening tests, but the evidence on the efficacy of these programs is mixed and must be used with caution. Teachers must also be sufficiently motivated to use the available resources to teach to the level of students and to ensure that every student's learning needs are met. Sri Lanka will have to ensure that it has an educational ecosystem that can provide teachers with the means and motivation to maximize student learning.

162. **The urban/rural gap in teacher quality will need to be managed effectively, to ensure that the education system is responsive to the needs of all students.** Around the world, students in rural and low-income settings face certain challenges that are different from their urban and/or more affluent counterparts. The most acute challenge may be the that of access to high-quality teachers in rural areas. Rural areas (as well as the plantation sector in Sri Lanka) often find it harder to attract qualified teachers and sometimes find it harder to recruit teachers in subjects that are in high demand. To mitigate this challenge, many schools in rural areas have multigrade teaching, particularly at the primary level (Schleicher 2016). The 'digital divide' appears to be another challenge faced by rural schools around the world, as rural students often have less access to

technology and rural areas have less ICT infrastructure to implement technological innovation. At the same time, distance education, through ICT, has the potential to serve rural schools well. Both teachers and students in rural schools may benefit from distance education (Schleicher 2016). In contrast, students in urban schools may have vast exposure to, and immersion in, technology and the Internet. As such, they may require teachers who are more technologically savvy and able to leverage these conditions to enhance student learning. In either case, Sri Lanka’s teacher management system will have to pay close attention the unique needs of teachers and students in rural and urban areas. This may require more nuanced training or different induction programs for teachers in rural schools and urban schools. It may also require some innovative thinking to fill teacher shortages in certain subjects. For example, in Sri Lanka where there is a significant shortage of English teachers, teachers may have to be recruited from overseas to fill vacancies (Dundar et al. 2017). Ultimately, Sri Lanka will have to explore innovative options to ensure that children in rural/urban and plantation sector schools have equal access to high-quality teachers.

163. **A review of the teacher management system, to ensure that it can attract, motivate, and retain high-quality teachers, would be useful.** Teacher motivation is a critical ingredient of teacher quality, and the best way to achieve this may be to attract highly capable and motivated people to the teaching profession. In high-performing systems in countries such as Singapore, Finland, and Japan, teaching is a sought-after profession, because teachers are highly respected and well-paid (Lim et al. 2009). In the long run, improving teacher salaries may be a means of attracting better candidates into the teaching profession, but it is not a short-term solution (World Bank 2018a). There are several other ways to recruit and retain motivated teachers. Accountability mechanisms, such as financial incentives for successful teachers and job termination of low-performing teachers, are other means of motivating teachers. Given the vast and complex interaction of variables in an education system, such mechanisms must be deployed with caution. Financial incentives based on student performance has had mixed results. In Kenya and India, financial incentive programs did seem to improve student achievement (Duflo et al. 2012; Glewwe; Ilias, and Kremer 2010). In contrast, in several states in the United States, financial incentives seemed to have no impact on test scores (Fryer 2013; Glazerman, McKie, and Carey 2009; Springer et al. 2010). While there is no single paradigm for recruiting and retaining motivated teachers, the best-performing educational systems have a coherent system in place that covers all aspects of a teacher career cycle (see Table 4.4). This can help ensure that teachers are highly motivated because they are well respected, well selected, well compensated, and well supported (World Bank 2018a). Sri Lanka should review its teacher management system to ensure that it can attract and retain highly motivated teachers.

Table 4.4: A Coherent System Covers All Aspects of a Teacher Career Cycle

Goal	Instrument
Attraction and selectivity	Good pay Effective filtering Mechanisms to increase the attractiveness of teaching as a profession
Good preservice	Government control and quality assurance Filtering at various stages
Smooth induction	Open doors Mentoring and extensive support Time and space for learning

Continuous improvement	Teacher support networks Teamwork and collaboration Lesson study Culture of continuous improvement
Career development	Promotion policy Multiple career pathways, including pathways for promotion while leaving good teachers in the classroom
Making teaching easier	System coherence Aligned, streamlined curriculum, and textbooks Adequate non-class time

Source: Crawford, Hasan, and Bentaouet 2018

4.5 ENHANCING LEARNING OUTCOMES THROUGH TECHNOLOGY-BASED INITIATIVES

164. **In recent years, the country has taken steps to integrate ICT into the teaching-learning process.** With the rise of ICT in every sphere of 21st century life, governments around the world have scrambled to ensure that ICT is appropriately integrated and utilized to support learning and prepare students for the 21st century workplace. In keeping with these trends, the GoSL has introduced a number of initiatives related to the use of ICT in education. The government has been gradually upgrading the ICT infrastructure across schools in Sri Lanka. ICT infrastructure has been provided to approximately 4,500 schools, covering almost 90 percent of the student population (Pasqual 2018). The GoSL has also launched initiatives such as SchoolNet, a web portal connecting about 1,500 schools (15 percent of all schools) islandwide. The MoE recently launched the e-thaksalawala initiative, aimed at developing digital content (including test papers, online digital course material, supplementary questions for test preparation, and so on) to support the teaching learning process for Grades 1 to 13 (MoE 2019). In addition, nearly 100,000 teachers have been provided with basic ICT training and introduction to CAL (ADB 2017). The Information and Communication Technology Branch of the MoE, in partnership with the University of Vocational Technology, has introduced three graduate programs for teachers under the B. Tech in ICT degree certificate: the programs on software technology, multimedia, web and network technology seek to provide the teachers with the required skills to empower the future generation with the relevant ICT education (MoE 2019). These initiatives signal Sri Lanka’s interest and engagement with technology as a tool for learning.

165. **The country is now poised to strategically deploy ICT to improve educational outcomes.** Sri Lanka has launched an array of initiatives to integrate ICT into education. Many of these initiatives are centered around providing ICT hardware and infrastructure to schools. This is, of course, an important first step in integrating ICT into teaching and learning. Moreover, many of these initiatives may have helped familiarize the students, particularly in rural areas, with ICT infrastructure. Still, it is unclear how widespread the impact of these programs has been, particularly because Internet connectivity in schools stands at about 21 percent (ADB 2017). Sri Lanka has also encountered a number of other challenges while introducing ICT into the education system, including the huge recurrent investment required to maintain ICT infrastructure at the school level and a lack of motivation among teachers to adopt ICT-based teaching resources (Pasqual 2018). Sri Lanka’s telecommunication sector has made a significant progress over the past decade in terms of market efficiency, product innovation, and rural penetration of services

(ADB 2017). This puts the education sector in a better place to begin strategic planning for the integration of ICT in education. Sri Lanka should take the lessons learned from its small-scale implementation of ICT in schools and begin to focus on strategically deploying ICT to improve educational outcomes.

Policy Options to Improve the Use of ICT in Education

Box 4.8: How Khan Academy Is Partnering with Schools to Improve Education

Khan Academy is a nonprofit educational organization founded in 2006. It is now one of the most popular education websites in the world, offering more than 5,500 instructional videos—the majority of which are about math. The site also offers more than 100,000 practice math problems that students can complete at their own pace. Khan Academy also introduced additional ‘coaching’ features developed with schools in mind but available to home users as well for informal instruction. The coaching section includes materials to guide teachers, tutors, parents, and others on how to use Khan Academy to meet their students’ learning goals.

In 2011, a group of K-12 schools in California collaborated with Khan Academy to pilot innovative approaches to teaching and learning in classrooms, combining Khan Academy with traditional instruction. During this pilot, Khan Academy was primarily used as a supplementary tool—not as the core primary curriculum. Moreover, the pilot was used as a time for Khan Academy to work with the schools to refine and update its learning tools and resources. Students primarily used Khan Academy problem sets to practice and refine skills individually and with classmates, while getting immediate feedback. The pilot involved a variety of approaches to integrating online learning tools in the schools.

The pilot was implemented in a number of different school settings. One particularly interesting setting was a high school serving a predominantly high-poverty population. Khan Academy was used on a daily basis by two educators: (a) one teaching an algebra readiness class for ninth graders and a learning lab class and (b) the other teaching a mixed Grade 9 and 10 algebra 1 class, a mixed Grade 9 and 10 geometry class, and a Grade 10 algebra 2 class. Preliminary evidence suggests that the changes made to the school’s math instruction, including the use of Khan Academy, were associated with improved test scores. However, it is important to note that these results cannot be attributed to Khan Academy alone, as they were integrated into a broader classroom-based instruction.

Overall, this pilot project highlighted a few observations that are useful to consider when integrating these online learning websites into the traditional classroom setting. First, although teachers may appreciate having a source of extensive, curated digital content, they want to maintain responsibility for leading instruction, as well as controlling students’ use of the content. Second, most students are not used to acting as independent learners, and teachers need to intentionally orient their students to the types of independent learning practices and habits necessary for success in this learning environment. The most important lesson learned is that ‘the teacher’s role is still central even in the wake of the adoption of new technologies’. At their best, new technology tools can enable teachers to help students learn better.

Source: SRI 2014.

166. **ICT, like other educational inputs and processes, needs to be situated within the broader strategic goals of the education sector.** Effectively integrating ICT in education involves more than providing schools with computers and other technological resources. A wide range of online learning tools and resources are available to support all aspects of the teaching and learning experience, from Khan Academy to Read,Write,Think, and EdX (see Box 4.8). Other online platforms, such as Google Classroom or Blackboard, are designed to help facilitate an exchange of information and aid communication between teachers and students. Irrespective of tools or platforms integrated, it is important to keep in mind that to be effectively used in education they must be viewed as tools to support the teaching-learning process (World Bank 2018a). It is

also important to note that the empirical evidence on the impact of ICT on learning outcomes is mixed. Some research suggests that ICT has little to no impact on learning when poorly delivered (Angrist and Lavy 2002; Dynarski 2007). In contrast, other studies, such as a 2016 meta-analysis examining the impact of laptop programs on students' academic achievement, found significant positive average effect sizes in English, writing, mathematics, and science (Zheng et al. 2016). Moreover, there is evidence that ICT interventions that support the teacher-learner interaction and those that change pedagogical methodology are particularly promising (Linden 2008; World Bank 2018a.). Most advanced education systems have made efforts to integrate ICT into education. The most successful ones, including those in Korea, Singapore, and Malaysia, have developed master plans for the integration of ICT in education (see Box 4.9). Moving forward, it will be important for Sri Lanka to develop a master plan to integrate ICT interventions in the context of the broader strategic goal of improving student learning outcomes.

Box 4.9: Malaysian Smart School Initiative

In the late 1990s, Malaysia rolled out a nationwide initiative to introduce the use of ICT in both primary and secondary schools. This initiative was the Malaysian Smart School Initiative (MSSI), which is one of the seven flagship applications of the Multimedia Super Corridor (MSC) undertaken by the Malaysian government to strive toward becoming a knowledge-based economy. The MSSI was based on strategic public-private partnerships involving various stakeholders, including government ministries, industry actors, and local communities. The Malaysian Smart School is defined as “a learning institution that has been systematically reinvented in terms of teaching and learning as well as the improvement of the school management process in order to help students cope and leverage on the Information Age.” Underpinning the program is a comprehensive masterplan, aimed at (a) providing ICT infrastructure; (b) providing broadband and local area network facilities; (c) facilitating training to enhance teachers' competency in integrating ICT in education; (d) establishing a benchmark with the first 88 Smart Schools; (e) incorporating ICT elements into the curriculum; (f) introducing ICT programs at the school level; (g) providing various courseware, educational TV programs, and other resources for teaching and learning; and (h) establishing collaboration programs to expedite the process of making schools smart. The MSSI was launched in four waves:

- **Wave 1** Pilot Phase (1999–2002): 88 schools selected nationwide
- **Wave 2** Post-Pilot (2002–2005): Massive computerization phase to all 10,000 schools
- **Wave 3** Making All Schools Smart (2005–2010): Leveraging all ICT initiatives
- **Wave 4** Consolidate & Stabilize (2010–2020): Innovative practices using ICT enculturate

The MSSI is in the fourth stage of implementation. The pilot and post-pilot phase of the MSSI ended in 2005, and then the initiative was extended to all schools in Malaysia through the ‘Making all schools smart’ program. The pilot revealed a set of issues and challenges including infrastructure readiness, connectivity, change management, parallel ICT initiatives, training of teachers and administrators, technology obsolescence, and policies. To overcome the issues and challenges that emerged during the pilot phase, and in line with the move to make all schools ‘smart’, a monitoring tool known as the Smart School Qualification Standards (SSQS) was introduced in 2006. The SSQS is designed to monitor, evaluate, and categorize schools in the use and impact of the technologies. These indicators were developed to monitor the types of ICT resources available and changes in teaching/learning practices. The Malaysian experience highlights the need for continual support, monitoring, and evaluation as an important part of the implementation process.

Source: Lee and Thah 2016.

167. **CAL is promising but should be recognized as a tool to support teachers, rather than to replace them.** CAL software has become increasingly popular in the education space. It can

enhance communication between teachers and students and/or their parents and help teachers and parents identify and use age-appropriate development activities to support student learning (World Bank 2018a). The CAL programs that have received the most attention and show the most promise serve as a kind of ‘intelligent tutoring’ (Escueta et al. 2017). None of these programs are designed to serve as a substitute for teachers, but rather to complement them. A recent review of 29 studies which evaluated the impact of these ‘intelligent tutoring’ CAL programs suggests that these programs show great potential to improve learning outcomes, particularly when it comes to mathematics (Escueta et al. 2017). Many of these programs may be effective, in part because they allow students to learn at their own pace and adapt to students’ knowledge (Muralidharan, Singh, and Ganimian 2017). In other words, these programs allow students to ‘personalize’ their education. One such program in India, a dynamic CAL program for secondary school students, increased math and language scores more than any other intervention tested both in India and elsewhere. Still, this was designed as an after-school learning program, rather than a substitute for in-classroom instruction (Muralidharan, Singh, and Ganimian 2017). A gaming program in China also showed similar results. See Box 4.10 for more information on these programs. While CAL can be effective in supporting student learning, it works best when it complements teachers, rather than tries to replace them. Sri Lanka may want to consider utilizing CAL to improve learning outcomes, but only to complement the in-classroom instruction provided by teachers.

