SRI LANKA STATE OF THE ECONOMY 2018

Climate Change, Food Security and Disaster Risk Management



INSTITUTE OF POLICY STUDIES OF SRI LANKA

SRI LANKA
STATE OF THE
ECONOMY
2018

INSTITUTE OF POLICY STUDIES OF SRI LANKA
100/20, Independence Avenue, Colombo 7, Sri Lanka

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Institute of Policy Studies of Sri Lanka

ISBN 978-955-7397-11-5

National Library of Sri Lanka-Cataloguing-In-Publication Data

Sri Lanka State of the Economy 2018 .- Colombo : Institute of Policy Studies of Sri Lanka, 2018
322p. ; 25cm.

ISBN 978-955-7397-11-5

i. 330.95493 DDC23

1. Sri Lanka - Economic conditions - 21st Century
2. Sri Lanka - Economic conditions
2. Sri Lanka - Economic development

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The contributions of Mufaris Omar in preparing the Statistical Appendices, Gayendri Karunaratne in providing editorial support and Suresh Fernando in preparing infographics, under the overall guidance of Charmaine Wijesinghe and Shihara Maduwage are gratefully acknowledged.

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Acronyms

AAIB	Agriculture and Agrarian Board of Sri Lanka
AIIB	Asian Infrastructure Investment Bank
APTA	Asia Pacific Trade Agreement
BRI	Belt and Road Initiative
CAR	Capital Adequacy Ratio
CBO	Community-based Organisation
CBSL	Central Bank of Sri Lanka
CCEM	Cabinet Committee on Economic Management
CCS	Climate Change Secretariat
CIFC	Colombo International Financial City
CIPs	Climate Information Products
CLOs	Community Level Organisations
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
CSA	Climate-smart Agriculture
CSE	Colombo Stock Exchange
CSR	Corporate Social Responsibility
DALYs	Disability-Adjusted Life-Years
DCS	Department of Census and Statistics
DMC	Disaster Management Centre
DOM	Department of Meteorology
DRM	Disaster Risk Management
EIA	Environmental Impact Assessment
ERD	Department of External Resources
FAO	Food and Agriculture Organisation
FDI	Foreign Direct Investment
FMPS	Farmers Pension and Social Security Benefit Scheme
GDP	Gross Domestic Product
GFSI	Global Food Security Index
GHG	Greenhouse Gas
GHI	Global Hunger Index
GSP	Generalised System of Preferences
GWP	Gross Written Premium
HIES	Household Income and Expenditure Survey
IBSL	Insurance Board of Sri Lanka
ICIMS	Integrated Climate Information Management Systems

ICT	Information and Communication Technology
IFPRI	International Food Policy Research Institute
ILO	International Labour Organisation
IMF	International Monetary Fund
IPCC	Inter-governmental Panel on Climate Change
IPS	Institute of Policy Studies of Sri Lanka
IRCSL	Insurance Regulatory Commission of Sri Lanka
ISB	International Sovereign Bond
IT-BPM	Information Technology Business Process Management
MDGs	Millennium Development Goals
MDM	Ministry of Disaster Management
MFIs	Microfinance Institutes
MNEs	Multi-national Enterprises
MOE	Ministry of Education
MOF	Ministry of Finance
MOH	Ministry of Health
MRIA	Mattala Rajapaksa International Airport
NAP-CCI	National Adaptation Plan for Climate Change Impacts
NCDM	National Council for Disaster Management
NCPI	National Consumer Price Index
NDCs	Nationally Determined Contributions
NEC	National Economic Council
NELM	New Economics of Labour Migration
NES	National Export Strategy
NGO	Non-governmental Organisation
NITF	National Insurance Trust Fund
NLMP	National Labour Migration Policy
NNDI	National Natural Disaster Insurance
NSF	National Science Foundation
NSW	National Single Window
NTP	National Trade Policy
OBOR	One Belt One Road
ODI	Overseas Development Institute
OECD	Organisation for Economic Cooperation and Development
PAYE	Pay-As-You-Earn
PCA	Paris Climate Agreement
PDNA	Post-Disaster Needs Assessment

PIT	Personal Income Tax
PPPs	Public-Private Partnerships
R&D	Research and Development
RCEP	Regional Comprehensive Economic Partnership
SDGs	Sustainable Development Goals
SLCDMP	Sri Lanka Comprehensive Disaster Management Programme
SLNDMP	Sri Lanka National Disaster Management Plan
SLSFTA	Sri Lanka-Singapore Free Trade Agreement
SME	Small and Medium Enterprise
SOE	State-Owned Enterprise
T&G	Textiles and Garments
TFA	Trade Facilitation Agreement
TIMSS	Trends in International Mathematics and Science Study
TIP	Trade Information Portal
TPP	Trans-Pacific Partnership
TRI	Tea Research Institute
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UV	Ultraviolet
WBB	Welfare Benefit Board
WBPS	Welfare Benefit Payment Scheme
WDF	Women's Development Federation
WDR	World Development Report
WFP	World Food Programme
WHO	World Health Organisation
WTO	World Trade Organisation

TOWARDS GROWTH AND STABILITY

1. Policy Perspectives

Despite the many improvements on the macroeconomic front in 2017, the headline grabbing news on the Sri Lankan economy was on the growth front. GDP growth of 3.1 per cent – down from 4.5 per cent in 2016, and the lowest recorded since 2001 – is a cause of some anxiety. Bad weather and its devastating impacts on agricultural output in 2017 partly explain Sri Lanka's lower-than-expected growth. However, what is worrying is the drag on economic growth from weak manufacturing and services; in particular, services sector performance has been marginally below GDP during 2015-17. First half 2018 GDP estimates of 3.5 per cent suggest that the run of GDP growth of under 4.0 per cent is continuing for a sixth consecutive quarter, albeit with suggestions of a turn around.

Economic growth matters; whether or not GDP is an appropriate measure of economic progress or strength of a country's economy, it is a measure that governments rely on heavily to shape policy, determine spending or use as a scorecard for performance.

Economies grow in different ways and for different reasons. The excesses of Sri Lanka's credit driven, rapid growth in the immediate post-war years was unsustainable; it was exaggerated by a large domestic consumption bubble. By contrast, the present policy emphasis on productivity enhancements to boost growth can yield sustained and lasting growth. To this end, the government has made significant gains on the macroeconomic front over the last two years. After a shaky start, public finances are in much better shape; the gaping fiscal deficit of 7.6 per cent of GDP in 2015 has narrowed to 5.5 per cent by 2017. Monetary policy has been largely effective in restoring price stability, with year-on-year inflation dropping from a high 8.8 per cent in October 2017 to a low 1.6 per cent by April 2018. Exchange rate management has been sensible, allowing for a gradual depreciation – by a modest 2 per cent in 2017 and a more notable 3.5 per cent in the first half of 2018 – instead of an often futile attempt to defend the currency with limited dollar reserves in hand.

The gains on the macroeconomic front have been complemented by a series of regulatory enactments. These include an Inland Revenue Act, a Foreign Exchange Act, an Active Liability Management Act, an Anti-dumping and Countervailing Act, and a Safeguard Measures Act. In turn, these are intended to change the way the government works and help markets work efficiently.

Some fundamental numbers in the economy too are moving in the right direction. In 2017, Sri Lanka saw a reversal in fortunes related to two critical areas, exports and foreign direct investment (FDI). Export earnings crossed the USD 11 billion mark, last achieved in 2014. Export earnings continued to grow by 6.7 per cent in the first six months of 2018. Similarly, FDI inflows recorded a surge to USD 1.4 billion or 1.6 per cent of GDP. These developments may not yet hold the transformative

The gains on the macro-economic front have been complemented by a series of regulatory enactments.

promise of productivity enhancements that the Sri Lankan economy needs urgently – with nearly 60 per cent of FDI flowing into infrastructure rather than manufacturing and services – but they are a useful start to getting the economy to pick up speed again.

Sri Lanka's investor community must certainly hope so. Despite a spiraling global trade war instigated by US tariff impositions on China and other trading partners, the overall global outlook in key export markets to support Sri Lanka's economic growth is more optimistic. Signs of stronger growth in the US, EU and Japan – a so-called 'synchronised upswing' – on the back of better than expected international trade flows generated some optimism of a more convincing global economic bounce back. While the early optimism has dimmed somewhat, global economic conditions are still reasonably favourable to support Sri Lanka's embryonic turnaround in export performance. At the same time, Sri Lanka's domestic reforms – the elimination of para-tariffs for instance – coupled with improved market access through GSP+ are aligned to take advantage of such emerging opportunities. The conclusion of the Sri Lanka-Singapore Free Trade Agreement (SLSFTA) in January 2018 also sends out an important signal of the government's policy direction to up its engagement in international economic integration initiatives.

Thus, after three years of underachievement, the economy is being put on a sounder footing to attract private investment and revive growth, and most importantly, accrue benefits to ordinary citizens in the process. The question is whether despite the positive progress on the macroeconomic front, private investors will hold-off, uneasy at the prospect of what promises to be testing electoral times ahead for the ruling coalition.

Much of the blame for the underperformance on the economic front can be laid at the door of coalition politics. While fiscal austerity vis-à-vis the IMF's revenue-led consolidation process typically has a downside impact on growth in the short-term,[1] private investment is expected to pick up as the macroeconomic fundamentals

[1] Weerakoon, Dushni. (2016). *Sri Lanka's extended fund facility arrangement with the IMF: It's mostly fiscal.* Retrieved from http://www.ips.lk/talkingeconomics/2016/07/07/sri-lankas-extended-fund-facility-arrangement-with-the-imf-its-mostly-fiscal/

improve and stimulate growth in the medium term. In Sri Lanka's case however, various business confidence indices indicate that investor sentiment has remained disappointingly flat. The reason, mostly, is political; policy decisions of the unwieldy coalition have been laboriously slow-moving, all too often sending mixed signals even when a decision appears to have been arrived at.

Creating political consensus around a desired change is harder under coalition arrangements; they are apt to be preoccupied with horse-trading and negotiations, and it is no different in Sri Lanka. But, alliances such as Sri Lanka's national unity government that brought the country's largest two political party rivals together, is also unusual. It added another layer of uncertainty with regards to how effective such an arrangement will actually be in government. Thus, even with one of the political parties having a history of being in favour of a more market-oriented approach to the economy, the outlook for a sustained reform initiative within such a coalition was doubtful from the outset. On past experience alone, IPS' *Sri Lanka: State of the Economy 2015* report argued, for instance, that 'the conditions for introducing, implementing and sustaining an economic reform effort are weaker today than during past successful efforts' (p.3).

This has proven to be the case despite the fact that Sri Lanka has perhaps the most reformist government that the country has seen for many years. In spite of plans for the economy which sounded promising – fleshed out, albeit two years later in 'Vision 2025' – attempts to revamp the economy have fallen short of expectations. Addressing constraints on 'Ease of Doing Business' to boost private investment and make life easier for businesses have dragged on interminably. These are clearly the early and easy gains that could have been accrued to help lift the rate at which the economy can grow. Instead, it took the spectre of a looming economic crisis – and intervention under a Stand-By Arrangement (SBA) with the International Monetary Fund (IMF) in mid-2016 – to get reforms underway.

Some of the harder reforms that came with the IMF programme imposed a heavy burden on household incomes as a result of higher taxes. This included an unpopular increase in the value-added tax (VAT) to start shrinking a large fiscal deficit that was partly the result of populist adventurism in the run up to the 2015 elections. The impact on cost of living was made worse unfortunately by adverse weather that disrupted agriculture production in 2016-2017. Added to this, slow growth meant modest wage gains and job creation; in fact, Sri Lanka's employed to population ratio has remained stagnant at 37 per cent in this period. Against this backdrop, higher prices on food and other essentials were sufficient for the public's mood to swing dramatically and provoke a voter backlash at the much delayed local government polls in February 2018.

This first test of electoral popularity for the government deepened the cracks in the ruling coalition. The manifestations of this, such as the decision by the President in March 2018 to take economic management under his chairmanship of the National Economic Council (NEC) and abolish the Cabinet Committee on Economic Management (CCEM) headed by the Prime Minister, sends mixed signals as to who in government is responsible to push changes through on economic policy matters. Outward dissent has also been a recurring problem with a spate of strikes and demonstrations gathering momentum. The number of man days lost as a consequence of strikes in the private sector has risen to an annual average of 80,000 days during 2015-18 compared to a figure of 50,000

Some of the harder reforms that came with the IMF programme imposed a heavy burden on household incomes as a result of higher taxes.

during 2012-14,[2] disrupting day-to-day business operations. A 12-day state of emergency was declared in March 2018 following inter-community clashes. Some of it is no doubt politically motivated, but it adds to the overall impression of disarray and the seeming absence of a sense of urgency to address the problems firmly.

Countering opposition to reform is harder when an economy is struggling. Even otherwise however, the government has been particularly inept in communicating the need for, and benefits of, some of the easy reforms. In this vacuum, there has been a progressive hardening of positions regarding more contested reforms such as bilateral free trade agreements (FTAs) or divestiture of state entities similar to the Hambantota Port and Mattala International Airport. The prioritising, sequencing and pacing of reform initiatives have been ad hoc. In the melee, it becomes that much harder to build broad based support for the kinds of reforms necessary to make the Sri Lankan economy more competitive.

With a small consumer base, sustained and lasting growth can only come via rising demand abroad for Sri Lanka's goods and services. With an ageing demographic, a different kind of transition that relies more on total factor productivity growth, where labour and capital are used more effectively through a process of technological transformation, is what the economy needs to be globally competitive.

These same demographic forces and technology driven jobs market can also deliver rising socio-economic inequities. Sri Lanka's Gini-coefficient of household income is already at a relatively high 0.45. Governments cannot therefore ignore dissenting voices be it on the role of trade, education or state-owned-enterprise (SOE) reforms. Indeed, the current upheaval in advanced economies with the rise of 'protectionist populism' signals the need to be sensitive to potential disruptive effects of economic adjustments. In these volatile times, the ability to take your message convincingly to the voting public is a must.

Outward dissent will be louder as Sri Lanka enters a decisive election cycle; delayed Provincial Council elections are scheduled next, to be

[2] Estimated as the number of strikes times the number of workers involved. See Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

With a small consumer base, sustained and lasting growth can only come via rising demand abroad for Sri Lanka's goods and services.

followed by the critical presidential elections in late 2019/early 2020. As the ruling coalition appears to be gearing up to stand on separate election platforms, it may be tempted in the run up to lean on both fiscal and monetary policy to stimulate growth and deliver some swift economic relief measures. The grim reality, however, is that there is little leeway to do so without undoing the gains wrought through a painstaking and steady procession of changes over the last two years. Changes to tax rates and tax structures are bringing about higher revenues to the Treasury and helping to narrow the fiscal deficit. But, there is still a considerable way to go before fiscal policy can play an expansionary role – either through lower taxes or higher expenditures – as Sri Lanka struggles with a public debt overhang of 77.6 per cent of GDP in 2017.

In line with discussions with the IMF, a decision to introduce a fuel price formula in June 2018 – the immediate impact of which was an increase in fuel prices squeezing consumers' incomes yet further – is a sign that the government's resolve to push ahead with some more unpopular measures is still intact. The subsidy bill on fuel has soared as international oil prices have climbed, worsening the financial position of key SOEs. Fuel subsidies for the most part have benefitted the well-off, whilst imposing an economy-wide cost through weak fiscal outcomes.

As with fiscal policy, there is very limited room for easing monetary policy. If carried through imprudently, it can encourage another cyclical boom and place the Sri Lankan rupee under pressure. Consumer import expenditure has grown steadily at 18 per cent in the first half of 2018, spurred by a near 120 per cent growth in imports of motor vehicles that brought yet another revision to motor car taxes in July 2018. By contrast, imports of investment goods contracted by 0.6 per cent in the same period, indicative perhaps that businesses are holding back from making all but the most essential investments. In the short term, the upward adjustment in fuel prices since mid-2018 will also nudge up inflation; in August 2018, year on-year inflation had already picked up to 5.1 per cent from a low 1.6 per cent in April 2018. Thus, a careful balance has to be struck between stimulating growth and maintaining a grip on price stability.

For much of the year so far, the Sri Lankan rupee too has been shaky, depreciating by 10.5 per cent in the first nine months of 2018. The movements in the exchange rate are revealing.

The depreciating pressure is largely the result of a strengthening US dollar that is impacting a host of emerging market currencies. But, domestic factors are also at play. With the Central Bank of Sri Lanka (CBSL) rightly adopting a hands-off approach for the most part to let market fundamentals drive exchange rate adjustments, the steady depreciation, particularly from April 2018, suggests that both speculation and investor sentiment are also playing a role. Indeed, unlike at other times when the Sri Lankan rupee has come under pressure, CBSLs accumulated reserves as at end April 2018 was a relatively healthy USD 10 billion, sufficient for 5.5 months of imports, and well above the danger threshold of three months. In fact, in contrast to past practices, the improvement in reserves reflected both quantitative and qualitative aspects, with the CBSL purchasing US dollars from the domestic market on a net basis to shore up the volume of non-borrowed reserves. Thus, the performance of leading indicators such as the currency, suggests that market jitters and worries about the Sri Lankan economy are not just confined to sluggish growth.