Box 4.10: Impact of CAL on Learning: Examples from China and India

China: A cluster-randomized experiment in 57 schools in China was undertaken to study the impact of a remedial, game-based CAL program on academic and noncognitive outcomes for students in public schools in minority rural areas in China. The results show that the program that focused on teaching Standard Chinese (Mandarin) after school hours improved the standardized Mandarin scores of the students in the treatment schools by 0.14–0.20 standard deviations compared to those in the control schools. Moreover, CAL also had significant spillover effects on students’ standardized math test scores. The results also show insignificant positive effects of CAL intervention on students’ nonacademic outcomes of interest in studying and metacognition and significant positive effect on students’ self-efficacy of learning Mandarin.

India: A study was undertaken to look at the impact of a CAL program called Mindspark, using a sample of 619 students recruited from public middle schools in Delhi. A lottery provided winning students with a voucher to cover program costs associated with using Mindspark. A key feature of the Mindspark software is its ability to use these data to finely benchmark the learning level of every student and dynamically customize the material being delivered to match the level and rate of progress made by each individual student. A second important feature is its ability to analyze the data to identify patterns of student errors and precisely target content to alleviate conceptual ‘bottlenecks’ that may be difficult for teachers to diagnose or address at the individual student level in a classroom setting. The results showed that lottery winners (those who used the Mindspark program) scored 0.36 higher in math and 0.22 higher in Hindi relative to lottery losers after just four and half months of access to the program. The study found similar absolute test score gains for all students, but the relative gain was much greater for academically weaker students because the rate of learning in the control group was close to zero. The results suggest that well-designed technology-aided instruction programs can sharply improve productivity in delivering education.

Source: Lai et al. 2012; Muralidharan, Singh, and Ganimian 2017.

168. The education system has an important role to play in improving digital literacy, but again it is important to ensure that the technology is deployed to serve this strategic goal. The other important goal of integrating ICT in education is to promote digital literacy and skills. This will empower teacher and students with the skills to use basic technological applications, such as Microsoft Word or Excel and ICT such as Google and Email, for research and

communication. These are applications that are widely used in today's workplace and present-day jobs increasingly require a basic level of digital literacy. The education sector has an important role to play in providing students with the opportunity to acquire those skills. In the last two decades, a group of programs, coined as the one-laptop-per-child (OLPC) program, have been implemented in countries around the world. The goal of many of these programs is to provide children with personal computers to improve educational outcomes and digital skills. Empirical evidence on the impact of these programs suggests that while they do have positive impact on students' ICT skills and usage, the impact on students' academic achievement is modest to nil (Esceuta et al. 2017). To date, many of Sri Lanka's 'ICT in education' initiatives seem to be aimed at improving digital literacy, which is an important goal. Still, moving forward, it will be important for Sri Lanka to clearly identify how to strategically achieve this goal and to ensure that it is aligned with the other objectives of its 'ICT for education' policy.

4.6 USING INTERNATIONAL AND NATIONAL ASSESSMENTS FOR EDUCATION DEVELOPMENT

169. **A high-quality learning assessment system is critical for improving the quality of the education system and, ultimately, for improving student learning outcomes.** The quality of an education system is measured by educational assessments, including classroom-based assessments and national and international assessments. There is considerable evidence that specific types of assessment activities, when implemented and used correctly, have a positive impact on student learning. For instance, research shows a strong link between high-quality, formative classroom assessment activities and better student learning outcomes, as measured by student performance on standardized tests of educational achievement (Clarke 2012). A review of high-performing and highly effective education systems of countries such as Singapore and Finland found that effective assessment systems share a number of common characteristics including that they (a) demonstrate the importance of assessment for student learning, rather than as a disconnected element of the education system; (b) provide students, teachers, and policy makers with information on what has been learned; (c) are closely aligned with curriculum expectations, performance criteria, and learning outcomes; and (d) engage teachers in the assessment development process (Darling-Hammond and Wentworth 2010).

170. **Sri Lanka's learning assessment system has made progress, but there is still room for improvement.** Sri Lanka introduced national assessments in 2003. They are funded by the MoE and carried out by the National Education Research and Evaluation Center (NEREC) at the University of Colombo. Every three years, these national assessments test cognitive skills in the first language (Sinhala and Tamil), English, and mathematics for Grade 4 students and English, mathematics, and science for Grade 8 students. There are a few ways to make these national assessments more useful for education development. First, the technical rigor of the national assessments, including test design, sampling, survey management, analysis of results, and dissemination and publication, needs to be strengthened (Dundar et al. 2017). Moreover, these assessments miss out on the opportunity to collect data on schools, students, teachers, and parents, which could be beneficial to policy makers for educational planning. This type of data was collected in one assessment cycle but was discontinued due to budgetary constraints. In recent years, an effort has been made to improve the understanding of the purpose and use of national assessments among policy makers, but there is still room for improvement in this area. Likewise, the utilization of national assessments for policy development needs to be strengthened. The MoE

introduced a TIMSS module in its national assessments. However, to date, the country has not participated in any of the international assessments such as TIMSS or the Program for International Student Assessment (PISA).

Policy Options to Improve the Learning Assessment System

171. **Sri Lanka will need to improve its use of national assessments for education policy and planning.** National assessments are designed to provide evidence of a country’s educational performance and can be used to measure student learning at one point in time or over time (Dundar et al. 2017). The data from national assessments can also be used as the basis for reviewing the education system, designing and revising curriculums, improving textbooks and learning material, strengthening teacher education and training, and guiding resource allocation (Greaney and Kellaghan 2008). Using national assessments for education development begins with an understanding of the role and purpose of national assessments. It is particularly important that policy makers understand that national assessments play a distinct role and are different from public examinations. Table 4.5 highlights the main purpose and functions of national assessments and how they differ from public examinations.

Table 4.5: Differences between National Assessments and Public Examinations

	National Assessments	Public Examinations
Purpose	To provide feedback to students	To certify and select students
Frequency	For individual subjects offered on a regular basis (such as every four years)	Annually and more often where the system allows for repeats
Duration	One or two days.	Can extend over a few weeks.
Who is tested?	Usually a sample of students at a particular grade or age level	All students who wish to take this examination at the examination grade level
Format	Usually multiple choice and short answer	Usually essay and multiple choice
Stakes: importance for students, teachers, and others	Low importance	Great importance
Coverage of curriculum	Generally confined to one or two subjects	Covers main subject areas
Effect on teaching	Very little direct effect	Major effect: teacher tendency to teach what is expected on the examination
Additional tuition sought for students	Very unlikely	Frequently
Do students get results?	Seldom	Yes
Is additional information collected from students?	Frequently, in student questionnaires	Seldom
Scoring	Usually involves statistically sophisticated techniques	Usually a simple process that is based on a predetermined marking scheme
Effect on level of student attainment	Unlikely to have an effect	Poor results or the prospect of failure, which can lead to early dropout.

	National Assessments	Public Examinations
Usefulness for monitoring trends in achievement levels over time	Appropriate if tests are designed with monitoring in mind	Not appropriate because examination questions and candidate populations change from year to year

Source: Greaney and Kellaghan 2008.

172. **The institutional capacity and conditions to use national assessments for education development need to be developed.** According to Kellaghan, Greaney, and Murray 2009, a number of conditions must be met for a country to make optimal use of the findings of a national assessment. First, there must be sufficient political will to consider reforms and changes that may need to be undertaken in response to the findings of a national assessment. Second, policy and decision makers in the MoE should have the knowledge and skills to interpret and use information from a national assessment—and if such capacity is lacking, substantial investments may have to be made to build this capacity. Third, national assessments must be integrated into existing structures, policy- and decision-making processes, and resource allocation channels. Fourth, there must be a clear dissemination strategy to communicate the findings of a national assessment. Finally, the government must ensure that a high-level team is responsible for undertaking, and interpreting the results of, the national assessments and staff turnover is minimized, as this can seriously affect the quality of the process (Kellaghan, Greaney, and Murray 2009). Going forward, it will be important for Sri Lanka to cultivate an ecosystem to effectively use national assessments for education planning.

173. **International assessments share many similarities with national assessments but offer the added benefit of providing information on the quality of an education system in relation to other systems.** An international assessment is, in many ways, similar to a national assessment. Like a national assessment, it is designed to provide evidence of student achievements/learning outcomes at a particular stage of education and in identified curriculum areas and to track progress over time. Both types of assessments also have a similar approach and share similar procedures in terms of instrument construction, sampling, scoring, and analysis (Greaney and Kellaghan 2008). The main advantage of an international assessment is that it provides information about an education system in relation to one or more other systems. This has a twofold benefit. First, it often puts pressure on politicians and policy makers to improve education services. It also helps them to better understand the factors that contribute to differences in student achievement (Greaney and Kellaghan 2008). It is important to note, however, that international assessments should not be expected to deliver accountability outcomes that national assessment exercises provide (Greaney and Kellaghan 2008). Table 4.6 provides an overview of the main advantages and risks of participating in an international assessment. Two of the main global assessments are TIMSS organized by the International Association for the Evaluation of Educational Achievement (IEA) and PISA organized by the OECD). Table 4.7 provides a description of the main distinctions of each of these two major international assessments.

Table 4.6: Advantages and Risks of Participating in an International Assessment

Advantages	Risks
Adherence to high technical standards of assessment design, instrumentation, sampling, administration, analysis, and reporting	Criticism of the cost of participation, particularly in view of the need to commit to successive rounds if the initial investment is to be worthwhile
Development of indigenous capacity to meet international standards of assessment practice	Disaffection with the international exercise if its assessment framework is of limited relevance and responsiveness to the country joining
High degree of transparency in dissemination of the results; political gains if performance is found to be relatively good compared with peers	Unfavorable comparison of results with neighbors and peers—with attendant political consequences
Positive effects of driving up performance from diagnostic application of results; exposing education system to external scrutiny; and tracking impact of certain interventions/reforms over time	International assessment exercises should not be expected to deliver the accountability outcomes that national census assessment exercises provide
Opportunity to ‘version’ survey instruments of international standard, that is, to adapt them to the national language and context	Failure to fully adapt the survey instruments to the national context. ‘Versioning’ goes beyond translation, to ensure that literacy texts (in particular) are suited to the children’s educational experience and sociolinguistic background

Source: DFID 2009.

174. **Early grade assessments, such as the Early Grade Reading Assessment (EGRA) and the Early Grade Mathematics Assessment (EGMA), have been developed to measure foundational literacy and mathematics skill acquisition.** It is now well established that early gaps in literacy and numeracy only widen with time, and addressing early learning challenges, particularly system-level early learning challenges, is important for developing a high-quality education system (RTI 2016). EGRA and EGMA are two major early grade assessments. These tools were designed to serve as ‘system diagnostics’. While the original test is not a means for screening individual students, there are modified versions of the test that can be used as a screening tool to identify individual students with needs (RTI 2016). Like national and international assessments, they are designed to provide policy makers with information on the quality of early grade instruction, with a view to addressing system needs. EGRA tests for letter recognition, phonemic awareness, reading simple words, and listening comprehension, while EGMA tests number recognition, comparisons, and ordering sets of objects. EGRA has been used in about 70 countries to provide national or system-level diagnostic information about children’s early learning, as well as to support classroom-based assessment and program evaluations (DFID 2009).

Box 4.11: International Assessment and Education Reform in Poland

Poland has greatly improved its student performance in the last decade. According to the OECD PISA results, Poland moved from below to above the OECD average and is now close to top performing countries. The improvements are the result of a series of Polish education system reforms introduced in 1999. The most important change of the 1999 reform was an extension of comprehensive education by one year. A public examination system and expansion of preschool were other key aspects of the reform.

Although policy makers did not pay close attention to the evaluation of these reforms, they undertook participation in PISA beginning in 2000. Polish students tested in 2000, 2009, and 2012, which coincided with a series of reforms that began in 1999. Taking part in successive rounds of PISA allowed them to evaluate the effects of the various reforms. Consequently, PISA has served as a tool to evaluate the reforms of 1999.

Source: Jakubowski 2015.

175. **Sri Lanka would benefit from participating in international assessments.** Most high- and upper-middle-income countries participate in a range of international assessments, such as the Progress in International Reading Literacy Study (PIRLS), TIMSS, and PISA. Developing countries are also stepping up efforts to participate in these tests because they help policy makers benchmark learning outcomes against international standards. Many countries have used international assessments to accelerate education reforms and ultimately improve educational outcomes. For example, TIMSS results in Japan spurred parliamentary discussions about planned changes in education policy. In New Zealand, a task force on mathematics and science was established in response to the TIMSS results. In Canada, the results led to the development of instructional materials based on an analysis of the common misconceptions and errors of students in their response to TIMSS tasks. In Singapore and Canada, participation accelerated changes in the revision of curricula (Greaney and Kellaghan 2008). Box 4.11 also provides the example of Poland, a country that successfully utilized PISA to evaluate the efficacy of education reforms over time. Sri Lanka would benefit from participation in international assessments, particularly as it undertakes reforms to improve the quality of education system. Sri Lanka's participation would help contextualize its student achievement in the global context and may also prompt the necessary reforms to spur further improvement in learning outcomes.

176. **The GoSL understands that mobilizing families and households is an important part of any effort to improve learning outcomes.** To this end, the country has established a program of school-based management, known as the Enhanced Program for School Improvement (EPSI). The EPSI was designed to bring about a change in the culture of schools, with the ultimate aim of improving the quality of student learning. Recognizing the importance of empowering parents and the wider community, School Development Committees (SDCs) were established under the EPSI and were designed to include parents and other members of the broader school community (school alum and other well-wishers). The role of SDCs is to prepare, assist, and monitor the results of school development plans. As such, the SDCs give parents and the community an opportunity to play an integral role in shaping the quality of the school. Moreover, these SDCs provide a platform to engage the parents and the wider school community in any activities that contribute to the improvement of the school, for example, raising additional resources needed for school activities. Ultimately, through the SDC mechanism, the EPSI empowers parents and the community to improve the quality of their local school and the quality of student outcomes in their local area.

177. **The EPSI can further empower the school community to improve student learning outcomes by educating/sensitizing parents and the wider community on student assessment.** Student learning outcomes are captured in a variety of assessments at both the school and the national and international levels. Giving parents and the wider school community a better understanding of (a) what these assessments are designed to do, (b) what kind of information the assessment results provide, and (c) the potential implications of these assessment results for planning interventions at the school level, the EPSI can empower parents and the community with the information they need to plan better for learning improvement at the school level. For instance, if the national assessments indicate that a province or district has performed particularly poorly in a certain subject, for example, English, the SDCs may want to consider using school development grants to develop more activities to improve English language learning in their school; they may even consider working together with a group of schools in the area to improve outcomes in this subject. Empowering all members of the school community with better information on the various

aspects of student learning, such as student assessment, can ultimately help improve the quality of learning outcomes.

Table 4.7: Comparison of PISA and TIMSS

	TIMSS 2003	PISA 2003	
Purposes	<ul style="list-style-type: none"> • To provide comparative evidence on the extent to which students have mastered official school curriculum content in mathematics and science, which is common across a range of countries • To monitor changes in achievement levels over time • To monitor students' attitudes toward mathematics and science • To examine the relationship between a range of instructional and school factors and achievement (reading is covered in separate PIRLS assessment) • 	<ul style="list-style-type: none"> • To provide comparative evidence on the 'yield' of the school system in the principal industrial countries and to assess whether students can apply their knowledge and competencies in reading, mathematics, and science to real world situations. • To monitor changes in achievement levels and equity of learning outcomes over time • To monitor student approaches to learning and attitudes to mathematics, science, and reading • To provide a database for policy development 	
Framework	Framework developed by content experts	Framework developed by content experts	
Target population	Grades 4 and 8.	15-year-olds	
Curriculum appropriateness	Designed to assess official curriculum organized around recognized curriculum areas common to participating countries	Designed to cover knowledge acquired both in school and out of school, defined in terms of overarching ideas and competencies applied to personal, educational, occupational, public, and scientific situations	
Item content differences (mathematics, Grade 8)	Grade 8, item distribution: <ul style="list-style-type: none"> • Number 30% • Algebra 25% • Data 15% • Geometry 15% • Measurement 15% 	Mathematics, overarching ideas: <ul style="list-style-type: none"> • Quantity • Space and shape • Change and relationships • Uncertainty 	Item distribution: <ul style="list-style-type: none"> • Number 31.8% • Geometry 21.2% • Statistics 21.2% • Functions 10.6% • Discrete math 5.9% • Probability 5.9% • Algebra 3.5%
Cognitive processes	Grade 8: <ul style="list-style-type: none"> • Solving routine problems 40% • Using concepts 20% 	Item distribution: <ul style="list-style-type: none"> • Connection 47% • Reproduction 31% 	

	TIMSS 2003	PISA 2003
	<ul style="list-style-type: none"> • Knowing facts and procedures 15% • Reasoning 25% 	<ul style="list-style-type: none"> • Reflection 22%
Item types (mathematics)	About two-thirds being multiple-choice items, with the remainder being constructed response or open-ended items	About one-third being multiple-choice items, with the remainder generally being closed (one possible correct response) or open (more than one possible correct response) constructed-response items
Frequency	Every four years: equal emphasis on mathematics and science in each cycle	Every three years: extensive coverage of one domain (subject) every nine years (reading in 2000, mathematics in 2003, and science in 2006), plus less extensive coverage of the other two every three years
Geographical coverage	48 countries: 20 high-income, 26 middle-income, and 2 low-income countries.	30 OECD countries as well as 11 other countries
Analysis	Four benchmark levels and a mean score, which are based on all participating countries	Seven mathematics proficiency levels and a mean score, which are based on OECD countries

Source: Greaney and Kellaghan 2008.

4.7 PART FIVE: IMPROVING GENDER EQUITY IN LEARNING OUTCOMES

178. **Like many middle- and high-income countries, Sri Lanka must confront a new challenge for gender equity; that of boys lagging behind in access at the higher levels of the education system and underperforming in terms of learning achievement.** The analysis of educational participation and achievement data for Sri Lanka clearly shows that girls outperform boys at every level of the educational system. Girls participate in education at higher rates than boys, particularly at higher levels of the education system (Aturupane, Shojo, and Ebenezer 2018). Girls also consistently outperform boys on all measures of achievement in the educational system. This is a relatively new challenge for most countries, and the policies to address this challenge are less tested. Nevertheless, for Sri Lanka to improve its learning outcomes overall, it must address this challenge, and if it is successful, it may be a pioneer in this emerging challenge to gender equity. It should also be noted that despite high education achievements, the labor market outcomes of women have been less satisfactory over a long period of time (Aturupane 1996; Aturupane 1997; Rodrigo and Perera 1997).

179. **Research on boys' underperformance in Sri Lanka suggests several key factors, including societal and cultural influences, curriculum and learning styles, peer group pressures, and attitudes to education that are likely having an impact on boys' educational performance.** A recent study was undertaken to better understand the reasons for boys' underperformance in Sri Lanka. The results suggested that there may be a set of social and cultural influences that may be having an impact on boys' performance; these include cultural perceptions of the relative importance of education for boys versus girls, gender stereotypes about the innate academic ability of boys and girls, and differences in parental oversight of boys and girls (Aturupane, Shojo, and Ebenezer 2018). The same study also suggests that there may be

classroom-level variables such as curriculum and assessment methodology, the structure of the school day and the academic workload, and the lack of male teachers in the system—all of which may be having an impact on boys’ performance. Finally, interviews and focus group discussions also suggest that student behavior and attitudes such as a lack of professional ambition among boys and the absence of positive role models are also important factors affecting boys’ educational performance in Sri Lanka.

Policy Options to Improve Boys’ Learning Achievement in Sri Lanka

180. **Sri Lanka should consider special training for principals and school leadership, to sensitize them on gender-based stereotypes that may influence the performance of both male and female students.** Cultural and societal norms and stereotypes are deeply entrenched and identifying effective strategies to address them is a challenge. Moreover, researchers have emphasized that gender stereotypes form early and therefore it is important to address them as early in the school cycle as possible, even at the preschool level (Aina and Cameron 2011). Strong school leadership may be particularly important to this endeavor, as a comparison of two experimental programs, one each in Australia and Jamaica, suggests. Both these programs attempted to address gender stereotypes. In Jamaica, they experimented with interventions such as counseling and adopting transparent approaches to engagement between teachers and students, with the specific goal of dismantling gender stereotypes about school and so on. The Australian program attempted to transform the school environment—without specifically trying to change boys’ stereotypes of masculinity. In the end, the Jamaican school was not as successful in transforming the gender-based stereotypes as the Australian school. Researchers hypothesize that this may have been in part due to the difference in school leadership; at the Australian school, the principal’s vision to create an open, transparent, and engaging learning space for all students may have been a more powerful factor in changing students’ perceptions of learning (Jha and Kelleher 2006). This program underscores the importance of school leadership in shaping the culture and environment of a school. Ultimately, training for principals and school leadership should include sensitization to gender-based stereotypes, and this may have a powerful influence on the performance of both male and female students.

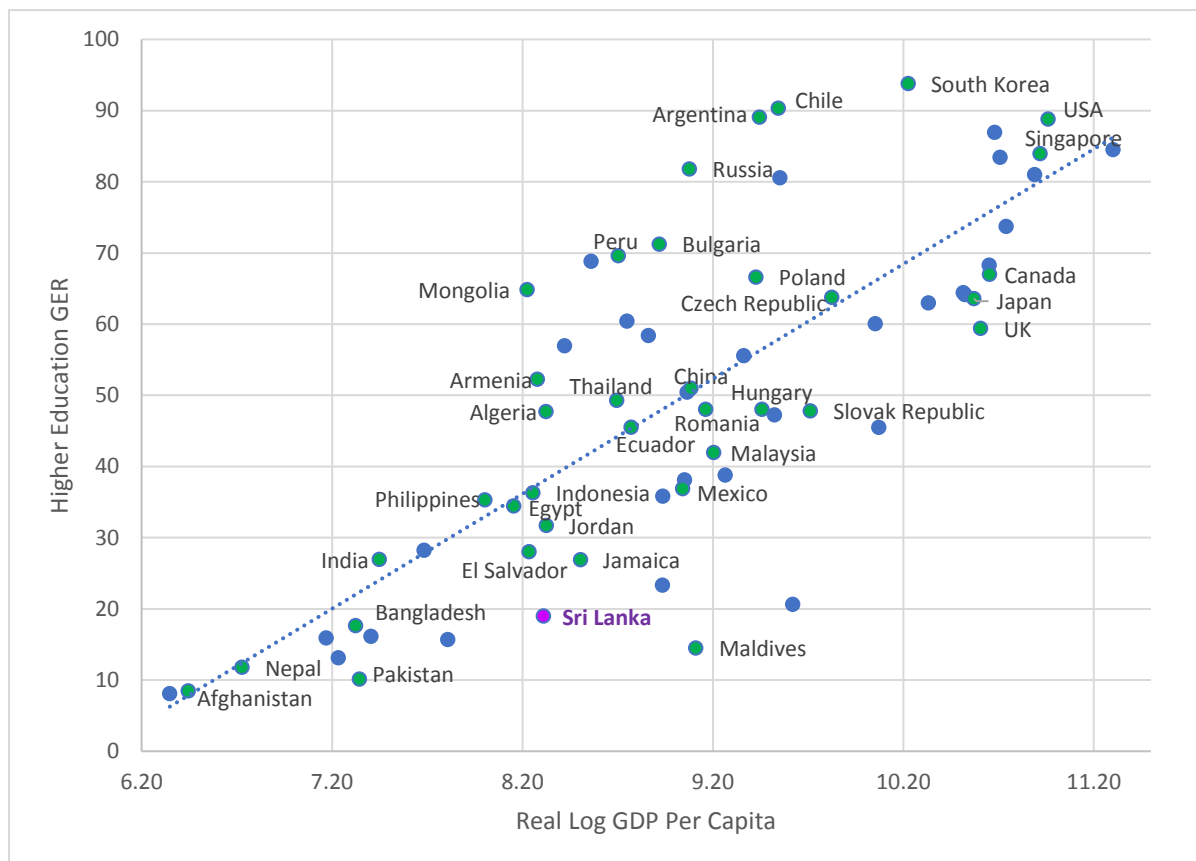
181. **Sri Lanka may also want to consider undertaking an institutional review of aspects of the traditional school structure, curriculum, and assessment methodology, all of which may have an adverse impact on boys’ performance.** The literature points to a variety of strategies to improve pedagogical practices as a means of engaging boys and improving their academic performance. These include highly structured lesson plans, frequently changing classroom activities, positive reinforcement of achieved outcomes, personal interviews for the purposes of target setting, and various modes of hands-on learning (Cuttance and Thomson 2008). As the 2018 study on boys’ underperformance in education in Sri Lanka suggests, aspects of the Sri Lankan curriculum, school schedule, and structure may need to be reexamined to address underperforming boys (these include the timing of the Grade 5 scholarship exam, the current assessment methodology, the tightly packed school schedules, and the amount of outdoor activity built into children daily schedules) (Aturupane, Shojo, and Ebenezer 2018). It will be important for a set of Sri Lanka’s educational stakeholders and experts to conduct a focused review of various aspects of the educational system, to assess how they can be reformed in ways that are beneficial to the performance of all students, boys and girls.

CHAPTER 5. HUMAN CAPITAL DEVELOPMENT: TRANSFORMING HIGHER EDUCATION

5.1 INTRODUCTION

182. **Higher education is increasingly important for development in the modern, technologically advanced, knowledge-intensive global economy.** The economic benefits of investment in higher education have been steadily increasing over the last 30 years (Psacharopoulos and Patrinos 2018). However, participation in higher education in Sri Lanka is low by international standards (Aturupane 2017; Gunatilleke 2015). Higher education enrollment is considerably below East Asian middle-income countries such as China, Indonesia, Malaysia, Mongolia, the Philippines, and Thailand, as well as India in South Asia (Figure 5.1). However, the demand for higher education is increasing in Sri Lanka as the number of students who complete secondary education is large and rising (Dundar et al. 2017). Further, the demand for higher education is income elastic; as the per capita income of the country increases and the aspirations of young people grow, the demand for higher education will rise. In addition, employers in the private sector are seeking graduates with high-quality knowledge, skills, and expertise for their firms and industries.

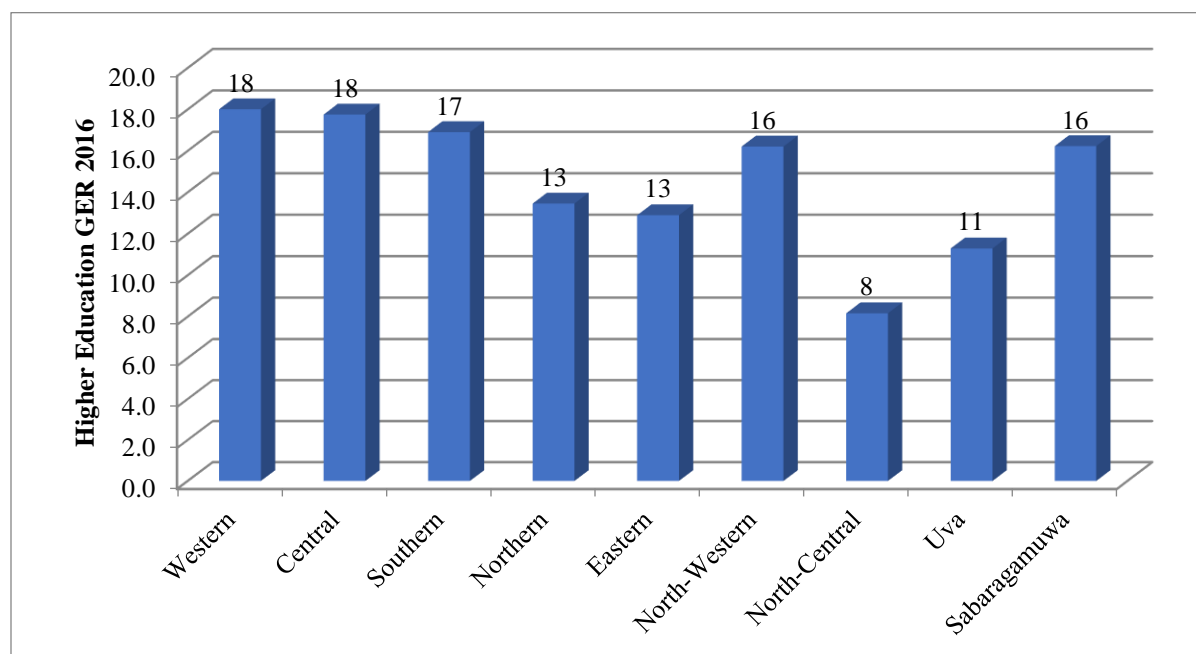
Figure 5.1: Higher Education Enrollment in International Perspective 2014–2016



Source: World Bank Education Statistics.
Note: GER = Gross enrollment ratio.