The overhang of government debt in the medium term contributes to anxiety on the Sri Lankan rupee. There is no let up on the country's reliance on commercially priced foreign borrowing given the bunching of foreign debt repayments due over 2019-2022. With the enactment of the Active Liability Management Act, the CBSL went to the markets early to secure USD 2.5 billion by issuing an international sovereign bond (ISB) in April 2018. The latest USD 2.5 billion – split into USD 1.25 billion five-year and USD 1.25 billion 10-year tenures priced at 5.75 per cent and 6.75 per cent, respectively – was 2.6 times oversubscribed. But, Sri Lanka can ill afford to take comfort from such over subscription. Risky sovereign bonds from countries such as Iraq and Argentina are also met with similar enthusiasm. Oversubscribed issues have become almost normal, as bond investors continue to face relatively low interest rates in developed economies. But as advanced economies enter a rate tightening phase, countries like Sri Lanka will be vulnerable to higher refinancing risks. If investor sentiment towards frontier markets were to worsen as more and more riskier sovereign borrowers are accommodated, the refinancing costs will be even more.

In May 2018, Sri Lanka raised another USD 1 billion as a syndicated loan with eight-year tenure from the China Development Bank. In August 2018, another USD 1 billion syndicated loan was raised from the same source. Stockpiling hard-currency debt earlier than later, to ease medium term debt resettlement seems the obviously prudent course of action. Indeed, at least until June 2019, the on-going IMF programme offers a measure of macro-prudential cover to attract foreign investors.

Some of the reserves were used up to defend the downward spiral of the rupee. The more restrained intervention is sensible in view of limited reserves on hand, and to avoid a 'forced' devaluation as in the past that carries much greater costs. The devaluation nonetheless will worsen Sri Lanka's debt ratios. It will also add another blow to GDP growth; interest rates will rise, containing investment and growth prospects further.

With a sounder macroeconomic footing, the surer bet for a sustained growth rebound, is deeper structural economic reforms that tackle key constraints such as skills and technology. But, a reform push now to ratchet up pro-growth measures is even trickier as Sri Lanka starts readying for further rounds of elections. In this

scenario, the move to a fuel price formula in June 2018 was as important politically, as it was for purely economic reasons; it signals that the government may yet believe that there are still gains to be had from reforms that will boost investor confidence and lift economic prospects in the remaining term of office. The biggest uncertainty to this premise is Sri Lanka's unfolding politics.

The ruling political coalition has to pull off a delicate act in the coming months – prevent economic policy slippages that damage the country's investor prospects, and push ahead with reforms that will revamp the economy and lift growth. It is a tall order for a coalition that is struggling to maintain a united and common front with a host of actors 'in power' and 'in opposition' at the same time.

The overhang of government debt in the medium term contributes to anxiety on the Sri Lankan rupee

Going by the aftermath of the February 2018 local government elections, as the election cycle raises the stakes – from Provincial Council elections to presidential and parliamentary elections – the differences between the ruling coalition partners are likely to widen rather than narrow. In the interim, the two parts of the coalition government may well be caught between attempting not to damage the country's economic prospects, and for not getting the blame if the economy does badly.

Thus, Sri Lanka must prepare for a certain degree of policy gridlock in the months to come; perhaps even more importantly, for a 'watch-and-wait' approach by investors looking to the medium to long term outlook. This attitude will be driven by a host of uncertainties; not least, on future political candidatures as parties gear up to stitch up alliances for national elections, and specifically, whether a reformist agenda will continue post-2020 or if its key provisions will be reversed.

In these circumstances, the best that can be hoped for is that the economic gains of the last two years will be retained. The CBSL's optimistic growth forecast of 4.5-5.0 per cent for 2018 has

been subject to downward revision; to 4.0-4.5 in May 2018 and to 4 per cent in August 2018. The Sri Lankan economy will see incremental improvements in growth from the low 3.1 per cent achieved in 2017, but without the hoped for transformative acceleration that can come from a rapidly modernising economy.

Within this relatively narrow growth corridor, the economy remains exposed to both domestic and external shocks as never before. Higher debt servicing costs and risks that have come about with a notable shift in the composition of the creditor base makes the economy more vulnerable to external shocks. The immediate worries are the threat of rising oil prices, a shift to a more decisive phase of interest rate tightening and lower remittance inflows as the geopolitical environment becomes less predictable. Currency mismatches in sovereign debt means that any of the above has a direct bearing on the exchange rate. The spread of Turkey's economic woes to other emerging market currencies in August 2018 is a timely reminder once again of the swift contagion effects from capricious global financial markets. Besides Turkey, Sri Lanka is one of six other emerging and frontier market sovereigns – amongst Argentina, Ghana, Mongolia, Pakistan and Zambia – that Moody's identified as most vulnerable to an appreciation of the US dollar. Their external vulnerability and sensitivity to a rise in the cost of debt is deemed high in view of the size and composition of their balance of payments, and the amount of financial buffers in the form of foreign exchange reserves.[3]

On the domestic front, the Sri Lankan economy has become more vulnerable to climatic related shocks that have led to poor agricultural harvests, lost livelihoods and disaster related catastrophes. Resultant poor harvests are not the only means through which impacts are felt on the economy. Other important sectors like tourism are also directly impacted; for instance, travel advisories from key markets due to floods and dengue following inclement weather was partly responsible for Sri Lanka's subdued tourism sector growth in 2017.

Estimates of the exact costs of climate change are hard to pin down, but there is little doubt that these are rising as the frequency and severity of catastrophic weather events climb. More lives, livelihoods and property are at immediate risk, while in the medium term, the ever present threat of climate-induced shocks and disasters add a worrying level of unpredictability. Thus, Sri Lanka has to face up to the prospect of planning for a risky and unruly future that is overshadowed by the persistent threat of climate change, unlike in the past. Indeed, Sri Lanka is identified as a country that is highly vulnerable to the dangers of climate change; massive losses due to disasters within a relatively short time period have seen the country climb up the ranks to fourth place in the Global Climate Risk Index for 2018.

In 2017 alone, Sri Lanka was hit by cyclone Roanu in May, after suffering a severe drought at the beginning of the year. The cyclone and resultant floods and landslides caused nearly 220 deaths; floods and dry spells had a devastating impact on agricultural production in 2016-2017. These impacts exacerbate prevailing conditions of inequality. Disasters have a disproportionate impact on those with low incomes; they face higher risks from poorer living conditions, and are more reliant on vulnerable sectors like agriculture for livelihoods.

[3] Moody's Investors Service. (2018). Moody's: *Renewed financial market correction highlights vulnerability of some emerging and frontier markets*. Retrieved from https://www.moodys.com/research/Moodys-Renewed-financial-market-correction-highlights-vulnerability-of-some-emerging--PR_388195

Estimates of the exact costs of climate change are hard to pin down, but there is little doubt that these are rising as the frequency and severity of catastrophic weather events climb.

As the impacts of climate change on Sri Lanka's economy becomes more pronounced, this year's *Sri Lanka: State of the Economy* report draws attention to 'Climate Change, Food Security and Disaster Risk Management' as its thematic focus to examine the many interrelated socio-economic impacts that need policy consideration.

Meteorological data indicate a gradual change in climatic parameters across Sri Lanka. These include rising air temperature, erratic changes in the annual pattern of precipitation, a change in the spatial distribution of rainfall, and rising sea levels. The socio-economic impacts of these changes in climate – on crop yields, disease and labour productivity amongst others – can be far reaching. For Sri Lanka, the surest way to meet these challenges is to mainstream climate change adaptation into policy, with a view to building up a climate resilient economy. Climate adaptation means looking for more effective ways to deal with scarcer water, higher peak temperatures, and changing weather patterns. The interventions must seek to i) strengthen the adaptive capacity of affected sectors and communities; ii) reduce vulnerability of communities, economic sectors and ecosystems; and iii) adopt innovative risk management instruments to address residual risks.

There is little time to be lost. Livelihoods in agriculture are most at risk from climate change impacts. The vast bulk of Sri Lanka's poor are also to be found in areas heavily dominated by agricultural production. This, combined with a persistent problem of malnutrition in the country, has brought the problem of food security to the top of the policy agenda. The Global Hunger Index (GHI) developed by the International Food Policy Research Institute (IFPRI) ranks at 84th position among 119 countries, where its hunger status is classified as 'serious'. To make Sri Lanka's food production systems both climate

resilient and nutrition sensitive, approaches to raise the adaptive capacity of farmers, as well as the resilience and efficiency of resource use in agricultural production systems is critical.

While counting the cost of climate change accurately is hard, one indication of its rising toll is the number of people affected by natural disasters. The number of deaths due to natural disasters has been rising steadily in Sri Lanka, reaching approximately 220 people in 2017 alone. Through better early warning systems and public information, death rates and other associated losses from natural disasters can be lessened. But, inadequate disaster risk management practices continue to hamper both preventive and recovery efforts in Sri Lanka. Paying more attention to mainstream disaster resilience aspects into developmental planning, and spending more on preventing disasters so as to cut its costs are practical solutions.

Physical infrastructure developments can help protect societies from the economic toll of disasters and the rising tide of climate change impacts. However, if not properly planned, their environmental consequences can be high. Sri Lanka's ready participation in China's immensely ambitious Belt and Road Initiative (BRI) that brings billions of dollars of infrastructure investment has already generated concerns on environmental impacts. For instance, the impacts of land reclamation for the Colombo Port City or veering to fossil fuel have been contested. But, the ascendance of China in key areas like foreign investment, and trade and development in the Sri Lankan economy is only likely to strengthen in the emerging geopolitical environment. As Sri Lanka engages with the BRI, it needs to address not only the environment risks, but also those related to debt accumulation and issues of sovereignty, as it balances its strengthening relations with China and other major powers with an interest in the Indian Ocean.

As the consequences of climate change become more real in Sri Lanka, it will begin to dictate both outward and inward migration as people flee disaster prone areas. Water scarcity, extreme weather events or rising sea levels patterns will impact livelihood-sustaining activities like farming and fishing. With rural populations at most risk, rural-urban migration is likely to speed up in Sri Lanka and contribute to on-going rapid urbanisation processes, as well as food insecurity as the urban sprawl encroaches on agricultural land. The overall outcomes are uncertain; for instance, if it leads to more internal and external migration in search of better jobs, higher volumes of remittances may lead to improved resilience.

Countries that pay more attention to climate mitigation rather than adaptation are exploring new avenues for generating green jobs. For Sri Lanka, however, the more immediate concern is to cushion the already disproportionate impacts of climate change on workers with low incomes. They are found preponderantly in the rural economy, requiring a great deal of policy focus and spending to improve rural employment markets and safeguard rural workers from income fluctuations. At the same time, those in farming, construction and other outdoor jobs are also those likely to suffer health and labour productivity issues as climate change leads to warmer temperatures. Investments in education, social protection systems, infrastructure connectivity and agriculture productivity are key interventions to minimise the burden of climate change on the rural economy.

It is also those on low incomes that suffer the most in the aftermath of climate change related calamities. Credit may be harder to

obtain as whole communities are impacted. Risk management tools like microinsurance can help households to deal better with shocks and crises, including those from climate related disasters. Sri Lanka's low insurance penetration of 1.2 per cent in 2017 suggests considerable room to improve coverage. But, the absence of an adequate regulatory mechanism to facilitate microinsurance, and its current focus on life-cycle rather than livelihood related shocks have not been very helpful. Despite Sri Lanka's recorded low poverty level of 4.1 per cent in 2016, a high concentration of the non-poor population just above the poverty line indicates that much more needs to be done to address growing vulnerabilities of low income households.

It is also the low income households who are most at risk from the shifting weather patterns that impact on the quality, quantity, accessibility and affordability of food produced. These in turn have a significant bearing on health and nutrition outcomes. Despite admirable health outcomes, Sri Lanka suffers from a persistent problem of malnutrition; the most recent data available from the Demographic and Health Survey of 2016 reveal that 20.5 per cent of under five year old children in the country are still underweight. Effective nutrition education on healthy eating habits needs to be accompanied by interventions targeting individual causes of malnutrition, identifying food shortages, and diversities in diets that exist among communities.

The interwoven matrix of socio-economic factors relating to climate change – from agriculture, nutrition, human health, and labour productivity, amongst others – clearly indicates that it is no longer a simple choice between growth and environment sustainability. As Low middle-income emerging economies like Sri Lanka begin to grapple with policy interventions to adapt to

The next steps and their outcomes are likely to be heavily determined by the ntersection of politics and economics.

climate change, it is also clear that economic growth must remain a central focus. It is only with growth – pursued sustainably – that the economic pie becomes bigger, to better address climate change related vulnerabilities, both at national and global levels.

As the Sri Lankan economy recovers from a series of climate-related calamities in 2016-2017 that not only dragged down growth, but also exerted a sharp pull on food prices, the government will hope for a respite from further such shocks in the near term. A respite will not only shield it from more bad news, but it will also not distract policymakers from the necessary self-reflection on the next steps.

The next steps and their outcomes are likely to be heavily determined by the intersection of politics and economics. A push to adopt more populist measures with an election in sight will of necessity be restrained by Sri Lanka's programme with the IMF till mid-2019 and the challenge of early refinancing of the country's medium term debt settlements from 2019. In this hiatus, there will likely be limited appetite for pushing ahead with economic reforms. As trade-offs are weighed between reforms and the possibility of an electoral backlash, politicians will be stuck between voter demands for the immediate accrual of benefits, while actual benefits are likely to be felt only after a lag. For the government, that lag time is narrowing swiftly. In this scenario, the temptation to switch from economic reforms to politics-as-usual will be high; it is to be hoped that Sri Lanka will be more successful this time around in breaking its pervasive populist cycle to retain the gains on the macroeconomic front.

2. Economic Performance and Outlook

2.1 Introduction

Sri Lanka's economic performance report card for 2017 is mixed. Gains were made in macroeconomic indicators, export performance and foreign direct investment (FDI). However, if overall economic performance is to be measured by Gross Domestic Product (GDP) growth, Sri Lanka is clearly in the throes of a growth slump.

A final official figure of 3.1 per cent GDP growth in 2017, well below the 5 per cent forecast, was the lowest growth achieved in the 16 years since 2001. The dampening impact of adverse weather conditions on agricultural production and spillovers into manufacturing activities such as food processing is partly to blame for the growth slowdown. However, Sri Lanka's recent GDP numbers reveal a more troubling trend – a progressive slowdown in services sector growth that is also unhelpfully pulling overall growth down in view of the overwhelming share of services in economic output.

Stimulating growth through fiscal and/or monetary policy interventions is not immediately on the policy agenda. Fiscal excesses of the past mean that there is limited room for an expansionary policy stance. Even as the overall deficit has been reined in, Sri Lanka still suffers from a high public debt hangover close to 78 per cent of GDP. Equally, excessive monetary policy interventions in recent years have seen the Sri Lankan economy suffer from cyclical boom-bust episodes.

The most significant economic milestone in 2017 was the gradual reclaiming of macroeconomic stability with prudent fiscal, monetary and exchange rate policy management.

The most significant economic milestone in 2017 was the gradual reclaiming of macroeconomic stability with prudent fiscal, monetary and exchange rate policy management. Stronger economic fundamentals, and the expected boost to investor sentiment, will lay the foundation for a recovery in the growth momentum. For Sri Lanka to truly capitalise on the improvements in the macroeconomic front, implementing productivity enhancing structural reforms is the next step to convincingly lift the country's medium term growth outlook. Unfortunately, the fact that Sri Lanka is embroiled at the same time in messy electoral politics means that the economic reform outcomes for the remainder of the government's term of office cannot be taken for granted.

Against the above background, this chapter examines Sri Lanka's economic performance in 2017 and assesses the outlook for 2018 in the context of the country's medium term challenges from both domestic and external developments.

2.2 Fiscal Policy: Balancing Budgets

The most critical gains on economic policy management have been on the fiscal front. Sri Lanka implemented a series of tax reforms under its International Monetary Fund (IMF) programme that is heavily tilted in favour of revenue based fiscal consolidation. The tax increases implemented from mid-2016 was augmented by the passage of the Inland Revenue Act in September 2017 setting out clearer principles of taxation and bringing a degree of much needed predictability and certainty to the tax system.

Sri Lanka's persistently low and declining tax-to-GDP ratio has begun to reverse, albeit at a slower pace than anticipated. As seen in Table 2.1, the tax-to-GDP ratio of 12.6 per cent in 2017 was below the estimated forecast of 13.5 per cent, but comfortably above the 10.1 per cent, at its lowest level ever in 2014. Increased revenue and better control over expenditure overruns allowed the Treasury to maintain a fiscal deficit of 5.5 per cent of GDP, similar to that recorded in the previous year. Whilst this is a gradual improvement from the 2015 spike, it still fell short of the target deficit for 2017 of 4.6 per cent of GDP.