183. **The low level of higher education participation in the country is also reflected at the provincial level.** The higher education enrollment rate is below 20 percent in all provinces (Figure 5.2). The highest higher enrollment rates are seen in the Western Province and Central Province, 18 percent, followed by the Southern Province, 17 percent, and the North-Western and Sabaragamuwa Provinces, 16 percent. The North-Central Province, with an enrollment rate of 8 percent, has the lowest participation rate, followed by the Uva Province, 11 percent, the Eastern Province, 13 percent, and the Northern Province, 13 percent. The pattern of education outcomes across provinces, as measured by learning levels in schools, appears to be translated into higher education as well. The provinces that have the highest learning outcomes in general education also have the largest higher education enrollment rates.

Figure 5.2: Higher Education Enrollment across the Provinces, 2016



Source: Computed from the Household Income and Expenditure Survey 2016.

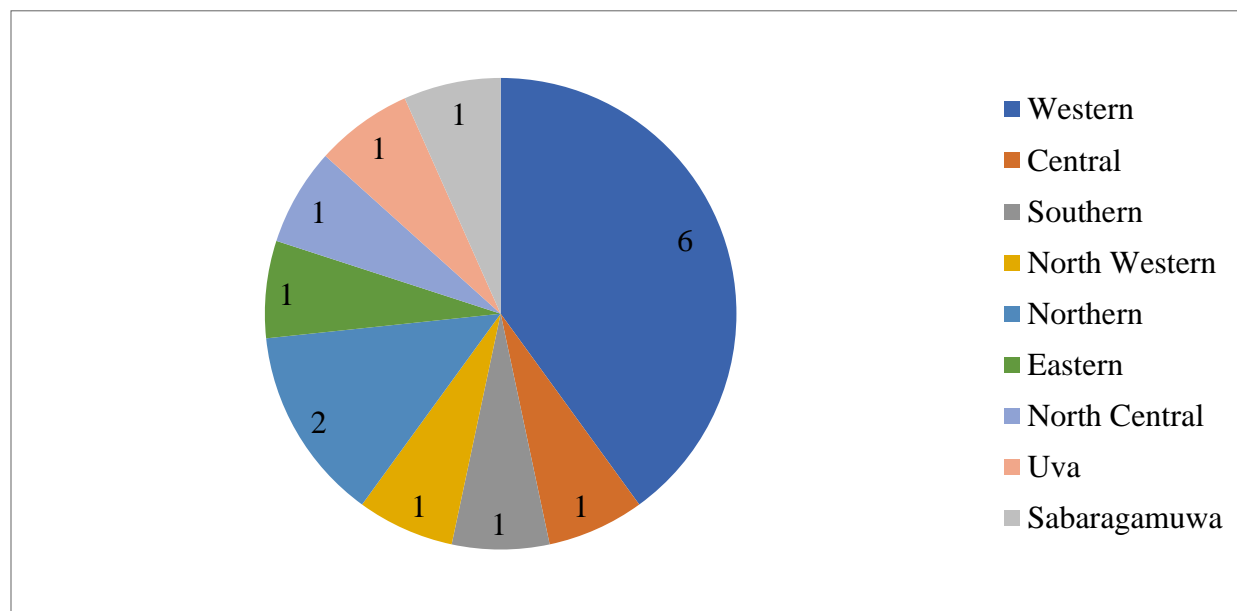
184. **The government has a multipronged strategy to develop the higher education system.** The key components of this strategy are to (a) increase enrollment in degree programs important for economic development; (b) improve the quality of university education, especially the labor market relevance of degree programs; and (c) enhance research and innovation. These are vitally important development initiatives. Sri Lanka's higher education enrollment, at about 18 percent, is well below the average for LMICs, 24 percent, and UMICs, 52 percent. Increasing enrollment is, therefore, necessary. Improving the labor market relevance of degree programs is required to meet the needs of an evolving economy which is seeking to develop through private sector-led and export-oriented growth. Research and innovation are underdeveloped in Sri Lanka, as all universities are mainly teaching institutions. Sri Lanka performs relatively poorly across a variety of research and innovation rankings, such as the number of citable documents per million population and the number of patents applications submitted (Dundar et al. 2017).

5.2 HIGHER EDUCATION AND PROVINCIAL DEVELOPMENT

185. **Higher education can make a direct and strong contribution to the development of the provinces.** The location of large higher education institutions such as universities in provincial towns has the potential to stimulate regional economic development through multiple channels. The presence of thousands of students and hundreds of staff members generates demand for a wide array of commodities, including food, clothing, housing, education and cultural activities, recreation, and transport. Substantial inflows of investment in response to these demands can transform a regional economy (Harrison and Turok 2017). For instance, small towns can become large towns when universities are set up in their neighborhood. The production of graduates can also supply regional economies with educated human resources for managerial, professional, and technical jobs.

186. **Sri Lanka has a network of universities across all the provinces.** There are six universities in the Western Province, two universities in the Eastern Province, and one university in each of the other provinces (Figure 5.3). The large number of universities in the Western Province reflects the high population density of this province and the historical evolution of the university system in the mid-20th century. The existence of at least one university in every province, however, is the result of government policy from the 1990s (Aturupane 1993) to the early 21st century. The government deliberately opened a university in all the provinces that lacked a university during this period. The main objective of establishing a university in each province was to promote regional economic growth.

Figure 5.3: Share of Universities in Provinces, 2016/17

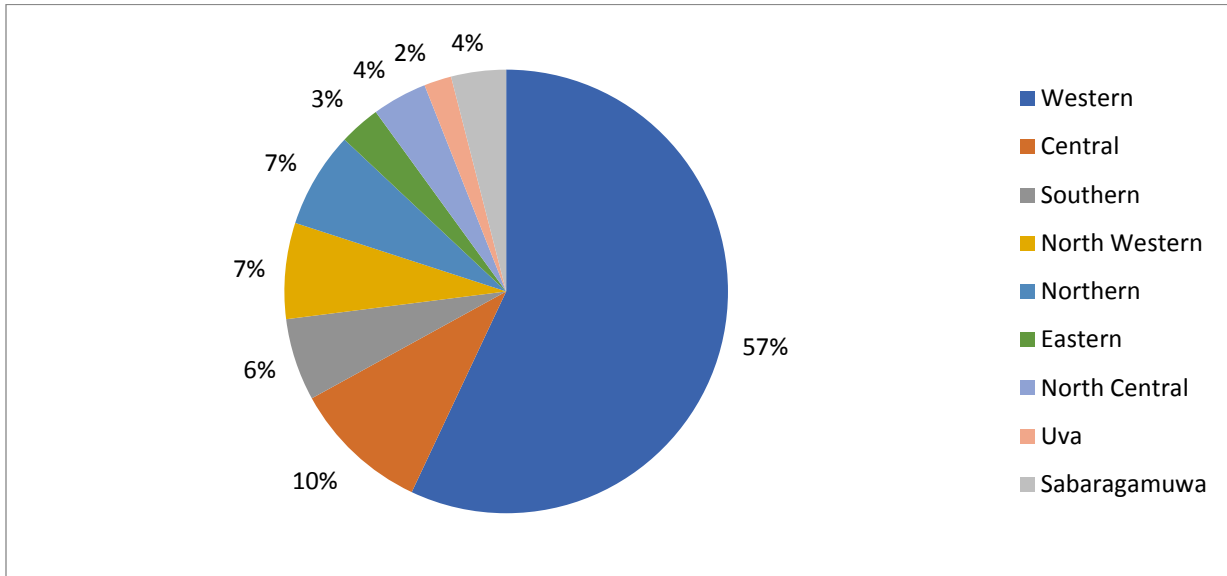


Source: Calculated from the UGC Statistical Handbook 2017.

187. **The largest university enrollments, 61,000 undergraduate students and 20,000 postgraduate students, are in universities in the Western Province** (Table 5.1 and Table 5.2). This is 57 percent of all undergraduate students (Figure 5.4) and 85 percent of all postgraduate students (Figure 5.5). The main reason for the prominence of the Western Province is that the

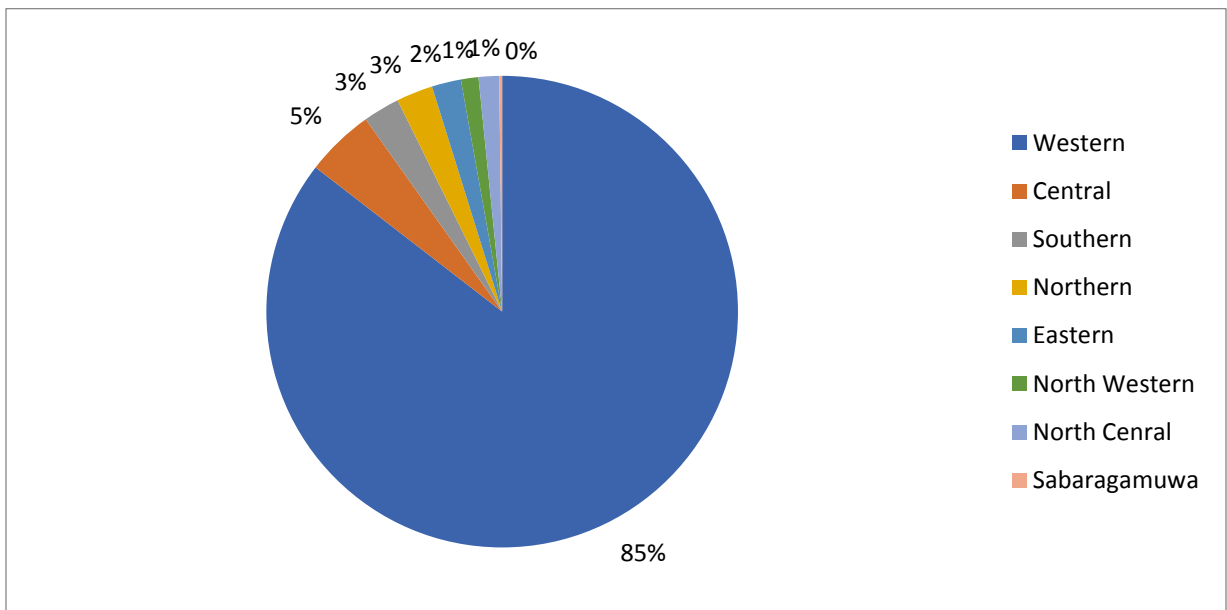
universities in the region are older and have had a longer period in which to develop than nearly all the universities in the other provinces. Only the University of Peradeniya in the Central Province is comparable in age to the University of Colombo in the Western Province. The universities in the North-Central, North-Western, Sabaragamuwa, Eastern, and Uva Provinces were established only in the mid-1990s and the early 2000s, to enable each province to have at least one university to promote regional development and geographical equity.

Figure 5.4: Share of Undergraduate University Enrolment, 2016/17



Source: Calculated from the UGC Statistical Handbook 2017.

Figure 5.5: Share of Undergraduate University Enrolment, 2016/17



Source: Calculated from the UGC Statistical Handbook 2017.

Table 5.1: Undergraduate Enrolment in Universities, 2016/17

Universities	Male	Female	Total Enrollments	Total Share of University Enrollment (%)
Western Province				
Colombo	2,663	6,209	8,872	8
Kelaniya	2,627	6,784	9,411	9
Moratuwa	4,129	2,262	6,391	6
Open	9,217	13,329	22,546	21
Sri Jayawardenapura	4,019	7,550	11,569	11
Visual Arts	560	1,629	2,189	2
Total	23,215	37,763	60,978	57
Central Province				
Peradeniya	4,265	6,406	10,671	10
Total	4,265	6,406	10,671	10
Southern Province				
Ruhuna	2,969	4,410	7,379	6
Total	2,969	4,410	7,379	6
Northern Province				
Jaffna	2,606	4,765	7,371	7
Total	2,606	4,765	7,371	7
Eastern Province				
Eastern	1,266	2,299	3,565	3
South Eastern	1,309	2,536	3,845	4
Total	2,575	4,835	7,410	7
North-Western Province				
Wayamba	1,236	1,973	3,209	3
Total	1,236	1,973	3,209	3
North-Central Province				
Rajarata	1,457	3,044	4,501	4
Total	1,457	3,044	4,501	4
Uva Province				
Uva Wellassa	791	1,241	2,032	2
Total	791	1,241	2,032	2
Sabaragamuwa Province				
Sabaragamuwa	1,411	2,368	3,779	4
Total	1,411	2,368	3,779	4
All	40,153	66,451	106,604	100

Source: UGC 2016.

Note: Undergraduate enrollments in universities include undergraduate enrollments in faculties and institutes.

Table 5.2: Postgraduate Enrollment in Universities, 2016/17

Universities	Male	Female	Total Enrollments	Total Share of Postgraduate Enrollment (%)
Western Province				
Colombo	3,389	3,542	6,931	29.6
Kelaniya	1,061	1,480	2,541	10.8
Moratuwa	2,211	624	2,835	12.1
Open	1,905	4,425	6,330	27.0
Sri Jayawardenapura	689	610	1299	5.5
Visual Arts	49	31	80	0.3
Total	9,304	10,712	20,016	85.3
Central Province				
Peradeniya	793	312	1105	4.7
Total	793	312	1105	4.7
Southern Province				
Ruhuna	294	294	588	2.5
Total	294	294	588	2.5
Northern Province				
Jaffna	336	243	579	2.5
Total	336	243	579	2.5
Eastern Province				
Eastern	109	55	164	0.7
South Eastern	262	52	314	1.3
Total	371	107	478	2.0
North-Western Province				
Wayamba	188	105	293	1.2
Total	188	105	293	1.2
North-Central Province				
Rajarata	172	166	338	1.4
Total	172	166	338	1.4
Sabaragamuwa Province				
Sabaragamuwa	35	10	45	0.2
Total	35	10	45	0.2
All	11,495	11,952	23,447	100

Source: UGC 2016.

188. The next stage of higher education development can draw upon three global waves of higher education: mission differentiation, internalization, and the development of the private

sector. These three waves of global experience commenced in advanced higher education systems such as those in the United States and Western Europe but are now spreading to UMICs. They can also complement the development of regions through higher education. Mission differentiation, for instance, can be used to strategically develop provincial universities and regional economies. Internationalization can enable provincial universities to reach out to global flows of knowledge and ideas and accelerate their development. The promotion of the private sector can help provinces attract investment and stimulate their economies. The next section of this chapter turns to a discussion of these various policy initiatives.

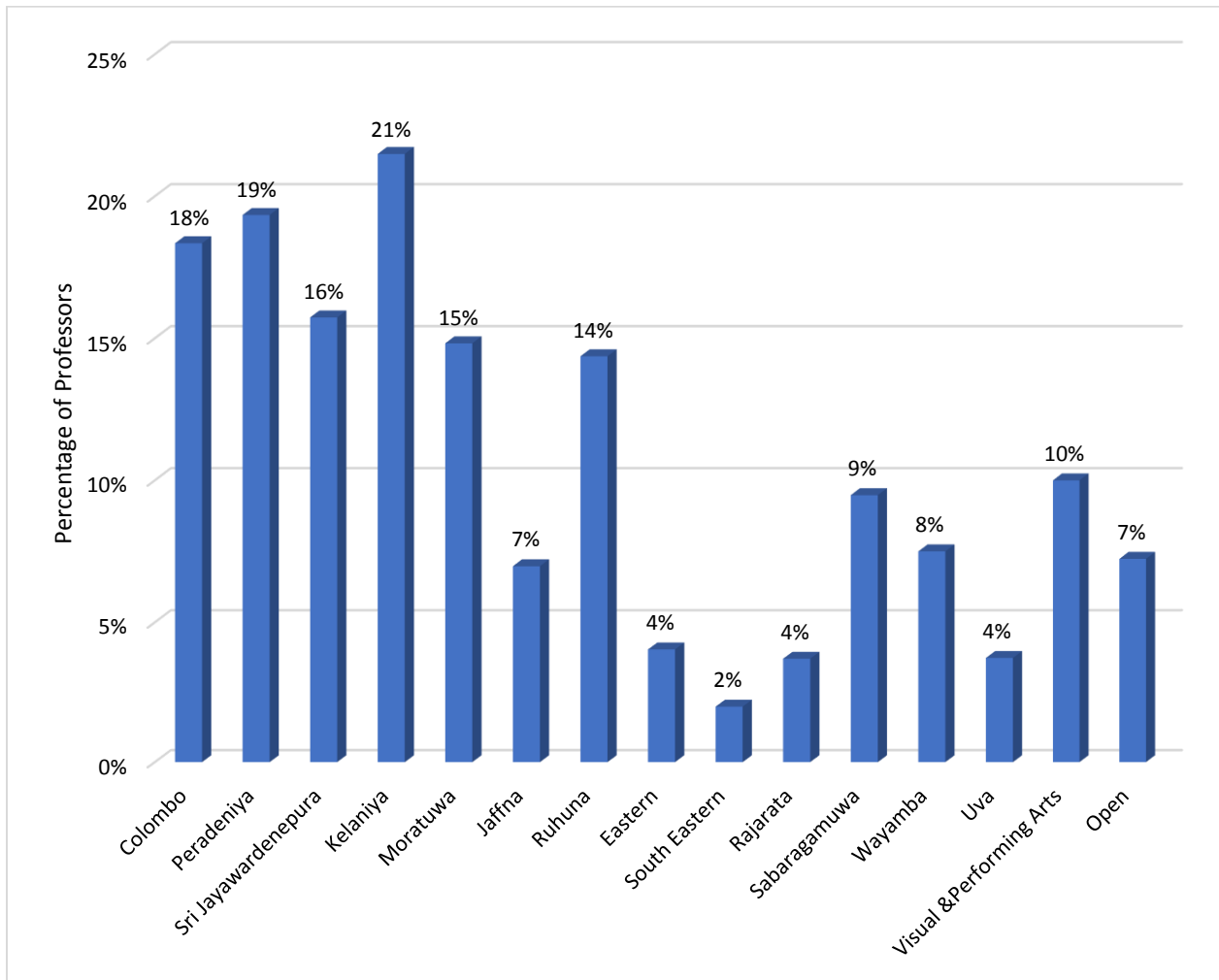
5.3 MISSION DIFFERENTIATION OF UNIVERSITIES

189. **Mission differentiation would be the logical next stage in higher education development.** One set of universities, mainly drawn from among the newer higher education institutions in the provinces, could be designated as predominantly teaching universities, with their main mission focusing on excellence in teaching and learning. The financing of these universities, and their internal governance systems, could reflect this focus. Another set of universities, mainly drawn from among the older, more developed higher education institutions, could have, in addition to their teaching role, an important mandate for research and innovation and the commercialization of innovations. A third set of universities could emphasize, along with their teaching functions, community services and regional development.

190. **The division between predominantly teaching universities and universities that could have a stronger research mandate needs to be linked to the quantity and quality of academic staff.** The older and more established universities, such as Peradeniya, Colombo, Kelaniya, Jayewardanapura, Moratuwa, and Ruhuna, have a higher proportion of professors (Figure 5.6) and may be the universities that are more likely to engage in research. Other universities, with fewer professors, may be less likely to engage in research and more likely to be mainly teaching institutions. However, this division is not hard, and within new universities there are groups of academics and departments where there are active researchers and innovators. These departments and academics need to be encouraged to engage in research and innovation commercialization activities.

191. **Mission differentiation among universities, based on comparative advantage, would offer promising opportunities for regional development.** The new universities located in the provinces can be developed as centers of teaching excellence to produce high-quality graduates, with a strategic focus on community services and regional development. Some of the graduates from these universities would work within their provinces, while of course other graduates would work in other regions of the country or overseas. In keeping with their regional development mandates, universities could create degree programs seeking to cater, in part, to their provincial labor market needs. For instance, universities located in areas that have strong potential for tourism—such as the Eastern and Northern Provinces with their ocean front coastlines and beaches and the North-Central Province with its historic ancient cities—can seek to produce the human resources required for rapid growth in tourism, hospitality, and leisure services. Universities in the Sabaragamuwa and Uva Provinces with their lush mountains and hills and large tracts of arable and fertile land have good potential for firms specializing in technology-intensive agriculture and agriculture-based industries. The universities in these provinces can seek to provide the knowledge and expertise for value-added agriculture and vertically linked industrial activities.

Figure 5.6: Proportion of Professors in the University System



Source: UGC Statistics 2017.

192. **An incentive system can be designed to promote high-quality teaching and learning in universities designated as centers of teaching excellence.** This would include career pathways and promotion schemes for academics that emphasize the quality of teaching and learning, with a special focus on the employment prospects of their graduates. The U.K. Teaching Excellence and Student Outcomes Framework, for instance, focuses on teaching quality, learning environment, student outcomes, and learning gains. The learning environment could also be more oriented toward outcome-based education and learning-centered teaching. In fund allocations, learning spaces could be redefined so that greater emphasis is given to learning spaces that seek to promote collaborative and team-oriented learning, rather than the traditional large lecture theatres and halls. Concepts such as the greater use of air and light, flexible seating, and individual and personalized spaces for students and staff, and smaller open learning spaces for group-based learning can be emphasized. Teaching excellence awards can also be introduced for academic staff in these universities. An example of a teaching award system from the United Kingdom is illustrated in Box 5.1.

Box 5.1: The U.K. National Teaching Fellowship Scheme Awards

The U.K. National Teaching Fellowship Scheme (NTFS) awards celebrated outstanding teaching and learning in higher education. Academics from England, Scotland, Ireland, and Wales were eligible to apply. Applications were made by individual academics, with support from their institutions. Each higher education institution could nominate up to three academics.

The awards could be used by the winners for professional development in teaching and learning. Award-winning individuals received recognition within the United Kingdom and overseas, as these were highly competitive. The awards also opened new opportunities for career development and progression. Award winners also become part of a community of professionals who were passionate about higher education teaching.

Higher education institutions also benefited. The NTFS awards were “increasingly used as a model to develop and extend university-wide schemes, aiming to raise the status of teaching and instill pride in the profession and student learning” and “enable staff to cross boundaries, collaborating with colleagues in other disciplines and forging links with universities abroad” (NTFS).

The NTFS was in operation for more than 19 years. About 860 NTFS fellows from over 40 academic disciplines benefited from these awards.

Source: The Higher Education Academy, England and Wales.

193. **The role of universities in advancing growth through research and innovation, and economic linkages with industry, is increasingly important in upper-middle-income and high-income economies** (Altbach 2013). Sri Lanka’s innovation policy acknowledges the value of universities in promoting innovation-led growth. The older, established universities, such as the more research-oriented universities, could be promoted as developmental universities. These universities would place greater emphasis on research, leading to innovations and the commercialization of innovations. The funding mechanisms, the incentive framework for academic staff, and the governance systems of these universities could explicitly recognize their roles as developmental universities. Science, technology, engineering, and mathematics (STEM) academics could be encouraged to undertake research and innovation, leading to intellectual property such as patents and industrial designs. Social science and humanities academics could be encouraged to engage in policy-oriented research which is useful for economic growth and social and cultural development. The latter could also result in intellectual property such as copyrights and trademarks.

194. **Policy initiatives can promote stronger linkages between the developmental universities and industry** (Guimon 2013). University-Business Linkage (UBL) Cells have been recently established in universities. These UBL Cells can provide support services to match firms and universities for research and development activities. The UBL Cells can also engage in outreach activities to promote networking and create awareness of the benefits of collaboration among academics and industry. In addition, the UBL Cells can develop technology transfer offices and business incubators in universities. Research commercialization activities can be supported through innovation grants to universities and firms for collaborative research and development projects.

195. **A framework for promoting university-industry collaboration in the context of a mission differentiated higher education system with some institutions emphasizing teaching excellence and other universities emphasizing research and innovation is presented in Table 5.3.** Teaching universities in less developed provinces could seek to improve the labor market

relevance of degree programs for their national and local economies. Teaching universities in the more developed provinces could invite partners from industry to contribute to the design of university curricula and the delivery of courses. Also, there would be more opportunities for student placements in industry through internship programs. An example of university-student interactions to improve the quality and relevance of degree programs in Germany is given in Box 5.2.

Table 5.3: Priorities for University-Industry Partnerships at Different Stages of Development among Provinces

	More Developed Provinces	Less Developed Provinces
Teaching universities	<ul style="list-style-type: none"> • Participation of industry in curriculum development • Participation of industry in teaching and course delivery • Student internships 	<ul style="list-style-type: none"> • Improve labor market relevance of undergraduate studies
Developmental universities	<ul style="list-style-type: none"> • Research consortia and long-term research partnerships • Spin-off companies, patent licensing • Business incubation services • Entrepreneurship promotion 	<ul style="list-style-type: none"> • Building absorptive capacity to adopt and better diffuse existing technologies • Focus on appropriate technologies to respond to local needs • Entrepreneurship education

Source: Adapted from Guimon 2013.

196. **Developmental universities would mainly be institutions that already contain active groups of academics engaged in research and innovation activities.** In more advanced provinces, such as the Western Province, developmental universities could collaborate with industry to promote entrepreneurship, develop spin-off companies, engage in long-term research and innovation partnerships, and provide business incubation services. In less developed provinces, universities could focus on developing appropriate technologies for local economic needs, creating an enabling environment for better adoption and diffusion of existing technologies and entrepreneurship education.

Box 5.2: Involvement of External Stakeholders in Program Development and Improvement at the Mittelhessen University of Applied Sciences, Germany

The possible scope of external stakeholder involvement in the development and implementation of higher education programs is exemplified by work-integrated programs in Germany, like the ones offered by the Mittelhessen University of Applied Sciences (UAS). To align its programs more closely with the demands of employers in the region, Mittelhessen UAS developed work-integrated programs, which are characterized by a combination of phases of study at the higher education institution and phases of work at the companies participating in the program. Mittelhessen UAS and the employers work together on different levels for the development, implementation, and improvement of these programs.