Despite missing the overall fiscal balance target, public finances are in a much sounder footing with the decisive revenue reforms expected to yield sustained gains to the Treasury. Indeed, a breakdown of the tax collections show that the

Table 2.1
Fiscal Outcomes as a Percentage of GDP

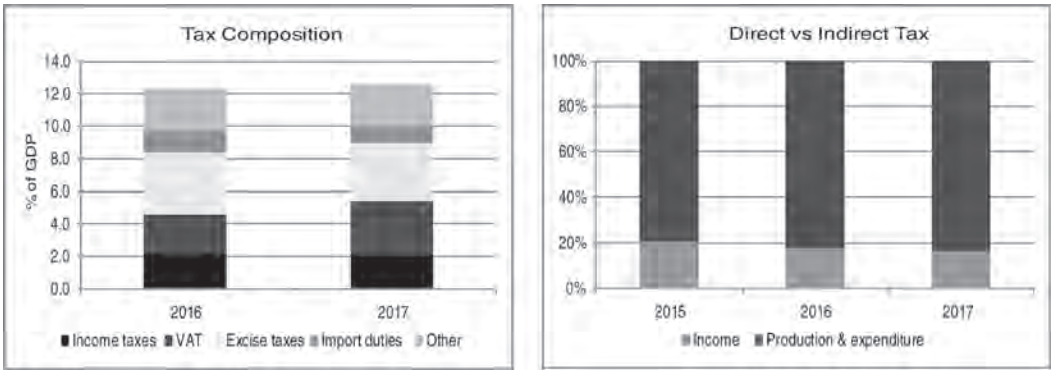
	2015	2016	2017		2018
			Forecast		Forecast
Total revenue	13.3	14.2	14.9	13.8	15.6
Tax revenue	12.4	12.3	13.5	12.6	14.3
Recurrent expenditure	15.5	14.8	14.4	14.5	15.2
Public investment	5.5	5.2	5.2	4.9	5.4
Primary balance	-2.9	-0.2	0.4	0.0	1.0
Overall balance	-7.6	-5.4	-4.6	-5.5	-4.8
Net domestic financing	5.4	2.1	2.2	2.2	2.2
Net foreign financing	2.2	3.3	2.5	3.3	2.5

Source: Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

primary change since the tax reforms of mid-2016 is the higher contribution from VAT amounting to 3.3 per cent of GDP in 2017 (Figure 2.1). In fact, the actual collection is higher than the target of 2.8 per cent set for the year.

and introduce unique digital identity systems, amongst others, is expected to improve efficiency of tax collection and help broaden the tax base through better compliance. Recent research by the Institute of Policy Studies of Sri Lanka (IPS)

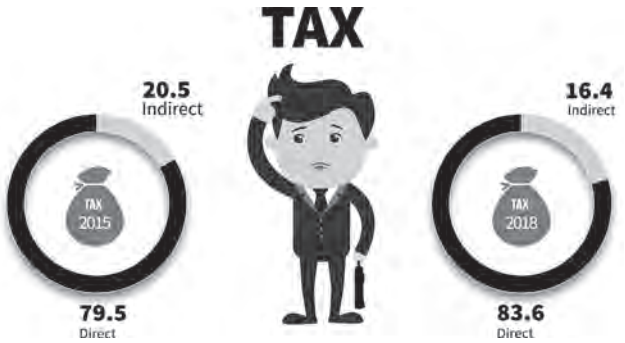
Figure 2.1
Tax Policy Outcomes



Source: Compiled with data from Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

However, the overall tax mix is becoming more regressive. This is in direct contrast to the government's stated intention of achieving a direct to indirect tax ratio of 40:60 from the prevailing ratio of 20:80. The recent tax changes

on the potential equity implications of the new Inland Revenue Act suggests a positive outcome in relation to at least the personal income tax (PIT) and pay-as-you-earn (PAYE) tax structures. The new structure is found to be more income



have unfortunately had the opposite impact. Clearly, much remains to be done to streamline and rationalise Sri Lanka's tax structure to achieve the broader objective of progressivity. Ongoing reforms to automate revenue collection

equalising, as the richest will pay a higher share of the taxes.[1]

Unlike on the revenue front, progress on the expenditure side has been limited. The most

[1] Arunatilake, N., & Jayawardena, P. (2017). *The proof of the pudding is in the eating: Distribution and revenue implications of Sri Lanka's new Inland Revenue act.* Retrieved from http://www.ips.lk/talkingeconomics/2017/09/25/the-proof-of-the-pudding-is-in-the-eating-distribution-and-revenue-implications-of-sri-lankas-new-inland-revenue-act/

Much remains to be done to streamline and rationalise Sri Lanka's tax structure to achieve the broader objective of progressivity.

pressing relate to restructuring of large loss-making state owned enterprises (SOEs). Despite Statements of Corporate Intent signed in 2017 for the five largest SOEs – Ceylon Petroleum Corporation, Ceylon Electricity Board, National Water Supply and Drainage Board, Airport and Aviation Services Limited, and Sri Lanka Ports Authority – the losses continue to mount. In particular, the rise in international oil prices contributed to weaker financial performance in the state owned energy affiliates in 2017, compelling the government to turn its attention to the implementation of a fuel price formula. With this item high on the agenda of the IMF programme, Sri Lanka introduced a new price formula in May 2018, under which price adjustments are to be reviewed every two months.

The bigger than anticipated overall fiscal deficit was financed by higher net foreign sources (Table 2.1). Net foreign financing which was estimated at only 2.5 per cent of GDP in 2017 eventually came to a significantly higher 3.3 per cent. The net domestic financing requirement was held to the target of 2.2 per cent of GDP. Clearly, the intention was to provide a more attractive interest rate structure in the domestic economy by limiting government crowding out of domestic financial resources. However, with Sri Lanka's large external debt overhang, continued reliance on high foreign financing of the fiscal deficit is an issue of concern.

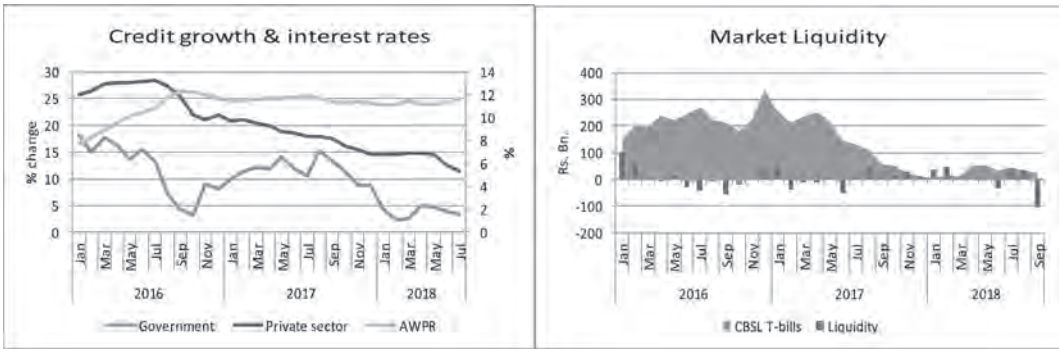
2.3 Monetary Policy: Price Stability

The stronger fiscal rebound helped the Central Bank of Sri Lanka (CBSL) to set a more prudent course for monetary policy from mid-2016. Continued high credit growth to the private sector was the major source of concern at the beginning of 2017 (Figure 2.2). Although credit growth had decelerated, it was still hovering at a relatively high 20 per cent. With inflation climbing steadily – with year-on-year inflation as measured by the National Consumer Price Index (NCPI) hitting 8.6 per cent in March 2017 – the CBSL responded to continued high credit growth to the private sector by tightening policy interest rates. The Standing Deposit Facility Rate (SDFR) was raised by 25 basis points in March 2017 to 7.25 per cent. Treasury bill holding of the CBSL was drawn down substantively with an eye to tighten monetary conditions in the economy. Market interest rates continued to remain at over 11 per cent for the rest of the year even as credit growth to the private sector decelerated swiftly from the first quarter of 2017.

Despite the CBSL's response to tighten monetary policy in view of high credit growth to the private

sector and accelerating inflation, inflationary pressures emanated primarily from supply side shocks to the economy. Inclement weather conditions that saw agriculture production dip sharply resulted in high and rising food demand-pull and supply-push factors. The monetary policy response was measured, with a 25 basis point rate hike in March 2017 as a precautionary measure against the return to a consumption driven, short lived credit boom.

Figure 2.2
Credit Growth, Liquidity and Interest Rates



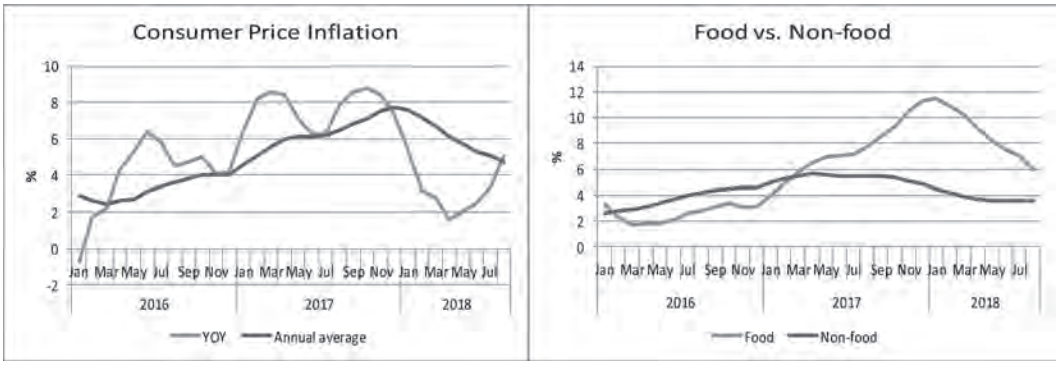
Notes : Credit to government includes SOEs.
Source : Compiled with data from Central Bank of Sri Lanka. *Monthly economic indicators.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

inflation. The NCPI which has a high 44 per cent weightage for food in its basket indicates the sharp acceleration in food inflation more so than the Colombo Consumer Price Index (CCPI) that has a smaller 28.2 per cent weightage for food (Figure 2.3).

Thus, what appears apparent is that Sri Lanka's recent inflationary bout has symptoms of both

With inflationary pressures and credit growth moderating substantially by the first quarter of 2018, the CBSL chose to cautiously ease monetary policy, reducing the Standing Lending Facility Rate (SLFR) by 25 basis points, but keeping the Standing Deposit Facility Rate SDFR unchanged. By narrowing the gap between deposit and lending policy rates, the CBSL was aiming to nudge short term interest rates downwards.

Figure 2.3
Inflationary Trends



Notes : Credit to government includes SOEs.
Source : Compiled with data from Central Bank of Sri Lanka. *Monthly economic indicators.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

2.4 Exchange Rate: Pegged, Managed or a Free Float?

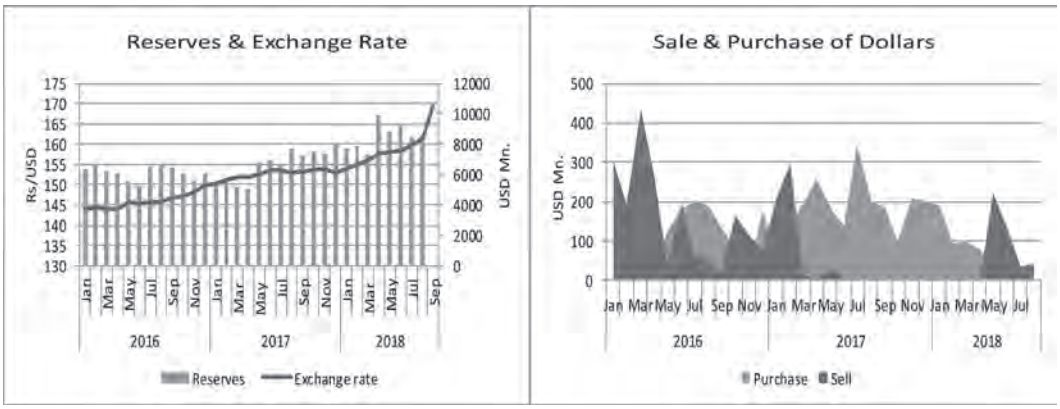
Sri Lanka's exchange rate policy management also underwent a marked change from mid-2016. The CBSL's approach in recent years for the most part has been to peg the exchange rate and attempt to defend the currency if under market pressure to depreciate. In turn it has led to sharp exchange rate shocks, soon after which a managed float is adopted temporarily, before it becomes a virtual peg in a vicious cycle. As a result, sharp rupee depreciations against the USD occur periodically.

The last such adventurism in 2015 eventually led Sri Lanka to approach the IMF for the on-going bailout package. Indeed, a firm condition of the IMF programme is the insistence on the shift to a more flexible, floating exchange rate regime. In addition, the IMF has also called on the CBSL to build up its stock of non-borrowed official reserves.

The CBSL has had a fairly successful run in meeting both these policy directives in 2017. It has been a net purchaser of US dollars in the market, shoring up reserves by an estimated USD 1.7 billion. However, the CBSL has simultaneously continued to return to international capital markets, borrowing USD 1.5 billion with the issuance of a 10 year International Sovereign Bond (ISB) in May 2017 and a further USD 1 billion in syndicated loans, borrowed in March (USD 450 million) and August (USD 550 million). In November 2017, a new Exchange Management Act was passed with the intention of easing some of the existing controls on foreign exchange transactions, related to both inward and outward flows.

A more comfortable official reserves position allowed the CBSL to adopt a gradual depreciation of the rupee. In 2017, the rupee held steady for the most part, recording on overall depreciation of only 2 per cent (Figure 2.4). However, the currency began to come under pressure in April 2018 owing to a host of factors, both economic and non-economic.

Figure 2.4
Exchange Rate Movements



Source: Compiled with data from Central Bank of Sri Lanka. *Monthly economic indicators.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

Confirmation that Sri Lanka's economic growth had fallen to its lowest rate in 16 years did little to allay concerns regarding the impact of the political fallout on the economy at large.

The most unsettling factor was electoral politics. Following the results of the delayed local government elections held in February 2018 in which the ruling coalition suffered a setback, political infighting and uncertainty began to dominate the headlines. On the economic front, the confirmation that Sri Lanka's economic growth had fallen to its lowest rate in 16 years did little to allay concerns regarding the impact of the political fallout on the economy at large. Despite the government securing USD 2.5 billion through the issuance of yet another ISB offering of five and 10 year maturities (at yields of 5.75 and 6.75 per cent, respectively) in April 2018, external sector developments continued to make inroads into investor and exporter confidence on the medium term outlook on the currency front.

2.5 External Sector: Trade, Transfers and Foreign Capital Inflows

Sri Lanka began to make some welcome inroads towards a stronger external sector performance in 2017, despite a worsening of the current account deficit to 2.6 per cent of GDP (Table 2.2). The most notable outcome was the signs of a strong export rebound, with earnings growing by over 10 per cent to reach USD 11.4 billion. Thus, after a hiatus of two years, Sri Lanka surpassed its 2014 export earnings of USD 11.1 billion.

While much was made of the concessions granted to Sri Lanka once again under the Generalised System of Preferences (GSP+) scheme of the EU in May 2017, the export rebound appears to not be intimately related to GSP concessions. In fact, Sri Lanka's share of exports to the EU dropped marginally to 29 per cent in 2017 from 30 per

cent in the previous year. Sri Lanka's share of garment exports to the EU – the export product sector considered to benefit primarily from the GSP+ concessions – remained unchanged at approximately 40 per cent. This seems to bear out research that suggests that the impact on exports is likely to occur only within two years after preferences have been granted.[2]

Despite the improved export performance, there was no positive gain on Sri Lanka's large trade imbalance nearing 11 per cent of GDP in 2017. This was owing to the high growth in import expenditures, particularly a 38 per cent growth on fuel imports. Accounting for over 16 per cent of total import expenditures, changes in international fuel prices have a strong bearing on Sri Lanka's trade account as a net importer of fuel. With growth in earnings from tourism decelerating over time, and growth in remittance inflows moving into negative territory, the country remains vulnerable to external sector shocks. The current upward trending of international oil prices is the most immediate threat on external sector stability for Sri Lanka.

Another breakthrough in 2017 with regards to external economic conditions is the purported increase in FDI inflows. In absolute terms, FDI inflows reached USD 1.4 billion, equivalent to 1.6 per cent of GDP and well above the post-war average of around 1.1 per cent of GDP. However, what is also quite apparent is that the increase has come primarily in FDI related to infrastructure (Figure 2.5). The sale of a 70 per cent equity stake in the Hambantota Port to China and FDI related to the China funded Colombo Port City project are the dominant sources of the increased FDI in infrastructure. Not surprisingly, China accounted for 30 per cent of total FDI into Sri Lanka in 2017.