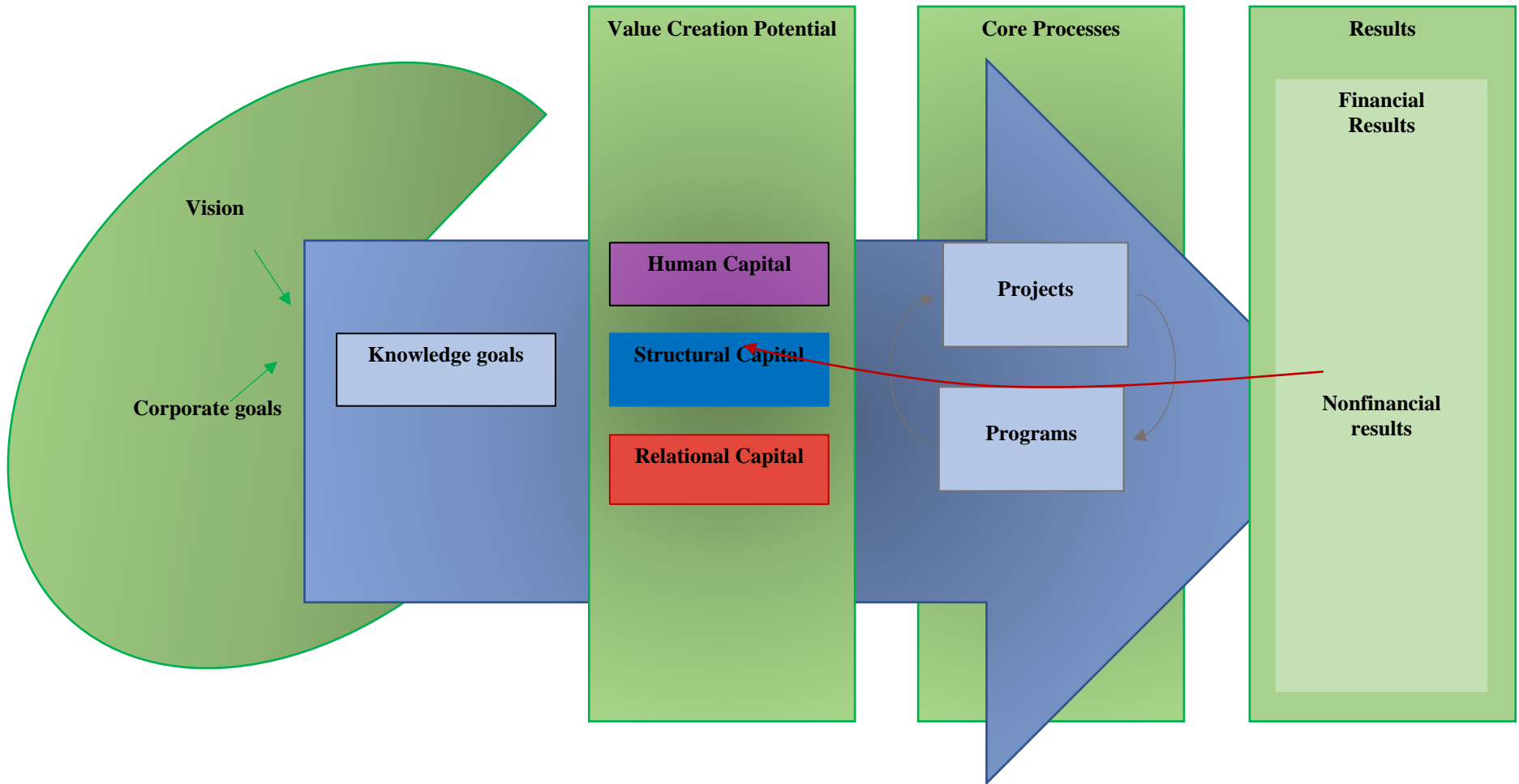
The basic structure of all programs was developed jointly, including the regional chambers. To implement the programs, a special center at the institution was established, that receives advice from a board staffed with representatives of Mittelhessen UAS and the companies participating in the work-integrated programs. The involvement of both parties in this board ensures a connection between the theoretical and practical parts of the programs as well as up-to-date study content in line with the employers' requirements. This connection is reinforced by boards on lower levels responsible for certain program fields, which deal with, among other things, the continuous development of programs, quality assurance processes, and knowledge transfer activities. There is an additional connection between employers and programs in that practitioners from the companies are directly involved in teaching activities.

Source: World Bank Support to Higher Education in Latvia, Volume 3.

197. **Policy initiatives to promote developmental universities could focus on creating an enabling environment for academics to engage in research and innovation, and innovation commercialization activities.** Universities need a more favorable environment for the promotion of research and innovation (Aturupane 2011, 2016; Larsen et al. 2016). There are several policy measures that are important. The incentives for academics to engage in innovation activities can be increased by giving recognition to research leading to intellectual property in university promotion schemes. The UBL Cells need to be developed to contain technology transfer offices and to create limited guarantee companies that can facilitate the commercialization of innovations. More space needs to be created in the work schedules of academics in developmental universities to undertake research and innovation. Developmental universities can also be enabled to establish open innovation spaces and business incubators. The evaluation of developmental universities can include assessing the extent to which their intellectual capital is used for national and regional development. An example of intellectual capital statements (ICSs) in Austria are given in Figure 5.7.

198. One approach to transforming intangible assets into internal reporting and management procedures is ICSs, which have become widely used in Austria. The basic idea behind an ICS is to represent the value of institutions' intangible assets such as knowledge and competences and thereby to complement financial reporting procedures. One model of ICSs has been developed by the Austrian Research Center. In this model, intellectual capital is captured through quantitative and qualitative measures and a narrative part within the ICS. Taking the institution's overarching vision as a starting point, knowledge objectives and related measures (covering intellectual capital, results, and impact) are derived (see Figure 5.7). The ICS developed this way can then be used to provide external stakeholders with knowledge on the institution and to support internal management processes. In Austria, ICSs have been made part of the yearly reporting duties of public higher education institutions to the Ministry of Education, Science, and Culture.

Figure 5.7: ICSs in Austria



5.4 TECHNOLOGY AND HIGHER EDUCATION

199. **Access to digital resources and the increasing use of the Internet can enhance the quality of teaching and learning in the university system.** Internationally, even the distinction between campus-based learning and e-learning is becoming less relevant and is being superseded by ‘blended’ learning, where ICT and the Internet are integrated into curriculum development, course management, and content delivery for on-campus study programs. At global levels, the headlines highlight ground-breaking innovations such as Khan Academy, Open Courseware (MIT), and Open Learning Initiatives (Carnegie-Mellon). In addition, campus teaching and learning can incorporate online video lectures, access to e-journals, and searches in engines such as Google Scholar, Bing, and Wikipedia. In addition, universities can use technologies such as group videoconferencing to bring rare expertise from overseas or more developed universities to entire classes of students.

200. **ICT can be used to enhance and support teaching and learning, especially in the less developed provincial universities, to bring them closer to the levels of teaching performance in more developed metropolitan universities.** Some of the trends in ICT and higher education that can facilitate this process are the following:

- (a) **Personalized learning and open courseware.** There is a vast quantity of higher educational resources available on the Internet. In consequence, academics are increasingly providing links to video lectures and texts through which students can utilize their level of prior preparation and follow studies tailored to their personal interests. For instance, Khan Academy has algebra lessons intended to fill gaps in the learning of more disadvantaged students and enable them to attain parity with their peers.
- (b) **Teacher-generated open content.** OECD higher education systems are increasingly empowering academics to identify and create learning resources with the greatest learning impact. Online textbooks are appearing which allow teachers to edit, add to and customize material, and enable students to prepare a tailored copy precisely matching the style and pace of the degree program. These ICT-enabled activities are often supported through nontraditional forms of intellectual property and copyright, such as Open Courseware and Creative Commons Licenses.
- (c) **Teacher managers or mentors.** The role of academic staff members in the lecture halls is being transformed from a ‘font of knowledge’ to an instructional manager whose role is to assist students through individualized learning pathways, identify applicable learning resources, create collaborative learning opportunities, and provide academic insight and learning support during formal class time and beyond the designated lecture period.

5.5 PRIVATE SECTOR HIGHER EDUCATION DEVELOPMENT

201. **The development of private universities in the provinces would be a landmark achievement.** At present Sri Lanka lags badly behind the rest of the world in private higher education. The share of private sector higher education enrollment in the country, at 20 percent, is

lower than the average for all world regions (Table 5.4). It is also less than half the average for South Asia and well below the shares in Sub-Saharan Africa and Eastern Europe and Central Asia, which are the world regions with the lowest share of enrollment in private higher education institutions. Yet, private higher education institutions have expanded rapidly around the world, and countries such as Korea, which lead the world in higher education enrollment, have a large private higher education sector (Box 5.3).

Table 5.4: Private Enrollment as a Share of Total Tertiary Education Enrollment by Region

Region	Proportion
East Asia and the Pacific	42.2
Eastern Europe and Central Asia	29.2
Latin America and the Caribbean	50.2
Middle East and North Africa	39.0
South Asia	47.0
Sub-Saharan Africa	32.0
Sri Lanka	20.0

Source: OECD for World regions; Dundar et al. 2017 for Sri Lanka.

202. **The low overall enrollment in higher education and the small share of enrollment in private higher education institutions mean that the country has an excellent opportunity to promote enrollment expansion through the development of private higher education.** Currently, the country has a few private higher education institutions. These are concentrated mainly in the Western Province, although there are also a few in Kandy in the Central Province. Over time, as the country develops, there will be demand for private higher education institutions to be located in other provinces. Further, the location of private higher education institutions in provinces outside of the Western Province can help generate economic activities in these provinces and promote their development. There are several strategies the government could adopt to promote the growth and development of the private sector in higher education.

203. **The provincial councils or national government can provide land for the establishment and development of private higher education institutions.** This is a well-known policy around the world which can be very useful for non-state higher education institutions, as land is one of the largest cost items in setting up or expanding campuses. This policy would be particularly useful for regions such as the Northern, Eastern, North-Central, and Uva Provinces, which are sparsely populated and have large areas of open land. However, it would be important to select the sites offered carefully, as staff and students would require easy access to the educational and health facilities and cultural and recreational opportunities available in towns.

204. **The provision of financial grants to meet the capital costs of buildings and equipment.** This policy measure would especially be useful for non-state higher education institutions that offer study programs that require expensive equipment, such as engineering, technology, and the sciences. The heavy setup costs of such degree programs are often a deterrent for private higher education institutions. A grant that subsidizes the cost of purchasing equipment and constructing facilities could be an attractive incentive to crowd-in private sector investment in higher education.

205. **Subsidizing the costs of students enrolled in private higher education institutions.** The government has already commenced implementing such a policy measure through a student loan scheme for non-state higher education institutions. The policy has been successful, with

considerable demand for these student loans. Further scaling up of this program with a focus on the provinces could be useful for the development of the private higher education sector and for regional development. This could be done, for instance, by encouraging higher education institutions to offer study programs that are relevant for the regional economies and increasing the number of student loans available for such degree programs in the relevant universities.

206. **Non-state higher education institutions can be helped to establish campuses in the provinces in combination with other activities.** Firms working in an industry in a geographical area may also set up higher education institutions in such areas. For instance, information technology firms may also establish computer science and information technology degree awarding institutions. This is a model that has been successful elsewhere and can be encouraged in Sri Lanka.

207. Finally, it should be observed that these different policy options are not mutually exclusive. Multiple policy initiatives can be combined and implemented.

Box 5.3: Private Higher Education Enrollment in Korea

Korea has one of the largest higher education enrollment rates, 94 percent, in the world. The country has approximately 3.3 million students enrolled in higher education and 359 higher education institutions. The country also has 222 four-year colleges of which 180 are private. In addition, there are 149 two-year and three-year junior colleges of which 140 are private. Overall about 85 percent of total higher education enrollments are in private institutions.

Private higher education institutions are held in high regard in Korea, as in the United States. The Ministry of Science, ICT, and Future Planning is responsible for the quality assurance and accreditation of Korea's higher education institutions. The establishment of institutions and academic departments, curriculum and degree requirements, and student quotas are all regulated by the ministry. The ministry identifies seven types of higher education institutions: (a) colleges and universities, (b) industrial universities, (c) universities of education, (d) junior colleges, (e) broadcast and correspondence universities, (f) technical colleges, and (g) other miscellaneous institutions.

Source: Ministry of Education and Ministry of Science, ICT, and Future Planning, Korea.

5.6 INTERNATIONALIZATION AND HIGHER EDUCATION DEVELOPMENT

208. **The internationalization of higher education offers excellent prospects for the accelerated development of provincial universities.** Internationalization, with cross-border movements of students, staff, and institutions, is one of the most significant recent developments in the global higher education landscape (Altbach 2013, 2015). One of the key features of internationalization is the integration of university teaching and learning across national and regional boundaries. This provides the universities in the less advanced provinces opportunities for rapid development of their teaching and learning activities through connections with overseas universities.

209. **The internationalization of higher education provides an opportunity for provinces to attract foreign students and contribute to regional economic growth.** Creating an enabling environment for private higher education institutions that cater for both domestic and foreign students could be extremely useful. High-quality private higher education institutions may be able

to attract students from other developing countries, including neighbors from South Asia. Such a strategy, if successful, would be an important source of income for the province as well as the country.

210. **There are several initiatives that the national government and provincial councils could implement to promote Sri Lanka as a hub for international students.** These would include

- Commissioning market research among potential students on the image of the country compared to competitor countries;
- Identifying the most promising overseas markets;
- Devising strategies for the recruitment of full-time undergraduate and postgraduate students;
- Producing promotional and public relations material to stimulate interest overseas;
- Developing partnerships with overseas recruitments agents;
- Promoting the country as a major destination for international academic conferences; and
- Conducting research into pricing, competitive behavior, and student satisfaction.

211. The government also needs to work with institutions such as the Board of Investment to implement policies that attract foreign higher education providers, recognizing that such projects can have long lead times to break even (Fielden et al. 2011). An example of how Malaysia is seeking to become a hub for international students is presented in Box 5.4.

212. **The private higher education sector can play a central role in promoting Sri Lanka as an international hub for foreign students.** The internationalization of higher education provides an excellent opportunity for Sri Lanka to broaden and stimulate higher education development by attracting foreign students. An inflow of foreign students will increase the revenues of domestic higher education institutions. The presence of foreign students on university campuses will also benefit Sri Lankan students, as it would expose them to other cultures and be educationally enriching. The demand for university education in Sri Lanka greatly exceeds the supply, and providing places in public universities to foreign students, beyond a small percentage, will be contentious and difficult to justify in the current context. Non-state higher education institutions do not face such constraints. Developing an enabling environment for non-state higher education institutions to deliver services to both domestic and foreign students is feasible. Good quality non-state higher education institutions would be able to attract students from other low-income and middle-income countries, including South Asia neighbors. This already happens on a small scale, with students from Maldives, for instance, travelling to Sri Lanka for higher education. Expanding the inflow of foreign students would be important for future higher education development. It would also be a lucrative source of income for the country.

Box 5.4: Malaysia as an International Hub for Students

Malaysia has an innovative and effective long-term strategy to attract foreign students. The country commenced as a center for overseas universities to enter into twinning arrangements with local universities in the mid-1990s. Credit transfer programs with foreign universities were developed subsequently. Over time, Malaysia has become a center for overseas universities to set up branch campuses. The number of international students increased from about 70,000 in 2008 to around 150,000 in 2014. Currently Malaysia facilitates foreign students to enter the country for higher education through the Malaysian Education Promotion Council. This is a nonstop center that provides information on the Malaysian education system and other relevant details. The council provides assistance in a range of areas, including information on government-approved universities and colleges, entry requirements for the various programs, application for entrance into universities admission timetables, financial aid and scholarships, guidance on admission tests and applications for visas, health requirements and procedures, and predeparture information.

The Educity in Iskandar Malaysia is a new multidimensional economic free trade zone neighboring Singapore. The objective of Educity is to provide high-quality education and to produce a highly skilled workforce for foreign companies in the commercial zone of Iskandar. Several overseas universities have opened branch campuses. These include the University of Southampton, Newcastle University, Netherlands Maritime Institute of Technology, and the University of Reading. These support a range of intellectual service industries such as tourism and leisure, health care and wellness, and the creative arts.

Kuala Lumpur Education City is another innovative education project combining commercial and residential operations with branch campuses of foreign universities and local higher education institutions. The Government of Malaysia is seeking greater penetration of large regional markets for higher education such as China, Indonesia, and India. The objective is to establish Malaysia as a regional center of excellence and the central hub for a network of international higher education institutions, companies, and services.

Source: Fielden et al. 2011.

CHAPTER 6. PUBLIC CONSENSUS AND STAKEHOLDER COMMITMENT FOR HUMAN CAPITAL DEVELOPMENT

213. **The development of the human capital will be of immense benefit and value to Sri Lanka.** It will also be a complex and challenging process and require visionary leadership, ownership, and long-term commitment from political authorities and policy makers.

214. **The human capital development system has served Sri Lanka well in some areas but performed weakly in others.** On the positive side, the human capital development system has brought child survival rates and adult life expectancy to levels seen in high-income countries. In addition, the number of years of schooling is equal to levels seen in UMICs and high-income countries. On the negative side, stunting is a persistent challenge, and learning outcomes need substantial improvement. There are also sharp regional variations in stunting and learning outcomes. The human production system should be encouraged by the positive achievements of the past and rise to address the challenges through ambitious policy reforms and development initiatives.

215. **The strategic initiatives for human capital development need to be prioritized and sequenced.** Human capital development is a lively topic of debate in Sri Lanka, and the government has stated that development of the education and health sectors is a high policy priority. The discussion and the menu of development options presented in this report is extensive and far-reaching. The government needs to select a set of strategic policy initiatives that can be implemented efficiently and equitably. Some of the initiatives presented can be implemented in parallel, other initiatives may need to be implemented sequentially, and yet other initiatives could be implemented cumulatively.

216. **The human capital development strategy needs to be broadly communicated among the general public and widespread ownership generated.** The reduction of stunting and the promotion of learning are long-term challenges and need sustained commitment to development initiatives from politicians, policy makers, technocrats, and administrators. In addition, academics, researchers, teachers, principals, doctors, nurses, and health workers are of central importance to the delivery of good-quality human capital services. Therefore, the ownership and commitment of these key stakeholders is a necessary condition for a successful human capital development strategy. The political authorities and policy makers need to communicate the scope, objective, and rationale for the human capital development program to these stakeholders. The choice of strategies to implement, and their ordering and sequencing, will need to be accomplished with the participation, ownership, and commitment of the education and health communities.

217. **Change and development of the education and health sectors can be controversial and have opponents.** These can include stakeholders who feel that their interests are not represented in the development initiatives proposed, parties that are ideologically opposed to the changes, and groups with vested interests. The leaders of change need to build bridges with any stakeholders who may have concerns about the strategy and ensure that these concerns are heard and genuine issues addressed. The leaders will also need to manage competing ideologies in a way that enables the best options selected for the strategy to be implemented for the overall benefit of the country.

218. **Human capital development in lagging regions, such as the Northern, Eastern, and other outlying provinces, needs special attention.** The human capital development strategy needs to be differentiated according to the level of performance and need across the different regions. The more advanced provinces, such as the Western, Southern, North-Western, and Sabaragamuwa Provinces, are at a more advanced stage of development. As a result, they can undertake more ambitious development initiatives. In contrast, the Northern, Eastern, Uva, North-Central, and other distant provinces are relatively underdeveloped and need greater policy attention and assistance.

219. **The media needs to be allies in the process of implementation of the human capital development strategy.** The popular media plays a vital role in providing information and shaping the perceptions of the general public. It is important that the achievements of the education and health systems, their future challenges, and the strategies adopted to address these challenges are communicated to and understood by the media. This, in turn, will enable the leaders of change and development to communicate to the general public their vision of the future of the education and health systems and their strategy to achieve that vision. The support and understanding of the public will be of great importance to generate long-term political interest and commitment to the human capital development strategy.

APPENDIX A: MAIN ISSUES, STRATEGIC DIRECTIONS, AND POLICY ACTIONS

Area	Objectives	Short-term Initiatives	Medium-term Initiatives
Chapter 1: Potential of Human Capital			
Human capital development in Sri Lanka	To understand the national and regional trends in human capital development in Sri Lanka	<ul style="list-style-type: none"> • Develop a strategy to address the large provincial disparities in human capital development, with a particular focus on the Northern, Eastern, and Western provinces • Develop a strategy to address the lagging human capital outcomes for boys 	<ul style="list-style-type: none"> • Policy makers should begin to prepare a strategy incorporating bold policy initiatives to combat second and third generation requirements for human capital development
Chapter 2: Regional Variations in Human Capital Development			
Regional disparities in child survival and expected years of schooling and adult survival	To ensure equitable human capital development across Sri Lanka	<ul style="list-style-type: none"> • Investigate causes for lower adult survival rates in the Northern Province and develop a strategy to address lagging adult survival rates in the Northern Province 	<ul style="list-style-type: none"> • Develop a strategy to ensure equitable progress in HCI outcomes
Regional disparities in stunting and learning-adjusted years of schooling	To ensure equitable human capital development across Sri Lanka	<ul style="list-style-type: none"> • Conduct a situation analysis of child survival and learning-adjusted years of schooling in the lagging provinces and develop a strategy of targeted interventions to address these HCI outcomes in lagging provinces 	<ul style="list-style-type: none"> • Develop a strategy to ensure equitable progress in HCI outcomes
Chapter 3: Key Achievements and Challenges for Human Capital Development: Child and Adult Survival and Stunting			
Child health and undernutrition	To reduce stunting by breaking the transgenerational transmission of undernutrition from a life-cycle perspective	<ul style="list-style-type: none"> • Develop more comprehensive nutrition-related behavior change activities targeting the life cycle of women, girls, newborns, and children with a high focus on the first 1,000 days • Improve quality of care in maternal, newborn, and child health programs to ensure that babies and children survive and thrive to reach their full growth potential 	<ul style="list-style-type: none"> • Mainstream nutritional interventions in policies at all levels and sectors • Revisit existing policies and practices and develop multisectoral strategies for all sectors, including urban, rural, estate, and urban slums, to address the underlying sociocultural determinants of behaviors connected to women's nutrition at all stages of their life cycle • Promote evidence-based food fortification programs to address micronutrient deficiencies

Area	Objectives	Short-term Initiatives	Medium-term Initiatives
		<ul style="list-style-type: none"> • Improve the quality of young child feeding programs, focusing on quality and quantity of the minimum acceptable diet, including the feeding during illness • Promote health-based interventions such as infection prevention, family planning, and longer birth spacing • Design programs for caregivers that provide information and activities related to child nutrition and early childhood development—the Positive Deviance Approach • Scale up food security (improve affordability and accessibility for food) and safety projects targeted at the household level • Strengthen the information management on nutrition-related data including disaggregation of data (for example, by gender), quality improvement, and real-time analysis of data and management • Develop the knowledge and evidence base of nutrition-related interventions to enable efficient allocation of resources to different programs, geographical areas, and population segments 	
Adult health and elderly care	To strengthen and reorganize the health systems and programs to respond to the increasing demand for health care among the working-age and older population	<ul style="list-style-type: none"> • Strengthen the policy environment and law enforcement mechanism on reducing the major risk factors of NCDs, such as tobacco use, unhealthy diet, and the harmful use of alcohol • Promote screening and management of NCDs, with a special focus on capturing the male population 	<ul style="list-style-type: none"> • Collaborate between different stakeholders of a primary care team with clear referral pathways to address the emerging health burden of NCDs and geriatric care • Align policies and services with future needs in establishing a network of supportive services for people with

Area	Objectives	Short-term Initiatives	Medium-term Initiatives
		<ul style="list-style-type: none"> • Strengthen the program strategies on holistic approach for elderly health care with multidisciplinary services • Investing in facilities for lifestyle changes, such as healthy lifestyle centers, including opportunities for physical exercise and the mental well-being of the adult and older population 	<p>chronic diseases and elderly care within the community; both home-based care and institutional care should be organized for elderly population</p> <ul style="list-style-type: none"> • Ensure sustainable health financing mechanism to meet the increasing demand for health care with the ageing population and growing burden of NCDs • Invest in specialized geriatric care units with skilled medical and nursing staff for long-term care of older people • Train health personnel to ensure adequate skilled human resources in the geriatric care services • Develop mechanisms to involve the private sector in critical service deliveries that can be financed by public sources • Support and promote employment of older workers in the labor market
Chapter 4: Key Challenges for Human Capital Development: Improving Learning Outcomes			
Investing in socio-emotional skills for success	To help students develop the socio-emotional and behavioral skills required to be able to successfully contribute to the 21st century workplace and to a cohesive and stable society	<ul style="list-style-type: none"> • Train teachers in social-emotional skills that they can model in the classroom • Develop classroom lessons and activities to improve the classroom climate • Develop social-emotional skills curriculum taught as a school subject • Develop teaching practices that incorporate social-emotional learning into the methodology for teaching academic content • Develop after-school enrichment programs 	<ul style="list-style-type: none"> • Assess the school context and develop appropriate tools to assess the development of socio-emotional skills in school students

Area	Objectives	Short-term Initiatives	Medium-term Initiatives
Investing in the early years	To ensure universal access to high-quality ECCE programming for children between the ages 3 and 5.	<ul style="list-style-type: none"> • Invest in center-based platforms to improve the health and nutritional status of young children by activities such as cultivating kitchen gardens in ECCE centers and providing balanced nutritious meals for young children in center-based care • Review ECCE curriculum to ensure that all ECCE centers use a curriculum with common goals and approaches • Review and upgrade the quality of in-service professional development opportunities for ECCE teachers 	<ul style="list-style-type: none"> • Build parenting and/or caregiver capacity by developing training programs aimed at improving the parental/caregiver capacity for providing early learning and early stimulation activities for children at home • Expand the number of child day-care centers (in addition to ECCE centers) • Review and implement a strategy for recruiting and retaining high-quality ECCE lead teachers
Teacher development	To develop a high-quality teaching cadre	<ul style="list-style-type: none"> • Review the quality of preservice TTPs • Evaluate (and upgrade) in-service TTPs to ensure that they are practical, specific, and continuous • Expand in-service teacher programming to include a peer-mentoring induction program for new teachers • Prepare teachers to integrate ICT into teaching/learning by integrating ICT modules into preservice TTPs and in-service programs • Improve the quality of assessment related pre- and in-service teacher training modules on student assessment, so that they are adequately trained on developing, integrating, and evaluating the results of student assessments to improve student learning • Review in-service TTPs to ensure that information is available to help teachers prepare for teaching in an 	<ul style="list-style-type: none"> • Upgrade the quality of preservice TTPs in line with international best practices • Develop and implement an appropriate system to foster professional teacher collaboration in Sri Lanka • Develop and implement a framework for PLCs in Sri Lanka • Review pre- and in-service teacher preparation programs to ensure that teachers are adequately prepared to use the most relevant and effective pedagogical approaches to help students improve their learning • Review the educational ecosystem to ensure that the educational system can provide teachers with the means (the right tools) and motivation (teacher incentives) to maximize student learning • Review the teacher deployment system and strategies to ensure that there are high-quality teachers in both urban and rural areas

Area	Objectives	Short-term Initiatives	Medium-term Initiatives
		urban or rural setting (depending on where they are located)	<ul style="list-style-type: none"> Review the teacher management system to ensure that the educational system can attract, retain, and motivate high-quality teachers
Enhancing learning outcomes through technology-based initiatives	To ensure that ICT is effectively utilized to improve student learning	<ul style="list-style-type: none"> Review the ‘ICT in education’ strategy to ensure that ICT inputs and activities are aligned with the broader goals of the education sector 	<ul style="list-style-type: none"> Evaluate options for integrating CAL tools into classrooms, to complement teacher instruction
Using national and international assessments to improve education development	To ensure that national and international assessments are effectively used to improve the education system and ultimately improve student learning outcomes	<ul style="list-style-type: none"> Review the institutional capacity and conditions for utilizing national assessments Accelerate efforts to participate in one of the large-scale international assessments, such as PISA or TIMSS 	<ul style="list-style-type: none"> Develop the institutional capacity and conditions to use national assessments for education development
Chapter 5: Human Capital Development: Transforming Higher Education			
Mission differentiation of universities	To improve the quality of higher education in Sri Lanka	<ul style="list-style-type: none"> Designate universities according to a mission differentiation system 	<ul style="list-style-type: none"> Design an incentive system to promote high-quality teaching and learning in universities designated as centers of teaching excellence Develop policy initiatives to promote stronger linkages between universities and industry
Technology and higher education	To improve teaching, learning, and research through the effective use of ICT	<ul style="list-style-type: none"> Develop initiatives aimed at promoting the use of ICT in the higher education sector 	<ul style="list-style-type: none"> Expand access to high-quality ICT for teaching, learning, and research
Private sector higher education development	To develop private sector higher education institutions in Sri Lanka	<ul style="list-style-type: none"> Prioritize the development of private sector higher education institutions in Sri Lanka Identify strategies to promote the growth and development of the private sector in higher education 	<ul style="list-style-type: none"> The provincial councils or national government to consider providing land for the establishment and development of private higher education institutions Consider provision of financial grants to meet the capital costs of buildings and equipment for private higher education institutions Subsidize the costs of students enrolled in private higher education institutions

Area	Objectives	Short-term Initiatives	Medium-term Initiatives
			<ul style="list-style-type: none"> • Help non-state higher education institutions to establish campuses in the provinces in combination with other activities (such as private sector enterprises/firms that might have an interest in the area)
Internationalization and higher education development	To accelerate the development of Sri Lanka's higher education system through internationalization	<ul style="list-style-type: none"> • Develop a strategy to promote Sri Lanka as a hub for international students 	<ul style="list-style-type: none"> • Implement longer-term initiatives to promote Sri Lanka as a hub for international students • The GoSL to work with institutions such as the Board of Investment to implement policies that attract foreign higher education providers

APPENDIX B: METHODS FOR ESTIMATING THE HUMAN CAPITAL INDEXES AT THE PROVINCIAL LEVEL

Introduction

HCIs are calculated based on five indicators: (a) child survival to age 5, (b) expected years of school, (c) harmonized learning outcome, (d) adult survival from age 15 to 60, and (e) fraction of under-five children who are not stunted. These indicators were selected as they reflect the key ingredients that determine the stock of human capital, as well as based on the availability of data across countries and years. Therefore, national-level data for these indicators are largely available from global data repositories. Subnational-level data, however, are not commonly available for many countries and years. Data availability is the major challenge in calculating the subnational HCIs. Given the lack of subnational-level data, some assumptions and extrapolations had to be made in calculating the provincial HCIs for Sri Lanka. Both national- and province-level data were used to derive consistent sets of estimates between provinces and the national level. The following subsections provide the methods for estimating the provincial indicators that were employed in this exercise.