Thus, there is still some way to go for Sri Lanka in attracting FDI into manufacturing and services sector activities that will generate spillovers in the form of higher productivity growth through technological and managerial uptake. The improved macroeconomic fundamentals and regulatory reforms such as the passage of the Inland Revenue Act and the Foreign Exchange Act will help. Most urgently, Sri Lanka must fast-track the implementation of a slew of recommendations to cut back on red tape and bureaucracy pertaining to investment approvals, customs clearance, and land registration, amongst others.

Table 2.2
External Sector Trends

	2014	2015	2016	2017
Export earnings, % growth	7.1	5.2	-2.2	10.2
Import expenditures, % growth	7.9	2.5	1.3	9.4
Remittance inflows, % growth	9.5	-0.5	3.6	-1.1
Tourism earnings, % growth	41.7	22.6	18.0	11.6
Current account, % of GDP	-2.5	-2.3	-2.1	-2.6

Source: Compiled with data from Central Bank of Sri Lanka. (Various Years). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

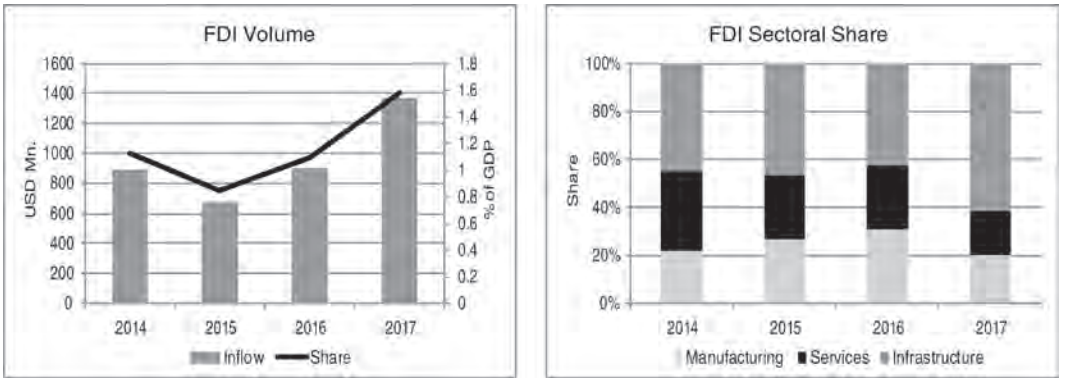
[2] Wijayasiri, J. (2017). *Crunching the numbers: What is the real export benefit of GSP plus to Sri Lanka.* Retrieved from http://www.ips.lk/talkingeconomics/2017/06/22/crunching-the-numbers-what-is-the-real-export-benefit-of-gsp-plus-to-sri-lanka/

Alongside improved FDI inflows, Sri Lanka also saw a turnaround in foreign investments in government Treasury bills and bonds (Figure 2.6). The share of foreign holding relative to the total outstanding Treasury bills and bonds that had dropped progressively from 11.5 per cent in 2014 to a low of 5.5 per cent in 2015, posted a recovery in 2017 to reach 6.7 per cent. Similarly, private investor sentiment also lifted in 2017 with the Colombo Stock Exchange (CSE) witnessing a net inflow of purchases by foreign equity buyers. Although at USD 115 million in 2017, the amount is still lower than the USD 160 reached in 2014, it adds to signs of an overall positive shift in foreign investor perception on the Sri Lankan economy.

Additionally, Sri Lanka continued to rely on further rounds of foreign capital borrowing in 2017. The most notable included USD 1.5 billion in ISB issues, USD 1 billion in syndicated loans and USD 500 million in Chinese loan commitments (Figure 2.6). Together, these inflows permitted Sri Lanka to record a surplus on its balance of payments (BOP) of USD 2 billion in 2017 as against a negative balance of USD 500 million in the previous year.

A BOP surplus that is largely the result of additions to Sri Lanka's growing external debt liabilities is not a noteworthy development. In fact, it raises more questions than answers with regards to how long the country can continue to refinance its external debt settlements at a relatively moderate risk premium in the face of less-favourable global liquidity conditions and a US dollar that is on an appreciating trend.

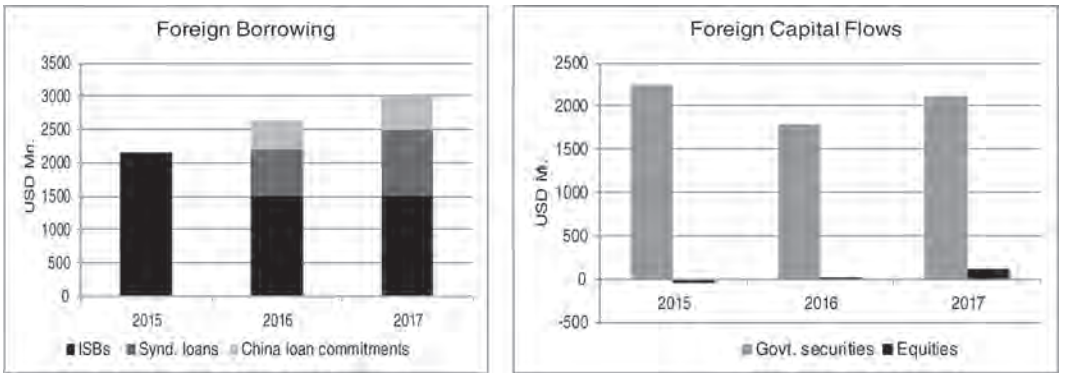
Figure 2.5
FDI Trends



Source: Compiled with data from Central Bank of Sri Lanka. (Various Years). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.



Figure 2.6
Government Foreign Borrowing and Other Capital Flows



Source: Compiled with data from Central Bank of Sri Lanka. (Various Years). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.); and Department of External Resources. (Various Years). Performance Report. Colombo, Ministry of Finance.

2.6 External Debt: Competing Risks in a Liquidity Tightening Phase

There was no easing up on Sri Lanka's growing exposure to external debt in 2017. In fact, the stock of external debt grew by a high 15.6 per cent in 2017 to USD 31.4 billion compared to a 10 per cent growth in 2016. By and large, external debt growth is averaging at a higher rate post-2015 than in the immediate years before (Table 2.3). Not surprisingly, the ratio of public external debt to GDP has also crept up over time to 35.5 per cent in 2017. The continuing shift towards commercial borrowing also means that the non-concessional foreign debt in the total external debt stock has been climbing steadily to 54.8 per cent by 2017.

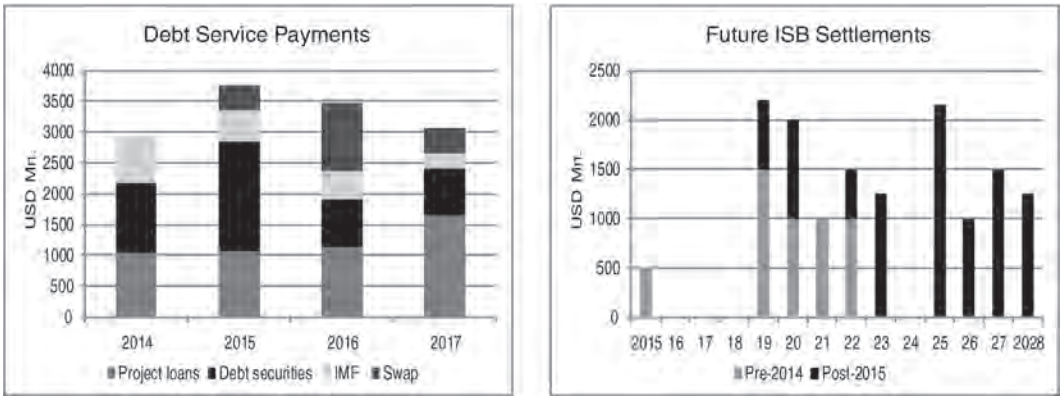
Conversely, Sri Lanka's external debt service ratio has been improving. From a high of 28.2 per cent in 2015, it has dropped to 23.9 per cent in 2017. Whilst this might suggest that external sector earnings have been growing sufficiently to comfortably service debt payments, the reason for the decline is that Sri Lanka has a hiatus in large external debt settlements during 2016-18 as a result of which total debt settlements decline during this period (Figure 2.7). Conversely, the real challenge in debt settlements begin in 2019 with a large bunching up of ISBs and syndicated loan settlements coming together, borrowed both pre and post-2015.

Table 2.3
External Debt Dynamics

	2013-14	2015-16	2017
Public external debt, USD Bn.	23.2	25.9	31.4
Public external debt, % change	4.5	6.2	15.6
Public external debt, % of GDP	30.5	33.2	35.5
Foreign non-concessional debt, % of total	50.8	52.1	54.8
Debt service ratio,[a] %	24.3	26.9	23.9

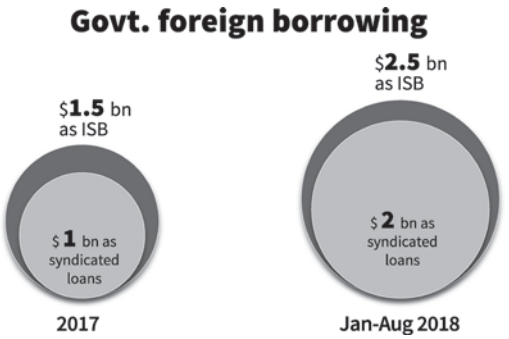
Notes: Debt service payments as a percentage of earnings from exports of goods and services.
Source: Compiled with data from Central Bank of Sri Lanka. Annual report. Colombo, Sri Lanka: Central Bank of Sri Lanka. (Various years).

Figure 2.7
Debt Servicing



Source: Compiled with data from Central Bank of Sri Lanka. *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka. (Various years).

Sri Lanka enacted the Active Liability Management Act in March 2018 to help manage medium term external debt settlements. Under this Act, the government is permitted to raise funds over and above the Parliament approved annual borrowing limit. The funds raised can be kept aside for future debt settlements in order to lower refinancing risks from a large bunching up of foreign debt payments. In April 2018, Sri Lanka raised USD 2.5 billion from ISB issues, and two syndicated loans of USD 1 billion each from China Development Bank in May and August 2018, respectively, partly



with the intention of addressing this problem. More such borrowings are envisaged in 2018.

Aside from the above, the government is also seeking to divest its share of SOEs where possible to build a buffer of non-debt capital inflows to help ease debt servicing. The controversial debt-to-equity swap whereby a 70 per cent stake in the Hambantota Port was sold to China on a 99 year lease so far has been the most lucrative for the government, netting an estimated USD 1.1 billion. Less controversially, other potential sources of funds include the sale of government equity shares in the hotel and leisure sector.

Early preparations to meet the debt resettlements are the most advisable course in the circumstances. A decisive interest rate tightening phase in global financial markets – and a draining of investor appetite for emerging market debt – raises the risks of refinancing at higher costs. The current upswing in capital flows to some 'risky' emerging market economies is raising concerns regarding potential downside impacts of rate tightening.

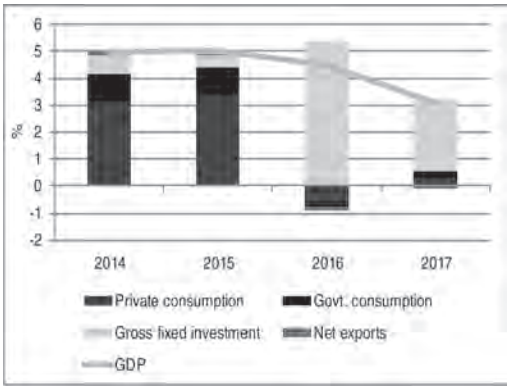
As Sri Lanka gears up to meet a large volume of medium term external debt settlements, maintaining sound macroeconomic fundamentals to reassure investors of the country's positive economic outlook will be critical. Attention must now focus on reviving Sri Lanka's sluggish GDP growth through reforms that can help raise economy-wide productivity and efficiency.

The current upswing in capital flows to some 'risky' emerging market economies is raising concerns regarding potential downside impacts for Sri Lanka of rate tightening in advanced economies.

2.7 Sluggish Growth Needs a Boost

A welcome shift in Sri Lanka's growth pattern in recent years has been a shift away from private consumption and towards investments (Figure 2.1). The contribution of government consumption to growth has also narrowed. Unfortunately, Sri Lanka's new revised system of national accounts fails to give disaggregated information on private and government investment to arrive at any conclusive view on the role of private investment in driving growth.

Figure 2.8
Contribution to GDP Growth



Source: Compiled with data from Central Bank of Sri Lanka. (Various Years). Annual report. Colombo, Sri Lanka: Central Bank of Sri Lanka.

However, it can be surmised that the increase in investment share of GDP is more likely the result of greater private investment. As evident from Table 2.4, central government public investment share of GDP has declined marginally over this period which is likely to be the overall trend for public investment, inclusive of provincial councils and SOEs. Despite the likelihood of a shift towards greater private investment, the contribution of net exports to GDP growth remains disappointing.

Overall, GDP growth has been lackluster, falling to 3.1 per cent in 2017. In fact, as per first half 2018 growth of 3.5 per cent, Sri Lanka has gone

on to record growth below 4.0 per cent for the sixth consecutive quarter. It prompted the CBSL to revise its annual growth forecast for 2018 from an initial forecast of 4.5-5.0 per cent to 4.0-4.5 per cent, and a further downgrade to 4 per cent. Efforts to stimulate growth through fiscal and/or monetary policy interventions will undo the gains made on the macroeconomic front and prove destabilising. Sri Lanka is still struggling to lower a still fairly large fiscal deficit of 5.5 per cent in 2017 to 4.6 per cent in 2018. First half 2018 fiscal estimates suggest a slight dip in revenue collection, possibly the result of the general slowdown in economic output and transition to taxation under the new Inland Revenue Act.

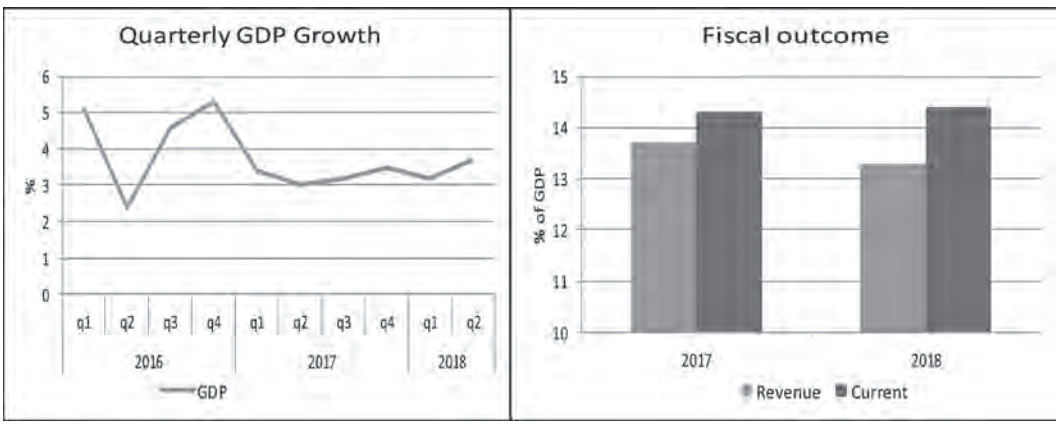
On the monetary policy front, the CBSL reduced policy rates by 25 basis points in April 2018 as credit growth to the private sector decelerated and inflationary pressures eased. However, there is little additional room for further easing of monetary policy. Credit growth to government and SOEs picked up in April/May, keeping market interest rates at the same levels (see Figure 2.2). It is also noteworthy that there has been a sharp pick-up in consumer import expenditures, growing by over 18.0 per cent in the first half of 2018 compared to 5.5 per cent in the same period last year (Table 2.5). The increase has been led by a resurgence in vehicle imports that precipitated previous bouts of BOP crises.

Table 2.4
Savings and Investment

	2015	2016	2017
Investment	31.2	35.0	36.5
Public investment*	5.5	5.2	4.9
Domestic savings	23.6	27.6	29.3
National savings	28.8	32.8	33.9

Notes: a) Refers to central government public investment only.
Source: Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.
* Savings and Investment (% of GDP)

Figure 2.9
First Half 2018 GDP Growth and Fiscal Outcomes



Source: Department of Census and Statistics and Ministry of Finance.

Efforts to stimulate growth through fiscal and/or monetary policy interventions will undo the gains made on the macroeconomic front and prove destabilising.

Whilst the rupee began to come under pressure from April 2018 as emerging market currencies adjusted to a strengthening US dollar, the unfolding domestic import expenditures also had a bearing on the rupee movements. Depreciating pressure on the rupee built up despite the CBSL holding official reserves of nearly USD 10 billion (sufficient for 5.5 months of imports) following a USD 2.5 billion ISB issuance in the same month. Whilst the CBSL had limited its intervention in the foreign exchange market to purchase US dollars in recent months, it reversed this decision in May 2018 to shore up the currency with only partial sterilization of rupee liquidity (see Figures 2.2 and 2.4). By August 2018, foreign reserves had dipped to USD 8.6 billion.