Estimating the Probabilities of Child and Adult Survivals for Each Province

In the global HCP study, two data sources were used to obtain the probabilities of child and adulthood survival. For child survival, data on under-five mortality rates¹⁵ from the UN Interagency Group for Child Mortality Estimation (IGME) were used (IGME 2017). For adult survival, data on the adult mortality rates from the UN Population Division's World Population Prospects (WPP) database were used (UN 2017). However, neither of these databases provided subnational estimates. To estimate those indicators for each province in Sri Lanka, we referred to the national and district-specific life tables 2011–2013 that were constructed by the Department of Census and Statistics (DCS) (DCS 2016). The life tables used mortality data from the civil registration system between 2011 and 2013¹⁶ and the population data from the census 2012. The issue was that the mortality rates used in the DCS life tables and those from the IGME and WPP were estimated in isolation of each other and hence the mortality rates from the life tables were not the same as in the IGME/WPP. To reconcile the district-specific mortality rates and the estimates from the IGME/WPP, we made some adjustments in the DCS life tables.

First, the national life table from the DCS was adjusted to align with the child and adult mortality rates from the IGME/WPP (for male and female separately). An optimization algorithm (GRG¹⁷ nonlinear method) was used to calculate a single multiplying factor to be applied for all age group-specific mortality rates in the DCS national life table, so that the difference between the DCS estimates and the IGME/WGG estimates became minimal (see Box B.1 for details).

¹⁵ Although this is called under-five 'mortality rate', it essentially refers to 'probability of dying'. The same applies to adult 'mortality rate'.

¹⁶ Completeness during this period is unknown. Completeness in 1982 was 94 percent.

¹⁷ GRG = Generalized Reduced Gradient.

Box B.1. Process of Adjusting the Mortality Rates in the Life Table

Original National Life Table for Females

Age	n	nM_x	nq_x	l_x	nd_x	nL_x	T_x	E_x
0	1	0.00775	0.00769	<u>100,000</u>	769	99,231	7,864,916	78.6
1	4	0.00041	0.00164	<u>99,231</u>	163	396,924	7,765,685	78.3
5	5	0.00024	0.00120	<u>99,068</u>	119	495,341	7,368,761	74.4
10	5	0.00027	0.00135	<u>98,949</u>	134	494,747	6,873,420	69.5
15	5	0.00048	0.00240	<u>98,816</u>	237	494,079	6,378,674	64.6
20	5	0.00060	0.00300	<u>98,579</u>	296	492,893	5,884,595	59.7
25	5	0.00056	0.00280	<u>98,283</u>	275	491,414	5,391,702	54.9
30	5	0.00066	0.00329	<u>98,008</u>	322	488,553	4,900,288	50.0
35	5	0.00084	0.00419	<u>97,685</u>	409	487,263	4,411,734	45.2
40	5	0.00124	0.00618	<u>97,276</u>	601	484,811	3,924,471	40.3
45	5	0.00199	0.00990	<u>96,675</u>	957	480,945	3,439,660	35.6
50	5	0.00327	0.01623	<u>95,718</u>	1,553	475,076	2,958,715	30.9
55	5	0.00491	0.02427	<u>94,164</u>	2,285	465,451	2,483,640	26.4
60	5	0.00798	0.03918	<u>91,879</u>	3,600	451,104	2,018,189	22.0
65	5	0.01437	0.06957	<u>88,279</u>	6,142	427,388	1,567,084	17.8
70	5	0.02697	0.12691	<u>82,137</u>	10,424	386,506	1,139,696	13.9
75	5	0.04503	0.20353	<u>71,713</u>	14,596	324,136	753,190	10.5
80	5	0.08335	0.34691	<u>57,118</u>	19,815	237,728	429,055	7.5
85	—	0.19497	1.00000	<u>37,303</u>	37,303	191,326	191,326	5.1

In calculating the under-five and adult mortality rates (refer to footnote 14 for their definitions as being probability of dying), we used the underlined numbers in the l_x column of the life table as follows:

$$\text{Under five mortality rate} = \frac{l_0 - l_5}{l_0} = \frac{100,000 - 99,068}{100,000} = 0.00932$$

$$\text{Adult mortality rate} = \frac{l_{15} - l_{60}}{l_{15}} = \frac{98,816 - 91,879}{98,816} = 0.07020$$

Now, the IGME/WPP estimates for 2012 were 0.00954 and 0.07749 for under-five and adult mortality rates, respectively. In reconciling these estimates, a single multiplying factor was calculated by GRG nonlinear algorithm that provided 1.10028. This factor was applied to all age group-specific mortality rates.

Adjusted National Life Table for Females

Age	n	nM_x	nq_x	l_x	nd_x	nL_x	T_x	E_x
0	1	0.00853	0.00846	<u>100,000</u>	846	99,154	7,764,146	77.6
1	4	0.00045	0.00180	<u>99,154</u>	179	396,618	7,664,992	77.3
5	5	0.00026	0.00132	<u>98,976</u>	131	494,878	7,268,374	73.4
10	5	0.00030	0.00149	<u>98,845</u>	147	494,224	6,773,496	68.5
15	5	0.00053	0.00264	<u>98,698</u>	261	493,490	6,279,272	63.6
20	5	0.00066	0.00330	<u>98,437</u>	325	492,187	5,785,781	58.8
25	5	0.00062	0.00308	<u>98,113</u>	302	490,563	5,293,594	54.0
30	5	0.00073	0.00362	<u>97,810</u>	354	487,421	4,803,031	49.1
35	5	0.00092	0.00461	<u>97,456</u>	449	486,005	4,315,610	44.3
40	5	0.00136	0.00680	<u>97,007</u>	659	483,315	3,829,605	39.5
45	5	0.00219	0.01089	<u>96,348</u>	1,049	479,076	3,346,290	34.7
50	5	0.00360	0.01784	<u>95,299</u>	1,701	472,649	2,867,214	30.1
55	5	0.00540	0.02667	<u>93,598</u>	2,497	462,125	2,394,565	25.6
60	5	0.00878	0.04303	<u>91,102</u>	3,920	446,481	1,932,441	21.2
65	5	0.01581	0.07630	<u>87,181</u>	6,652	420,736	1,485,960	17.0
70	5	0.02967	0.13882	<u>80,529</u>	11,179	376,714	1,065,224	13.2
75	5	0.04955	0.22180	<u>69,350</u>	15,382	310,466	688,510	9.9
80	5	0.09171	0.37539	<u>53,968</u>	20,259	220,908	378,045	7.0
85	—	0.21452	1.00000	<u>33,709</u>	33,709	157,137	157,137	4.7

The adjusted life table provides the optimum combination of under-five and adult mortality rates that are closest to the IGME/WPP estimates:

$$\text{Under five mortality rate} = \frac{l_0 - l_5}{l_0} = \frac{100,000 - 98,976}{100,000} = 0.01024$$

$$\text{Adult mortality rate} = \frac{l_{15} - l_{60}}{l_{15}} = \frac{98,698 - 91,102}{98,698} = 0.07696$$

We then used the adjusted national life table from the DCS as the benchmark for which the district-specific life tables would be adjusted so that the average mortality rates from all districts (weighted by the population size of each district) will equal the rates of the national life table. Again, a single multiplying factor was calculated, which was applied for all age group-specific mortality rates in all districts. Finally, we averaged the mortality rates from the adjusted district life tables (weighted by the population size of each district) for each province to develop the provincial life tables.

While the above life tables were the only source of information in calculating adult mortality at the provincial level, we have taken additional steps in estimating the provincial child mortality to account for the variations between provinces. From the district-specific life tables, the under-five mortality rates between districts were somewhat similar compared to the variations observed among adult mortality rates. If we compared the rates with the under-five mortality rates of each district from DHS 2016, the latter had greater variations (DCS 2017). Therefore, we informed the district life tables with findings from DHS 2016 to account for the geographical variations more accurately without affecting the national mortality rates when aggregated. We replaced the under-five mortality rates of the district life tables with the results from DHS 2016 as base values, which were then proportionally adjusted by the single multiplying factor to equal the national under-five mortality rates when aggregated. This adjustment had only a negligible effect on the mortality rates of age 5 and above. Finally, the under-five mortality rates and adult mortality rates between ages 15 and 60 were subtracted from unity to derive the child and adult survival rates.

Estimating the Learning-adjusted Years of School for Each Province

The education component of the HCI is a composite of two indicators: expected years of school and harmonized learning outcome. In the global HCI study, expected years of school were calculated from the total net enrollment rates (TNERs)¹⁸ and GERs¹⁹ provided by the UNESCO Institute of Statistics (UIS) database (UIS 2018). For preprimary education, GERs were used for the base of calculation, while TNERs were used for primary, lower secondary, and upper secondary schools. As the global study assumed that all countries have 14 potential years of education in total, we defined the duration of each level of school in Sri Lanka as follows:

- Preprimary: 1 year (although preprimary can be up to three years)
- Primary: 5 years
- Lower secondary: 6 years
- Upper secondary: 2 years

The provincial estimates of enrollment were estimated using data from Household Income and Expenditure Survey (HIES) 2012/13 and 2016 (DCS 2015, 2018). Calculating the GER for preprimary has proven to be difficult as reconciling the numerator and denominator was challenging. This is because although children between ages 3 and 5 are able to attend preprimary,

¹⁸ TNER measures the fraction of children in the theoretical age range for a given level of school, who are in school at any level.

¹⁹ GER measures the number of children of any age who are enrolled in a given level, as a fraction of the number of children in that age range.

attendance was highly concentrated among children ages 5 and attendance of children between ages 3 and 4 was low.

Calculating the GER will provide very small enrollment rates as the numerator is largely limited to children ages 5 but the denominator includes the total number of children ages 3 to 5. Conversely, if we limit the denominator to age 5, the numerator will become larger than the denominator as there are yet quite a number of children enrolled at age 3 to 4 or even above 5. Given that we assumed one year for preprimary as above and in obtaining sensible estimates, we opted for calculating TNERs for preschool by limiting both the numerator and denominator to children at age 5. After calculating the TNERs for four levels of school in each province, we adjusted the TNERs with repetition rates for each level assuming the same rates across all provinces that were used in the global study (estimates from the UIS). Finally, we calculated the expected years of school for each province as

$$\text{Expected Years of School} = \sum_{i=1}^4 TNER_i \times \text{Duration of school}_i$$

where i denotes the four levels of school. Similar to the mortality indicators, we scaled the expected years of school for each province by a single multiplying factor so that the population-weighted average will equal the national estimate from the global study.

The harmonized learning outcomes for the nine provinces were calculated using data from the SL-TIMSS for Grade 8 conducted in 2014 and 2016 (NEREC 2017a). The SL-TIMSS is an extraction of selected questions from the original TIMSS with a score range between 0 and 70 (scaled to a maximum of 100 for reporting). The conversion to a harmonized learning outcome was conducted by inflating the provincial mean scores for males and females by a single multiplying factor so that the population-weighted average score of TIMSS 2016 equaled 400 that was used for the global HCI study. We used the same multiplying factor to derive the harmonized learning outcomes for 2014. While individual-level data were available for the 2016 study, only aggregated data for each province with both genders combined were available for 2014. In disaggregating scores to males and females at the provincial level for 2014, we assumed the same proportional deviations of males and females from the scores of both genders combined for each province in 2016.

Estimating the Proportion of Under-Five Who Are Not Stunted for Each Province

Data of stunting were obtained from DHS 2016. Since the national-level stunting rate remained the same over the two rounds of DHSs (2006/07 and 2016), it was assumed that stunting status in the provinces remained unchanged over the last decade (DCS 2009, 2017). Therefore, we calculated the stunting prevalence for 2016 and applied the same for other years. The proportion of under-five children not stunted was derived by subtracting the stunting rates from unity.

Estimating the Provincial HCIs for 2012/13 and 2016/17

The five indicators estimated as above were then converted to the HCI for each province for two time points. As data for different indicators come from different years, we extra/interpolated data for 2012/13 and 2016/17 where possible or assumed data from neighboring years (that is, ± 1 year) as approximating those years. We used the same approach in calculating the provincial HCIs that

was devised for the global study (World Bank 2018b). These three components were calculated using the following equations:

$$Survival = Child\ survival\ rate$$

$$School = e^{\phi \left(Expected\ years\ of\ school \times \frac{Harmonized\ test\ score}{625} - 14 \right)}$$

$$Health = e^{[\gamma_{ASR} \times (Adult\ survival\ rate - 1) + \gamma_{Stunting} \times (Not\ stunted\ rate - 1)]/2}$$

$$HCI = Survival \times School \times Health$$

where ϕ refers to the returns to an additional year of school ($\phi = 0.08$) and γ to the improvements in productivity associated with an improvement in health ($\gamma_{ASR} = 0.65$; $\gamma_{Stunting} = 0.35$).

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