Table 2.5
Import Growth (January-June)

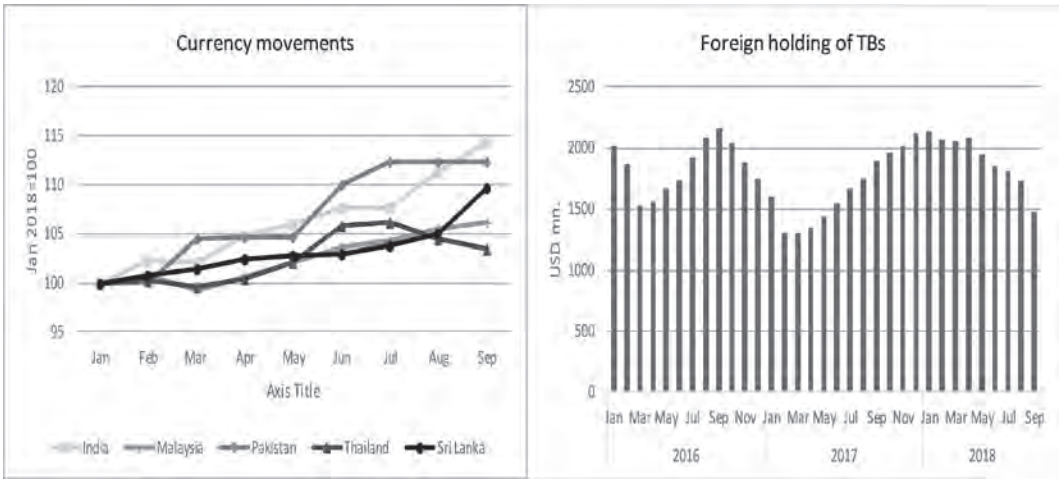
	2017	2018
Consumer goods	5.5	18.0
Vehicles	-11.7	119.5
Intermediate goods	11.9	18.2
Fuel	37.9	28.9
Capital goods	0.8	-0.6
Total imports	8.9	12.7

Source: Compiled with data from Central Bank of Sri Lanka. *Monthly economic indicators*. Colombo, Sri Lanka: Central Bank of Sri Lanka.

The depreciation of the rupee so far by over 10 per cent in the first nine months of 2018 will have an immediate impact on Sri Lanka's debt statistics, highlighting its exposure to external shocks on many fronts unlike neighbouring economies like India that also saw its own currency slide, but without the added risks of external debt exposure. Aside from public external debt of 35.5 per cent of GDP in 2017, Sri Lanka's private sector and SOEs hold another 20 per cent of GDP in the form of foreign currency denominated debt. The depreciation of the rupee will also impact their balance sheets. Tighter credit conditions to restore stability mean economic growth will take another hit.

Thus, the macroeconomic environment still remains highly exposed to both domestic and external shocks despite the gains made, particularly on the fiscal policy front. The fact that political instability has crept into the economics domain following local government elections of February 2018 has not helped that. Friction within the national unity government partners and the

Figure 2.10
Currency Volatility and Foreign Investments in TBs



Source: IMF and data from Central Bank of Sri Lanka. *Monthly economic indicators*. Colombo, Sri Lanka: Central Bank of Sri Lanka.

spectre of upcoming elections – at provincial level in 2018/2019 and national level in 2019/2020 – are likely to make investors uneasy. The more likely scenario is that they will adopt a 'wait-and-see' approach; indeed it is notable that capital goods imports which is an early indicator of investment growth, shows no pickup in the first half of 2018 (see Table 2.5).

2.8 Outlook

More so than ever, the outlook for the Sri Lankan economy at present is heavily entwined with the country's often unpredictable politics. This is because Sri Lanka began to experiment with a national unity government in 2015 that brought together traditional political foes into an uneasy alliance. Three and a half years later, the performance of the government on the economic front is mixed. After a shaky start, macroeconomic stability is being regained under the IMF programme that is set to run until June 2019. While GDP growth is still at a modest 3.5-4.0 per cent, the medium term growth outlook is more promising; a more sustainable

More so than ever, the outlook for the Sri Lankan economy at present is heavily entwined with the country's often unpredictable politics.

growth outcome can emerge from the sounder macroeconomic base, and complementary reforms that are underway to encourage exports and attract private investment.

In all this, Sri Lanka's politics bring the biggest uncertainty to any economic forecasts. From 2018, an electoral cycle kicks in until all the way to presidential elections in late 2019/early 2020. The first test of electoral popularity for the ruling coalition at local government elections in February 2018 did not go down well. In the weeks and months that followed, cracks in the coalition were laid bare that clearly has implications on the country's economy.

The implications are two-fold: first, is the impact on the speed of reforms, policy consistency and predictability; second, is the potential downside risk of looser macroeconomic management to allow more populist measures to creep in on the fiscal policy front and/or easing of monetary policy measures to provide financial relief to both businesses and households.

The former has manifested in the scrapping of the Cabinet Committee on Economic Management (CCEM) to bring economic policy discussions under a National Economic Council (NEC). Backtracking on announced policies, which are often reintroduced subsequent to clarifications, such as on fuel pricing, are examples. The political interests and fortunes of the coalition partners can only be expected to widen as each prepares for the next round of elections; under such circumstances, economic policy making is likely to suffer.

In the case of the ruling coalition adopting fiscal and/or monetary policy measures to provide relief to the voting public, any such measures will come up against a binding constraint – i.e. Sri Lanka's large medium term foreign debt settlements due from 2019. For refinancing risks to be contained, continuing with the IMF programme that imposes fiscal and monetary policy discipline will be quite critical. However, nothing can be ruled out. If politician adopt a short term view with only an eye toward winning the next election, the gains of the recent past can be reversed. The more likely outcome is a slowdown in reform initiatives, and modest adjustments to alleviate voter disaffections that will yield more of an unexceptional 'business-as-usual' economic performance in 2018. Indeed, the CBSLs second downgrade for Sri Lanka's 2018 GDP forecast by 0.5 percentage points in May 2018 to an expected GDP growth rate of 4 per cent for the year lends credence to this supposition.

In the interim, the economy remains highly exposed to shocks, be it domestic in the form of weather related disasters or external in the form of international interest rate adjustments. Sri Lanka's excessive reliance on foreign capital to finance investment under favourable external financial conditions is now leading to disruptions as those conditions change. The options for the country are to either allow a currency depreciation or to delay it by drawing down foreign reserves. The latter is not a tenable strategy for any extended period of time given Sri Lanka's limited buffer stock of reserves. As the depreciation of the rupee raises the country's debt liabilities, Sri Lanka must look to strong and resilient increases in GDP to constrain debt ratios and lower refinancing risks on its medium term foreign debt settlements. The demands on policymakers are many in this challenging environment. The risks are also high; the state of the economy will exert an ever more powerful influence on the electoral battles ahead.

3. International Environment

3.1 Introduction

During 2017, the global economy appeared to be recovering from the pessimism and uncertainty of nearly a decade since the onset of the financial crises, on the back of 'synchronised growth' in major advanced economies. However, recent political tensions, especially in regards to trade wars between the US and China, along with policy uncertainty in the US on several other significant political-economic fronts, can raise future global economic and geopolitical risks.

An investment recovery in many advanced economies, combined with continuously strong growth in emerging Asia, an upswing in emerging Europe, and signs of improvement among commodity exporters all contributed to global economic growth of 3.7 per cent in 2017, along with similar improvements in international trade. Two-thirds of the world economies experienced faster growth in 2017 than in the previous year, the highest proportion of countries experiencing a year-over-year improvement in growth since 2010.[1] This momentum is expected to continue in the short-term with global growth expected to improve to 3.9 per cent in 2018 and 2019.

Stronger investment spending was vital for improved economic performance in advanced economies, along with accommodative monetary policies and the release of pent-up demand for capital goods. Meanwhile, the growth in emerging and developing economies was driven mainly by an increase in private consumption. That said, it is important to highlight the heterogeneity across emerging and developing economies. For instance, growth in China and India was facilitated by resurgent net exports and strong private consumption, respectively, even though investment spending slowed down. Contrastingly, higher fixed investment growth accommodated economic growth in emerging and developing economies such as Brazil and Russia.

However, amidst the short-term positive outlook, medium to long-term prospects for the global economy are more sobering due to inadequacies in structural reforms and counterintuitive protectionist policies. Advanced economies continue to face ageing populations, falling rates of labour force participation, and low productivity growth – which are unlikely to create a conducive environment for the world economy to grow at pre-crisis levels. In addition, political and policy uncertainty and growing political tensions between economic powers continue to loom large.

Improvements in the global economy have had some positive impacts on Sri Lanka. Export revenue increased in 2017 while the country also attracted higher volumes of foreign direct investment (FDI) compared to preceding years. However, Sri Lanka's trade imbalance continues

[1] International Monetary Fund. (2018). *World economic outlook*. Washington D.C.: International Monetary Fund.

Even though some progress is being made on Sri Lanka's external sector, the economy continues to be exposed to significant risks. These include the impacts on external borrowing viz. interest rate adjustments in international capital markets and implications on the currency from an appreciating US dollar.

to grow as rising oil prices, combined with other factors inflate import costs. Thus, even though some progress is being made on Sri Lanka's external sector, the economy continues to be exposed to significant risks. These include the impacts on external borrowing viz. interest rate adjustments in international capital markets and implications on the currency from an appreciating US dollar.

3.2 Prospects for the Global Economy

3.2.1 Advanced Economies: Strong Structural Growth, but Concerns Remain

Advanced economies have experienced a gradual recovery – albeit haltingly – since 2014 in the aftermath of the 2008-09 financial crisis and the 2011-12 European debt crisis. These economies in particular have performed above expectations since the second half of 2016 through 2017, leading to a continuous decline in unemployment and some signs of wage and price acceleration. Cognisant of these trends, the International Monetary Fund (IMF) projects that advanced economies will grow at 2.5 per cent in 2018 and 2.2 per cent in 2019. Critically, this growth will be pushed by improvements in the Euro Area and Japan, and the effects of expansionary fiscal policy in the US.

Table 3.1
World Output (% change)

	2016	2017	2018	2019
World Output	**3.2**	**3.8**	**3.9**	**3.9**
Advanced Economies	**1.7**	**2.3**	**2.5**	**2.2**
United States	1.5	2.3	2.9	2.7
Euro Area	1.8	2.3	2.4	2.0
Germany	1.9	2.5	2.5	2.0
France	1.2	1.8	2.1	2.0
Italy	0.9	1.5	1.5	1.1
Japan	0.9	1.7	1.2	0.9
United Kingdom	1.9	1.8	1.6	1.5
Emerging Markets and Developing Countries	**4.4**	**4.8**	**4.9**	**5.1**
Russia	-0.2	1.5	1.7	1.5
China	6.7	6.9	6.6	6.4
India	7.1	6.7	7.4	7.8
Brazil	-3.5	1.0	2.3	2.5
ASEAN - 5	5.0	5.3	5.3	5.4

Source: International Monetary Fund. (2018). *World economic outlook – April.* Washington D.C.: International Monetary Fund.

Already at full employment, the recent passage of the US tax reform Bill is expected to help the American economy grow by approximately 0.5 per cent faster than its expected potential during 2018 and 2019.[2] However, the caveats of the Bill are such that these gains will be limited to the short-term and may expose the economy to higher risks, especially in terms of increasing its government deficit.[3] Therefore, the US Federal Reserve is likely to continue to gradually raise interest rates, as it has been doing over the past year, but may pursue a more proactive monetary policy intervention in the future if faced with inflationary pressures. Crucially for Sri Lanka and other emerging economies, the rise in US interest rates is leading to a reinvestment flow back to the US, leading to the depreciation of emerging market currencies.

Among other advanced economies pertinent to Sri Lanka's economic activities, the Euro Area and Japan in recent years have generally lagged behind other advanced economies and dragged down growth. Nevertheless, these economies appear to be achieving a long-awaited recovery that is expected to continue in 2018 and 2019 as well. Whilst the Euro Area economies are expected to grow by 2.4 per cent in 2018, Japan's growth is expected to moderate to 1.2 per cent. As with other advanced economies, these

[2] Deloitte. (2018). *United States economic forecast – 1st Quarter 2018.* Retrieved from https://www2.deloitte.com/insights/us/en/economy/us-economic-forecast/2018-q1.html

[3] Tax Policy Centre. (2017). *Distributional analysis of the conference agreement for the tax and jobs act.* Retrieved from http://www.taxpolicycenter.org/publications/distributional-analysis-conference-agreement-tax-cuts-and-jobs-act/full

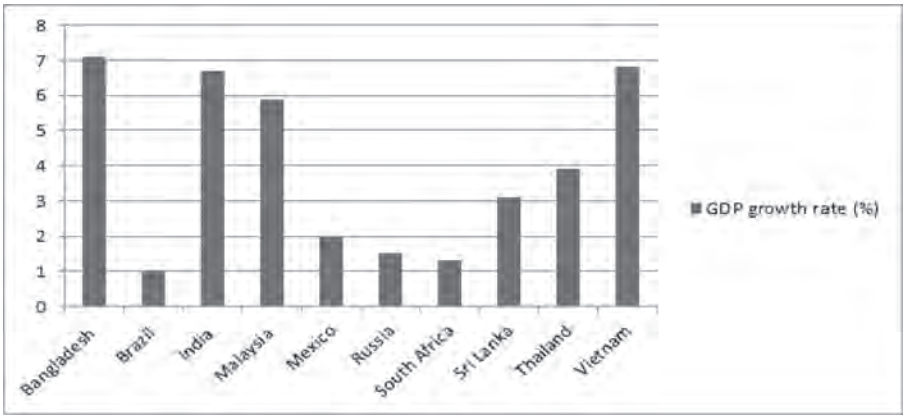
countries in particular are expected to benefit from favourable external demand prospects and increasing private investment. Furthermore, the terms of 'Brexit' – whereby the UK is officially scheduled to leave the EU in March 2019 – also needs to be factored in. A transition deal could create a grace period for the parties involved to eliminate the potential of a sudden economic shock.

3.2.2 Emerging and Developing Economies

Continuing the trend of recent years, emerging and developing economies remain as the main drivers of global economic growth. The growth rates of these economies are expected to increase from 4.8 per cent in 2017 to 4.9 per cent in 2018 and 5.1 per cent in 2019. In the medium term, growth in emerging and developing economies is expected to average 5 per cent.[4] While China's economic rebalancing strategy continues, its growth projections diminish slightly. The Chinese economy grew at 6.9 per cent in 2017 and is expected to grow at 6.6 per cent in 2018 and 6.4 per cent in 2019. The shift from investment to consumption, through the reduction of fiscal and credit channels, along with the strengthening of its social security, and the decline of precautionary savings, are likely to lead to a medium term growth rate of 5.5 per cent. However, the rebalancing is vital for economic sustainability and would pay dividends in the medium term to long run.

Elsewhere, among emerging economies, the Indian economy appears to be recovering from the transitory effects of the demonetisation initiative and the application of the goods and services tax (GST). Strong consumption growth is expected to drive the economy to 7.4 per cent growth in 2018 and 7.8 per cent in 2019, up from 6.7 per cent in 2017.[5] Amidst these generally positive trends, the Indian economy appears to be struggling to accommodate an employment creating economic growth to fulfill the needs of its labour market adequately. These structural weaknesses could weigh heavily on future socio-economic outcomes in the country as youth unemployment continues to grow.[6]

Figure 3.1
GDP Growth of Emerging and Developing Countries (Selected Economies), 2017



Source: International Monetary Fund. (2018). World economic outlook – April. Washington D.C.: International Monetary Fund.

[4] International Monetary Fund. (2018). *World economic outlook – April.* Washington D.C.: International Monetary Fund.
[5] *Ibid.*
[6] Financial Times. (2017). *Youth unemployment bucks India's rapid growth*. Retrieved from https://www.ft.com/content/ec92d162-04d2-11e7-aa5b-6bb07f5c8e12

Similar to many other commodity exporters, the Russian economy has gained from improved oil export revenue. Combined with stronger business confidence and a looser monetary policy, the country is expected to grow by 1.7 per cent in 2018, with its move out of recession expected to have a positive knock-on effect on neighbouring countries in the region due to improvements in trade and remittance flows.[7] Meanwhile, despite the fact that improvements in commodity markets have helped Middle Eastern economies somewhat, these nations are faced with high inflation stemming from earlier exchange rate depreciations. Furthermore, fiscal adjustments necessitated in oil exporting economies such as Saudi Arabia are expected to weigh down heavily on prospective growth in the region as well. Political turmoil, especially in regards to intra-regional political developments such as the Qatar blockade will further undermine growth in the region.

3.3 World Trade and Commodity Prices

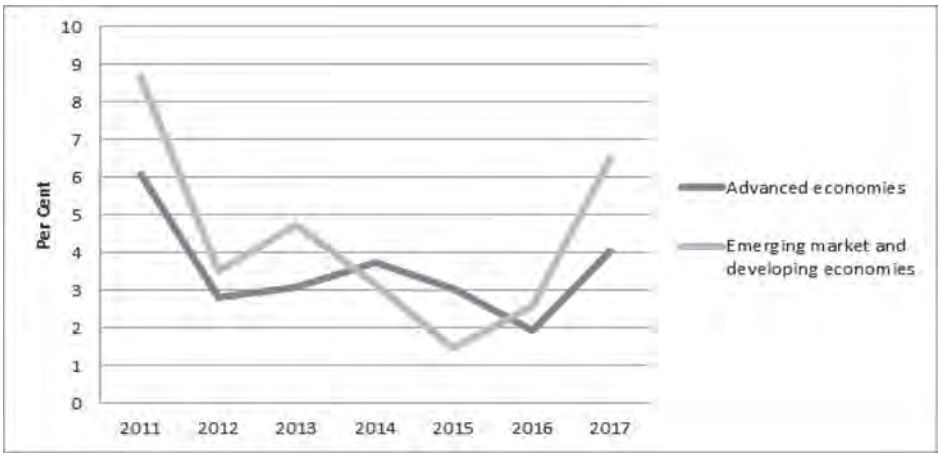
3.3.1 Potential Trade Wars Undermine Recent Gains

World trade experienced its largest increase in six years in 2017, driven mainly by cyclical factors, especially in increased investment and consumption expenditure. This momentum is expected to be sustained during 2018 as well through to 2019. However, these positive expectations for continuous improvements in trade growth are significantly tempered by the recent escalation of tensions in trade policy between the US and China. A cycle of retaliatory tariff increases outside the scope of the World Trade Organisation (WTO) dispute settlement mechanism has increased the threat of a trade war, and thus affected business confidence and future investment decisions. Given the uncertainty, the WTO forecasts global trade to increase within a broad range of 3.1-5.5 per cent in 2018.[8]

A cycle of retaliatory tariff increases outside the scope of the WTO dispute settlement mechanism has increased the threat of a trade war, and thus affected business confidence and future investment decisions.

[7] International Monetary Fund. (2018). *World economic outlook – April*. Washington D.C.: International Monetary Fund.
[8] World Trade Organisation. (2018). *Trade statistics and outlook – April 2018.* Geneva, Switzerland: World Trade Organisation.

Figure 3.2
Export Growth (2011-17)



Source: International Monetary Fund. (2018). *World economic outlook – April.* Washington D.C.: International Monetary Fund.

The increase in world merchandise trade growth to 4.7 per cent in 2017 from 1.8 per cent in 2016 was broad based, driven by rising import demand across regions, but most notably in Asia. After stagnating in 2016, Asia experienced the fastest trade volume growth for any region in 2017, while North American trade (both exports and imports) rebounded with growth of 4.2 per cent and 4.0 per cent, respectively. Trade flows in other regions improved as well, with Europe continuing to expand at a moderate pace while the Middle East and Commonwealth of Independent States (CIS) saw steady export growth of 2.3 per cent in volume, mainly due to stable demand for oil and other natural resources. Overall, import trade growth among developing countries rapidly increased to 7.2 per cent in 2017 from 1.9 per cent in 2016. During the same period, import demand increased among developed economies as well, albeit at a lower level of 3.1 per cent. [9]

Table 3.2
Leading Exports of Commercial Services, 2017

Rank	Exporters	Value (USD Bn)	Share %	Annual Change
1	USA	762	14.5	3.8
2	UK	354	6.7	4.9
3	Germany	296	5.6	7.0
4	France	249	4.7	5.5
5	China	226	4.3	8.7
6	Netherlands	216	4.1	15.6
7	Ireland	182	3.5	19.6
8	Japan	180	3.4	6.7
9	India	179	3.4	11.0
10	Singapore	165	3.1	4.3

Source: World Trade Organisation. (2018). *Trade statistics and outlook – April 2018.* Geneva, Switzerland: World Trade Organisation.

[9] World Trade Organisation. (2018). *Trade statistics and outlook – April 2018.* Geneva, Switzerland: World Trade Organisation.

Similar to merchandise trade, trade in commercial services expanded strongly during 2017 as well, following two years of weak-to-negative growth, and now account for nearly one-fourth of total exports in the world.[10] The 7 per cent increase in commercial services exports is driven partly by the transport services sector, growing at a global average of 8 per cent. Meanwhile, the slowest growing services exports category has been goods related services (5 per cent). At a regional level, Asia's export and import of commercial services increased by 7.1 per cent and 5.5 per cent, respectively. European and South American and Caribbean economies faced similar improvements in services trade as well. The growth of services exports in North America was relatively lower at 4.2 per cent, with services imports increasing by 6.9 per cent.[11]

However, the potential to sustain gains made in trade over the past year is being severely threatened by the looming prospect of trade wars – instigated by the US and its key trading partners, especially China. Since the imposition of tariffs by the US on Chinese imports of steel and aluminium, China has threatened retaliatory measures with tariffs of up to 25 per cent on high value American imports such as soybeans and cars. Initially, the tariffs are expected to apply to USD 46 billion worth of trade, roughly 2 per cent of American imports.[12] The cycle of retaliatory tariff increases is likely to lead to a Sino-American trade war that could derail recent global economic gains. In fact, the prospect of a trade war has already created considerable uncertainty and losses across stock markets around the world. For instance, S&P 500 Index faced a 4 per cent fall in US stocks on 1 March 2018 when President Trump announced the first round of tariff increases – which amounts to an approximate loss of USD 1.2 trillion in stock market wealth.[13] In addition to the immediate direct impact of a trade war on trade flows, continued trade tensions will have a negative effect on business confidence and investment decisions that will compromise future economic gains.

3.3.2 Commodity Market Growth

Commodity markets saw steady growth with commodity prices increases spurred by demand and supply factors. While accelerating growth increased the demand for commodities, several commodities faced supply constraints over the past year. Commodity price increases have been further spurred on by growing geopolitical risks and policy uncertainty on the imposition of additional tariffs, production cuts, and sanctions. Under current conditions, crude oil prices are expected increase from USD 53 per barrel (bbl) in 2017 to an average USD 65 bbl in 2018.[14] However, short-term policy changes could have a significant impact on these forecasts. Some analysts suggest that re-imposing sanctions on Iran could reduce global oil supply by approximately 600,000 barrels per day, approximately a third of its exports in 2016. Combined with political instability in Venezuela and geopolitical instability in the Middle East, global oil prices have, at least temporarily, increased beyond USD 70 per barrel and may increase even further.

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[10] Loungani, P., Papageorgiou, C., & Wang, K. (2017). *Services exports open a new path to prosperity.* Retrieved from https://blogs.imf.org/2017/04/05/services-exports-open-a-new-path-to-prosperity/

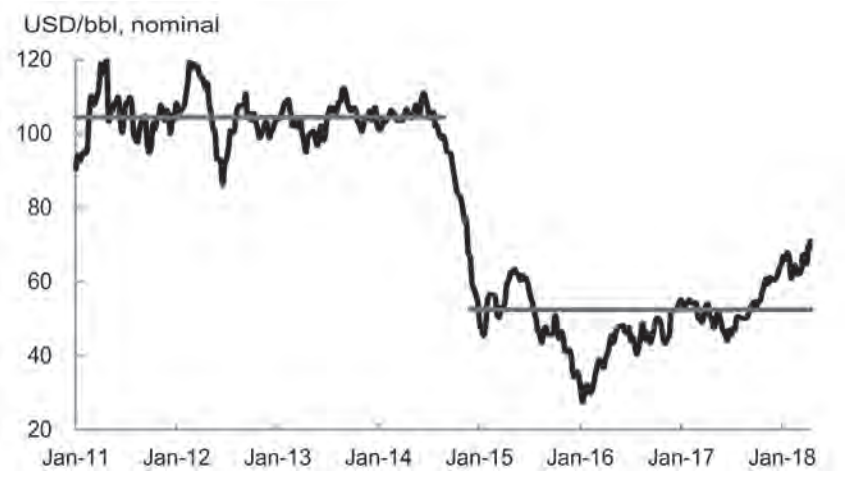
[11] World Trade Organisation. (2018). *Trade statistics and outlook – April 2018.* Geneva, Switzerland: World Trade Organisation.

[12] The Economist. (2018). *A tariffically bad idea: The looming global trade war.* Retrieved from https://www.economist.com/news/briefing/21738392-america-setting-dangerous-new-precedents-it-tries-curb-imports-looming-global-trade

[13] Time. (2018). *Trump's escalating trade war has already cost $1 trillion.* Retrieved from http://time.com/money/5230784/trump-trade-cost-to-economy/

[14] World Bank. (2018). *Commodity markets outlook – April.* Washington D.C.: World Bank.

Figure 3.3
World Crude Oil Prices

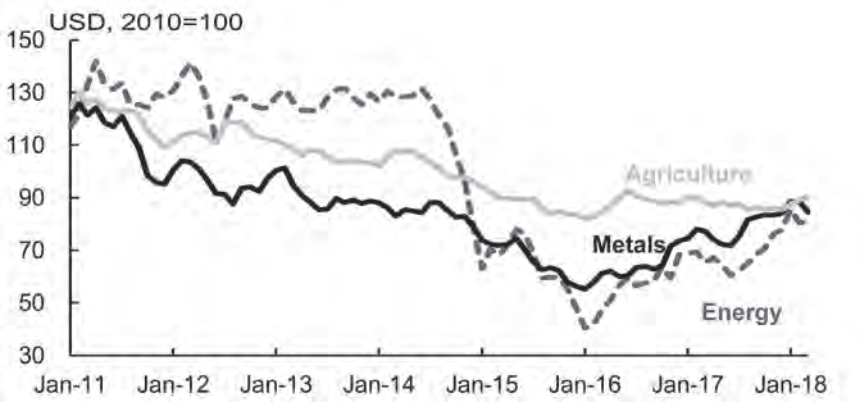


Source: World Bank. (2018). *Commodity markets outlook – April.* Washington D.C.: World Bank..

Among non-energy commodities, prices of metals rose by over 4 per cent due to improvements in global demand and concerns about tightening global supplies. Even though trade tensions between the US and China initially weighed on metal prices, aluminium prices have since surged to a seven-year high following the imposition of sanctions by the US on Russia's largest aluminium producer (accounting for more than 6 per cent of global supply).[15]

In agricultural commodities, global tea prices declined 7 per cent during the first quarter of 2018, even though Colombo and Mombasa prices have remained broadly stable. Overall, tea prices are expected to be marginally higher in 2018 than the previous year at USD 3/kg with moderate increases forecasted to take place. On the other hand, significantly large output of rubber during 2017 has resulted in oversupply, leading to low prices of natural rubber. Market

Figure 3.4
Monthly Commodity Price Index



Source: World Bank. (2018). *Commodity markets outlook – April.* Washington D.C.: World Bank.

[15] World Bank. (2018). *Commodity markets outlook – April.* Washington D.C.: World Bank.

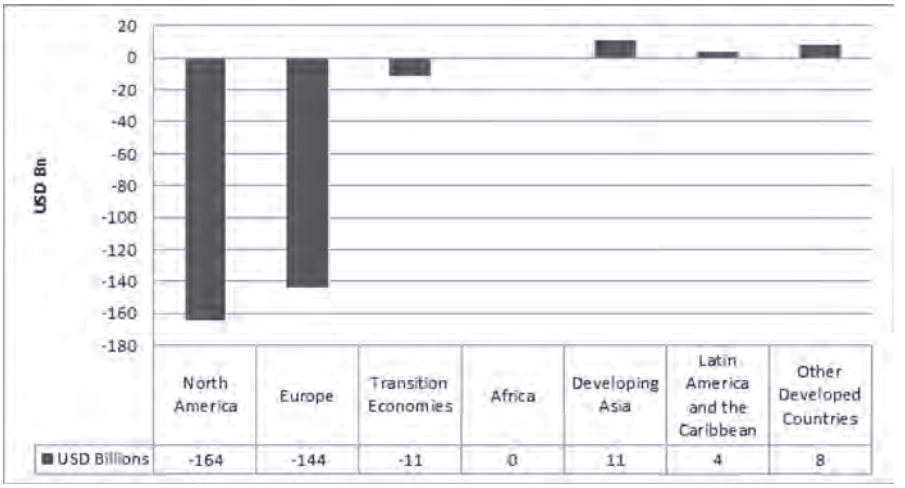
oversupply is expected to continue as indicated by an increase in rubber exports by key suppliers such as Thailand and Vietnam. As a result, rubber prices are expected to decline further during 2018 before recovering gradually.[16]

3.3.3 Mixed Performance in Foreign Direct Investment Flows

In contrast to other macroeconomic variables, global FDI fell by 16 per cent in 2017 to an estimated USD 1.52 trillion, from USD 1.81 trillion in 2016. The fall in global investment figures was mainly due to a fall in FDI flows to developed countries (-27 per cent), especially in Europe (-27 per cent) and North America (-33 per cent). Meanwhile, FDI to developing economies increased by 2 per cent to USD 653 billion with marginal increases in investment flows to developing Asia and Latin America and the Caribbean.[17]

A significant drop in FDI to the US and UK is behind the decline to developed countries in 2017. While the US was affected by a reduction in inflows from several offshore financial centers, the decline to UK is attributed to an anomalous increase of FDI in 2016 due to a few megadeals. However, despite the overall decline, FDI inflows grew in 19 out of the 32 European economies compared to 14 economies in 2016. Concurrently, amidst a general decline in FDI globally, estimated flows to developing economies in Asia increased to USD 459 billion, increasing the region's share of global inflows from 25 per cent to 30 per cent. The three largest FDI recipients were China, Hong Kong (China), and Singapore, in that order. Improvements in global macroeconomic fundamentals are expected to lead to an

Figure 3.5
Regional Contribution to Global FDI Flows (2016-2017)



Source: United Nations Conference on Trade and Development. (2018). Global investment monitor No. 28. Geneva, Switzerland: United Nations Conference on Trade and Development.

[16] World Bank. (2018). *Commodity markets outlook – April.* Washington D.C.: World Bank.

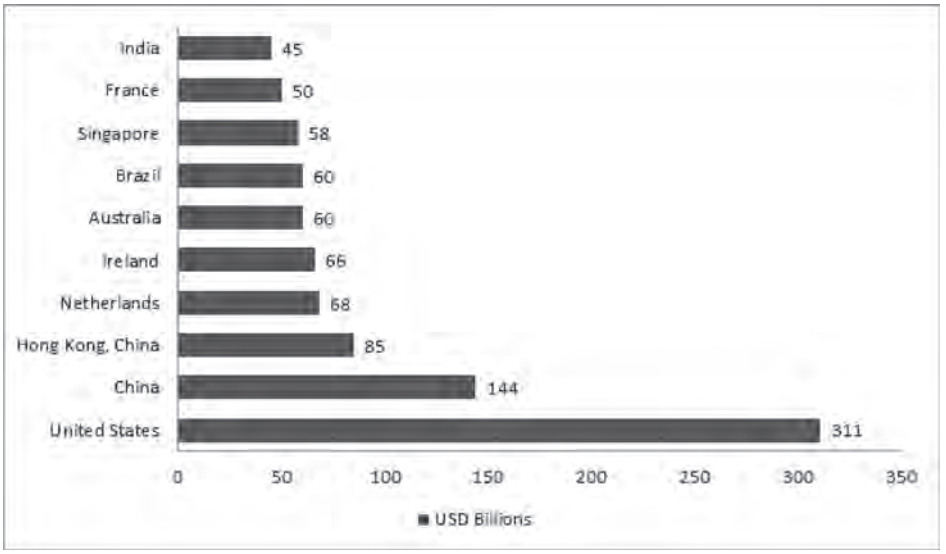
[17] United Nations Conference on Trade and Development. (2018). *Global investment monitor No. 28.* Geneva, Switzerland: United Nations Conference on Trade and Development.



FDI inflows into Developing economies in Asia increased to USD **459** billion, increasing the region's share of global inflows from **25**% to **30**%

improvement in overall FDI flows to approximately USD 1.8 trillion. However, the US tax reform Bill, passed in 2018, is expected to have particularly significant implications on global FDI patterns. Given that the Bill will affect Multi-National Enterprises (MNEs) and foreign affiliates accounting for almost 50 per cent of the global FDI stock, the Bill could potentially lead to the repatriation of almost USD 2 trillion overseas funds of US based MNEs, leading to a sharp reduction in global FDI stocks.[18] As discussed previously, the potentiality of a trade war between the US and China could further dampen global investment.

Figure 3.6
Estimated FDI Inflows - Top 10 Host Economies, 2017



Source: United Nations Conference on Trade and Development. (2018). *Global Investment Monitor No. 28. Geneva,* Switzerland: United Nations Conference on Trade and Development.

[18] United Nations Conference on Trade and Development. (2018). *Investment trends monitor - Tax reforms in the United States: Implications for international investment (No. 29).* Geneva, Switzerland: United Nations Conference on Trade and Development.

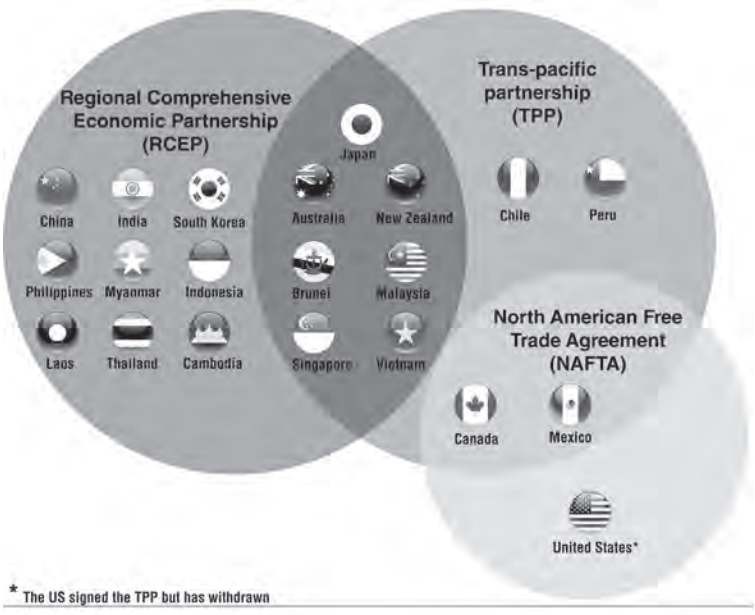
3.4 Geopolitical Developments

3.4.1 Global Economic Integration Trends: Regionals and Mega-regionals

The stagnation of the multilateral trading system at the WTO under the Doha Agenda has led countries to seek alternative arrangements to move forward on contemporary issues pertaining to international trade. As a result, major economies have shifted the emphasis away from the WTO and towards mega-regional trading agreements – or deep integration partnerships between countries or regions with a major share of world trade and FDI. While the primary cause for mega-regional agreements has been to inspire a change in trade rules, a number of political-economic factors have influenced the move towards mega-regional agreements in recent years. Among several potential mega-regional agreements, the Trans-Pacific Partnership (TPP) and the Regional Comprehensive Economic Partnership (RCEP) have gained particular prominence.

Firstly, the growth of regional and global supply chains – the process by which firms organise their production across numerous countries – has necessitated a change in trading rules. A call for change through the lobbying arms of MNEs has grown exponentially as a result.[19] For instance, traditional rules pertaining to rules of origin linked to value addition are becoming increasingly redundant in a world of supply chains. Secondly, the rise of China as a global economic superpower has raised the stakes for the US to find alternative means of balancing

Figure 3.7
Membership of Mega-regionals



Source: CNN Research, 2017.

[19] Bown, Chad P. (2016). *Mega-regional trade agreements and the future of the WTO*. New York: Council on Foreign Relations.

China's influence in the Asia-Pacific region. The expansion of the Belt and Road Initiative (BRI) has caused consternation among the US allies due to the potential for China to create a regional economic hegemony. The TPP, in particular, was inspired by the US 'pivot to Asia' under President Obama. The US-led agreement, that included 11 other Pacific economies, was geared in scope and content to exclude China and counterbalance its economic strength.[20] In response, China and India, along with several other developing countries have moved towards creating the RCEP as a counterweight to the TPP.

3.4.2 Current Status of Mega-regionals

Both the TPP and RCEP have faced significant obstacles through its negotiation and implementation process. The US withdrawal after President Trump took office severely weakened the scope of the agreement and its economic and political intent. Smaller economies such as Vietnam were expected to gain considerably through the TPP by gaining preferential access to the American market. However, Australia, Canada, and Japan have since assumed informal leadership among the remaining TPP membership to sign the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), also known as the TPP – 11 agreement, a slightly amended version of the original. Even though the agreement is more limited in influence due to the absence of the US, the TPP – 11 accounts for approximately 15 per cent of global trade and has established new rules of trade in subjects such as intellectual property rights and environmental standards. Ironically, since the escalation of tensions between the US and China following reciprocal tariff increases, President Trump has intimated that he is

Even though the agreement is more limited in influence due to the absence of the US, the TPP – 11 accounts for approximately 15 per cent of global trade and has established new rules of trade in subjects such as intellectual property rights and environmental standards.

[20] Hewage, K. V. (2017). *Sri Lanka and the pivot to Asia in the new global order.* Retrieved from http://www.ips.lk/talkingeconomics/2017/02/07/sri-lanka-and-the-pivot-to-asia-in-the-new-global-order/

considering the possibility of re-joining the TPP. On the other hand, while relevant nations have declared their desire to conclude negotiations by the end of 2018, the RCEP continues to face difficulties with its membership unable to compromise on critical issues. Since negotiations began in 2013, the RCEP has already missed three deadlines to conclude the agreement. Only two chapters – on Economic and Technological Cooperation and Small and Medium Enterprises – have been concluded thus far. Primarily, difficulties lie in bridging the interests of mature, developed economies such as Japan and Australia with less developed ones such as Lao PDR and Cambodia. Unlike TPP partners, many of those involved in RCEP negotiations do not have established free trade agreements (FTAs) amongst themselves to facilitate negotiations on a mega-regional agreement. Furthermore, India has also noted its concerns about liberalising 92 per cent of its tariff-lines given its existing high trade deficit with China.

3.5 Implications of External Environment Developments on Sri Lanka

Since 2015, Sri Lanka has been aiming to shift to an outward-oriented, export led, FDI driven economy, whilst relying on development finance from international capital markets. In this respect, external environment developments have a direct bearing on the country's progress. Apart from Sri Lanka's dependency on external markets to drive export growth and bring steady investment inflows into the country, Sri Lanka also remains vulnerable to external shocks such as oil prices fluctuations and international capital market trends as a result of a high debt overhang and a low buffer stock of reserves.

While prospects in the US and EU region remain crucial to Sri Lanka as these are the primary source of exports as well as investments in sovereign bonds, developments in East Asia are becoming increasingly critical as a source of FDI and development loans for Sri Lanka.

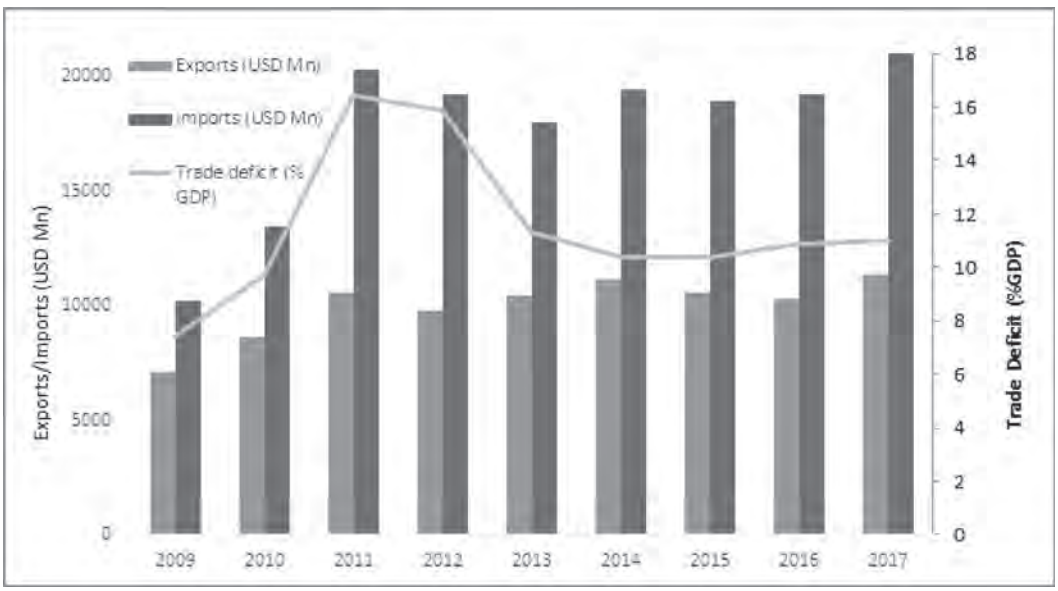
While prospects in the US and EU region remain crucial to Sri Lanka as these are the primary source of exports as well as investments in sovereign bonds, developments in East Asia are becoming increasingly critical as a source of FDI and development loans. For this reason, prospects in both the US/EU as well as East Asia have a significant bearing on the success of the outward-oriented growth path that Sri Lanka envisions, and is currently in the process of implementing. In this context, the policy thrust is aimed at securing market access for goods via schemes such as the Generalised System of Preferences (GSP+) and FTAs, encouraging inward investments by better positioning in global value chains, along with domestic reforms to provide the necessary institutional support.

3.5.1 Merchandise Trade Overview

Sri Lanka's external sector performance shows some notable improvements in 2017 compared to previous years. Export performance has picked up in line with the global upturn in merchandise trade; however, import performance shows a concurrent increase, which has resulted in a worsened trade balance compared to previous years.

Export earnings grew by 10.2 per cent in 2017 to an estimated USD 11.4 billion, which is the highest recorded export earnings figure (Figure 3.8). Nevertheless, this should be considered a recovery rather than an upsurge in exports; revenues have grown by only 2 per cent from levels reached in 2014. On the plus side, export earnings accounted for 13 per cent of GDP in 2017, which marked the reversal of a progressive decline in the export share of GDP experienced over the years. In the same vein, imports grew by 9.4 per cent, reaching a record USD 21 billion in 2017, topping the USD 20 billion mark for the first time since 2011. Hence, strong export growth was countered by equally strong import growth, as a

Figure 3.8
Sri Lanka's Trade Performance



Source: Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

Sri Lanka's largest export markets

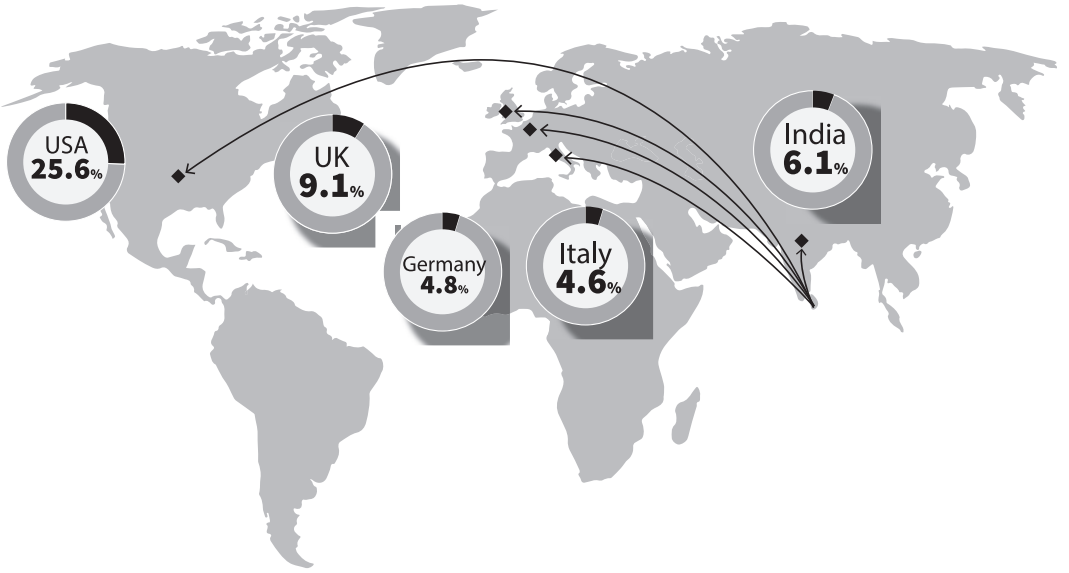


Table 3.3
Export Growth in Major Items 2016-2017

Category	2016 Value USD million	2016 Share %	2017 Value USD million	2017 Share %	Y-o-Y Change %
Agricultural Exports	**2,326.1**	**22.6**	**2,767.2**	**24.4**	**19.0**
Tea	1,269.0	12.3	1,529.8	13.5	20.5
Rubber	32.7	0.3	38.9	0.3	19.1
Coconut	366.0	3.5	347.9	3.1	-4.9
Spices	317.1	3.1	406.2	3.6	28.1
Minor agricultural products	114.1	1.1	138.7	1.2	21.6
Seafood	169.6	1.6	240.6	2.1	41.9
Industrial Exports	**7,940.1**	**77.0**	**8,541.9**	**75.2**	**7.6**
Textiles and garments	4,884.1	47.4	5,031.9	44.3	3.0
Rubber products	767.9	7.4	835.4	7.4	8.8
Petroleum products	286.9	2.8	434.3	3.8	51.4
Food, beverages and tobacco	323.7	3.1	392.7	3.5	21.3
Other industrial exports	712.2	6.9	816.1	7.2	14.6
Total Exports(a)	**10,309.7**	**100.0**	**11,360.4**	**100.0**	**10.2**

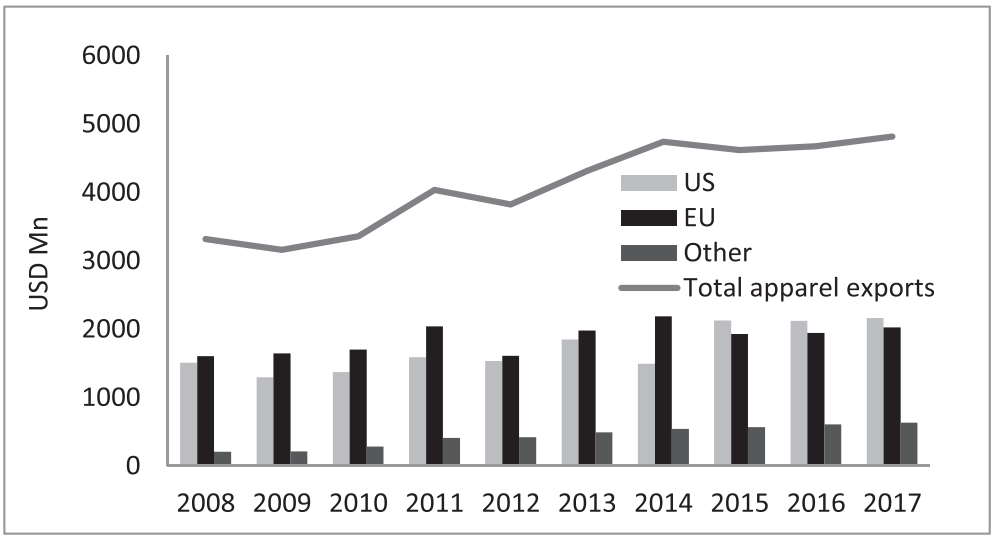
Source: Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.
Note: (a) Total Exports for 2017 – not the sum of the major categories provided in the table

result of which the trade deficit has not narrowed, remaining at approximately 11 per cent of GDP in 2017.

Sri Lanka's largest export markets continue to be the US (25.6 per cent), UK (9.1 per cent), India (6.1 per cent) Germany (4.8 per cent) and Italy (4.6 per cent) in 2017.[21] Merchandise outflows to these nations collectively accounted for 50 per cent of total exports in 2017.[22]

The textile and garment (T&G) sector continues to be Sri Lanka's largest revenue generating merchandise export (Table 3.3). The contribution from this sector amounted to approximately USD 5 billion in 2017, which is a 44.3 per cent share of total exports and a 58.9 per cent share of industrial exports (Figure 3.9). Earnings to the sector have marginally expanded by 3 per cent in 2017, up from 1.3 per cent in 2016, reflecting improved demand from EU markets as a result of its post-recession economic recovery and the restoration of the GSP+ facility since May 2017. Sri Lanka's largest markets for these products continue to be the US and the EU. The US has been the leading destination for T&G exports for the third consecutive year, despite the EU being the traditional leading market in previous years. It is expected that this momentum will continue; however, optimism must be viewed cautiously in light of the impending Brexit and other uncertainties in the European political sphere. This is of concern due to the over- reliance of the sector on these destinations; the US and EU collectively account for 87 per cent of total export earnings to the sector. Sri Lanka's export basket has remained stagnant and there have long been calls for diversification both in terms of type of goods and destination markets. As a step to rectifying this issue, the current policy thrust is aimed at diversifying into more Asian markets through impending trade agreements, as discussed later.

Figure 3.9
Apparel Exports to Primary Destinations

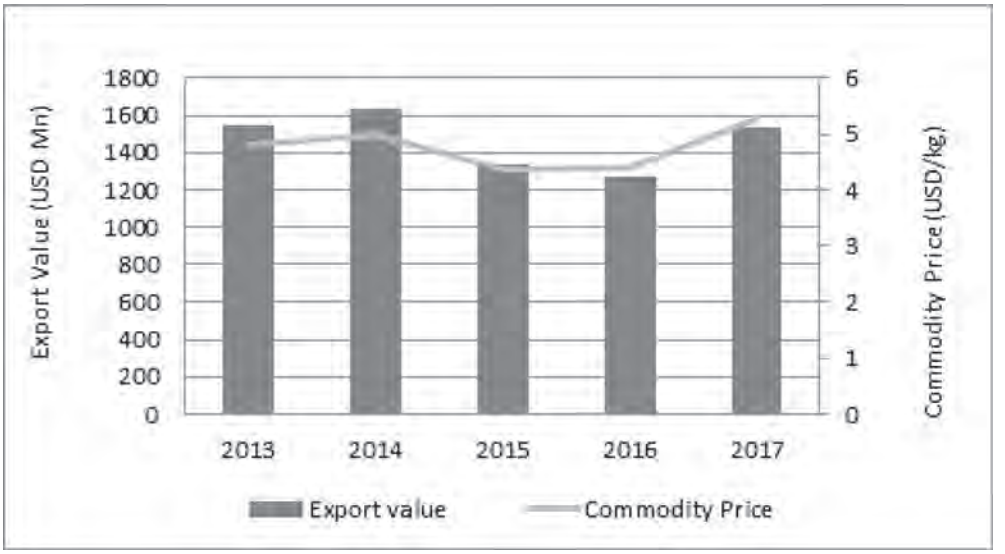


Source: Data from the Export Development Board (EDB) and Joint Apparel Association Forum (JAAF).

[21] Central Bank of Sri Lanka. (2018). *External sector performance – January 2018.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

[22] *Ibid.*

Figure 3.10
Tea Exports and Auction Prices



Source: Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

Sri Lanka's second highest export revenue generating sector is tea. It contributed USD 1.5 billion in 2017, which is a 20.5 per cent growth in revenue from the previous year. The sector accounts for 13.5 per cent of total merchandise exports and 55.3 per cent of agricultural exports.

Revenues from tea exports have witnessed an uptick in 2017 (Figure 3.10). International price volatility, instability in primary markets such as Russia, EU and the Middle East, coupled with supply side constraints led to a slowdown in the sector in recent years. However, the sector is beginning to show signs of recovery, primarily due to gains in international tea prices which reached USD 5.29 per kilo in 2017. This recovery in tea prices, driven by the decline in global supply has given a boost to agricultural exports, which grew by 19 per cent in 2017. However, these gains are potentially short lived and do not necessarily translate into sector benefits. Continued stress in primary markets, particularly in the Middle East and the possibility of weather disruptions continue to dampen optimism. In addition, low productivity is cited as one of the main supply side issues threatening the growth of the sector. The average productivity of the tea industry in Sri Lanka, especially in tea plantations, remains the lowest among tea producing countries such as Kenya, India and Indonesia.[23]

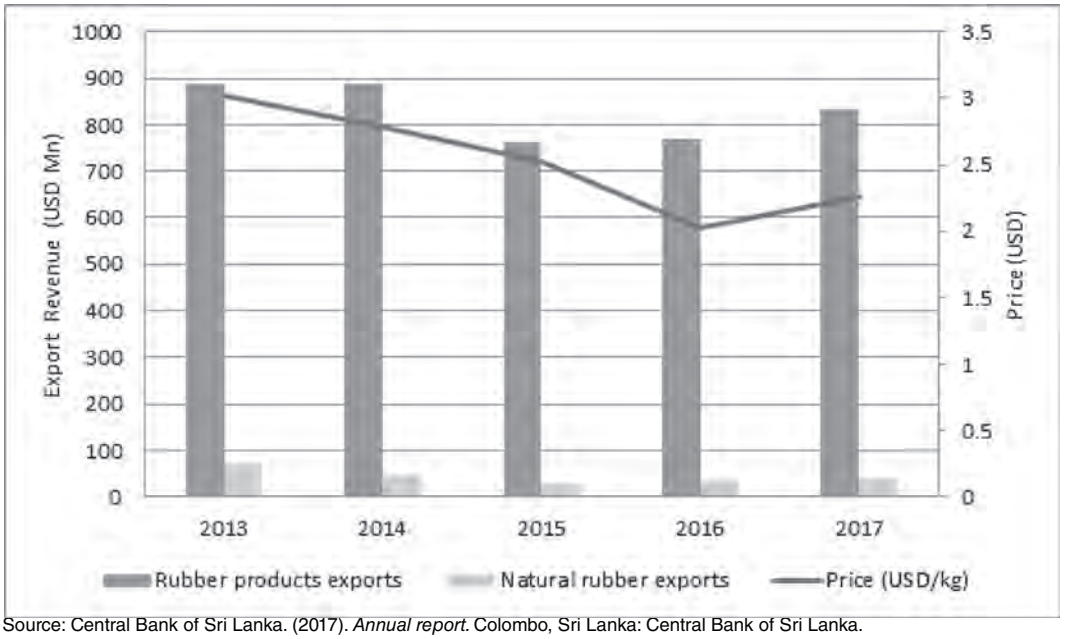
Whilst recent years have witnessed dampening of activity in the global rubber sector, a slight recovery in prices has helped boost Sri Lankan rubber product exports. Rubber products recorded an 8.8 per cent increase in export revenue and an aggregate income of USD 835 million in 2017. As a result, the sector accounted for 7 per cent of industrial exports in 2017. The primary export destination for Sri Lankan rubber

[23] Wijayasiri, J., Arunatilake, N., & Kelegama, S (2018). Sri Lanka tea industry in transition: 150 Years and beyond. Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

remains the US with an export value of USD 270 million.[24] Other major export markets are Germany, Belgium, Italy and the UK.

therefore a price hike for natural rubber. In a similar vein, the future outlook for natural rubber is encouraging with crude oil prices forecasted

Figure 3.11
Rubber Exports



Source: Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

The resurgence of rubber prices is supported by increased demand for natural rubber as a consequence of rising crude oil prices and elevated automobile purchases in China. China absorbs close to 40 per cent of aggregate global production of natural rubber, becoming a powerful force governing prices in the sector. Provided that the root of Chinese consumption is the surge in auto sales amongst its bourgeoning middle class, an economic slowdown in China will greatly impact the global rubber sector. Furthermore, movement in crude oil prices is mirrored in rubber prices as well. The rise in crude oil prices negates the incentive for production of synthetic rubber. The subsequent upshot is to increase in light of US withdrawal from the Iran nuclear deal and other geopolitical developments in the Middle East.[25]

Sectors that have contributed to strong year-on-year growth in exports in 2017 are petroleum products, rubber, spices and seafood exports (Table 3.3). While the aforementioned T&G, tea and rubber product sectors are the major export revenue generators, growth in the smaller sectors have contributed to strong export performance in 2017, from a year-on-year perspective. Whilst Sri Lanka's export sector overall appears to be on a path of recovery, sustained efforts are required to maintain the momentum in view of the fact that

[24] Export Development Board. (2018). *Rubber and rubber based products export performance.* Retrieved from http://www.srilankabusiness.com/rubber/rubber-and-rubber-based-products-export-performance.html.

[25] *Ibid.*

the 2017 upturn is only a 2 per cent growth from export earnings levels experienced in 2014.

In addition, the upturn in Sri Lanka's import bill is a subject of concern, which is largely driven by intermediate goods imports. Expenditure on imports of intermediate goods accounted for 55 per cent of total imports, with a year-on-year increase of 15.9 per cent in 2017. This comprised of fuel imports which grew by 38.2 per cent in 2017, and recorded higher import expenditure on all its sub categories: crude oil, refined petroleum and coal. Refined petroleum products grew by 45.9 per cent due to higher import volumes, the recent upturn in global oil prices and the higher demand from the domestic power generation sector on account of dry weather conditions experienced in 2017. [26]

In summary, Sri Lanka's current trade position is not an entirely comfortable one; an increasing import bill is exerting pressure on the trade balance, despite moderate gains in export growth. However, on a positive note, a supportive policy environment that embraces an export-led development strategy is emerging. A National Trade Policy (NTP) has been formulated with several policies to attract more export-oriented FDI, improve trade logistics and to make customs procedures more efficient and transparent. In addition, the signing of the FTA with Singapore was among the favourable developments in Sri Lanka's regional integration efforts. Further, the EU-GSP+ facility which provides duty free access to approximately 7,200 tariff lines was renewed in May 2017. Along with the phasing out of para-tariffs and negotiation of trade agreements, some policy efforts to minimise potential negative effects from trade liberalisation have also been taken; an Anti-Dumping and Countervailing Duties Act has been passed along with Safeguard Measures to address import surges.

In addition, trade facilitation initiatives such as the introduction of a National Single Window (NSW) for trade and the Trade Information

Table 3.4
Major Import Items, 2017

Category	2017		Y-o-Y Change %
	Value USD Mn	Share %	
Fuel	3,427.9	16.3	38.2
Other intermediate goods	3,217.3	15.3	9.9
Textiles and textile articles	2,724.2	13.0	0.7
Machinery and equipment	2,620.6	12.5	-4.4
Building materials	1,591.4	7.6	1.4
Chemical products	834.5	4.0	-2.5
Vehicles	772.7	3.7	-2.8
Diamonds precious stone and metals	772.4	3.7	50.1

Source: Central Bank of Sri Lanka. (2017). Annual report. Colombo, Sri Lanka: Central Bank of Sri Lanka.

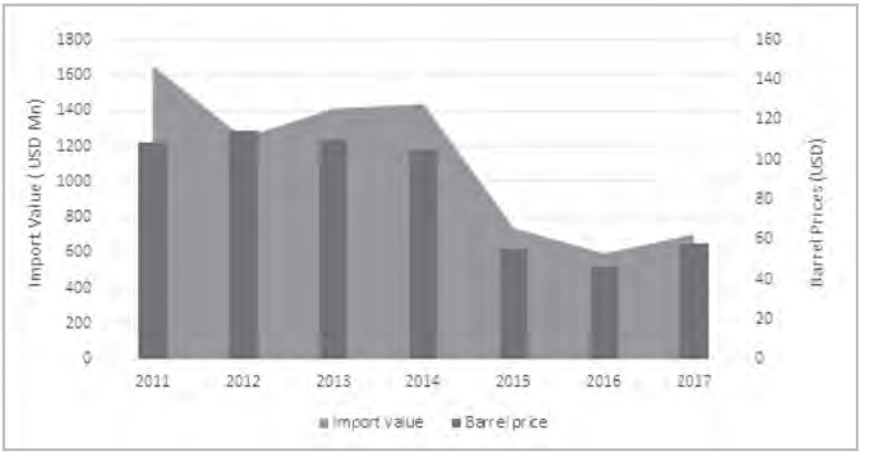
[26] Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

Portal (TIP) commenced in 2017, under the Trade Facilitation Agreement (TFA) of the WTO. The NSW facility allows parties involved in trade and transport to lodge information and documents with a single entry point to fulfil all import, export and transit-related regulatory requirements. Furthermore, institutional backing has been extended through the formulation of a National Export Strategy (NES) to drive forward focus industries, including but not limited to information technology related business process management (IT-BPM), wellness tourism, spice concentrates, processed food and beverages. The NES also focusses on the development of trade support functions including logistics, trade information and promotion and national quality infrastructure. Smooth implementation of these initiatives will provide the necessary institutional backing to push up export revenues further.

3.5.2 Commodity Prices

Sri Lanka is energy import dependent, which means that fluctuations in crude oil prices have a direct impact on economic performance. The sharp decline in global oil prices in 2015-2016 relieved some pressure on the external sector and helped to dampen inflationary pressures.[27] In 2017, oil prices have begun to show a modest recovery reaching USD 57 a barrel (Figure 3.12). This resurgence in prices is concerning for Sri Lankan authorities given that the weak external sector position faced in recent years has just begun to stabilise towards a path of recovery. Sri Lanka's official reserves position and exchange rate stability are bound to be adversely affected if oil prices continue to increase in 2018 and beyond. Moreover, the nation's ability to reduce its trade deficit and improve growth prospects relies heavily on swings in non-renewable energy prices.

Figure 3.12
Oil Imports and Global Prices



Source: Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

[27] Institute of Policy Studies of Sri Lanka. (2017). *Sri Lanka: State of the economy 2017.* Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

Markets still remain subdued compared to prices that prevailed in the decade pre-2014, which was maintained in the USD 80-100 range.[28] Nevertheless, projections for 2018 indicate that oil prices will continue to rise and hover around the USD 60-70 range due to an increase in demand for oil; this is due to strong growth forecasts by the IMF for 2018 and continued production curbs by the Organisation of Petroleum Exporting Countries (OPEC), Russia and their allies. It is widely believed that over-supply led to the sharp dip in prices experienced in 2015-2016; hence, the momentum for regaining price stability relies on the commitment by oil-producing nations to curb excess supply.

3.5.3 Earnings from Tourism and Remittances

Over the years, Sri Lanka has relied heavily on earnings from tourism and worker remittances, which have been Sri Lanka's top foreign exchange earners, outside of major export sectors such as T&G and tea. Whilst earnings from tourism have steadily grown in post-war Sri Lanka, the pace of growth in tourist arrivals appears to have moderated in 2017. At the same time, worker remittances which was once a steady source of income has been displaying fluctuations in recent years, and has culminated in a reduction in 2017. These trends are concerning given Sri Lanka's over-reliance on these sources for foreign exchange, in the context of existing pressures to bulk up reserve stocks and deal with a large debt servicing requirement.

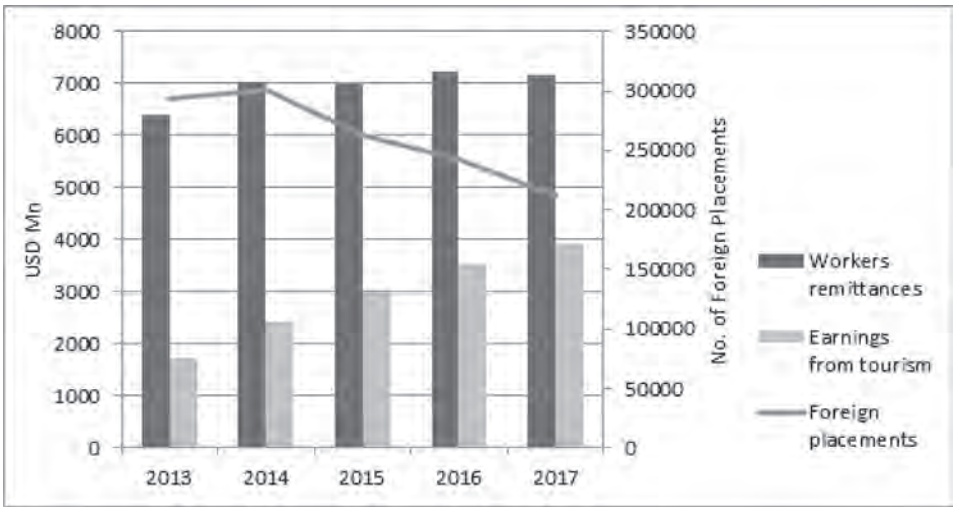
The tourism sector brought in earnings of USD 3,529 million in 2017, which was an 11.6 per cent growth from 2016. Hence, revenue growth in the sector has remained strong, with earnings from tourism doubling over the last five years (Figure 3.13). However, tourist arrivals have not picked up as expected in 2017, displaying only a moderate growth of 3.2 per cent.[29] Arrivals from major source regions such as Western Europe and South Asia displayed growth, but this was not the case for the Middle East, possibly owing to economic and political unrest in the region.

The government's medium term target to raise USD 7 billion from tourism earnings by 2020 relies on a combination of domestic policy factors and external factors. On the policy front, targeted promotional campaigns and upgrading of tourism related infrastructure have been prioritised. In addition, the investment approvals process for tourism development is being better facilitated for investors. These measures are reflected in the growth in earnings from hotel projects; 45 hotel projects amounting to USD 380 million were approved in 2017 compared to USD 126 million for the same in 2016. On the external front, a more positive growth outlook and an upturn in demand in the EU region is encouraging for the sector, given that 32.2 per cent of Sri Lanka's tourist arrivals are from Western Europe as of 2017.[30]

More concerning is the outlook on the remittances front, which has consistently been the top source of foreign exchange income over the years. Remittances declined for the first time in 2015, soon to be followed by a decline of 1.1 per cent in 2017 to USD 7,164 million. The fluctuations experienced during 2015-2017 are reflective of a number of external and domestic factors affecting foreign employment.

[28] *Ibid.*
[29] Central Bank of Sri Lanka. (2017). Annual Report. Colombo, Sri Lanka: Central Bank of Sri Lanka.
[30] *Ibid.*

Figure 3.13
Tourism Earnings, Worker Remittances and Foreign Employment



Source: Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

Overall, foreign employment has declined significantly by 12.6 per cent to 212,162 placements in 2017 (Figure 3.13). This is primarily owing to geopolitical uncertainties experienced in the Middle East – Sri Lanka's primary foreign employment source region – along with oil price declines that have stagnated income growth in the region. In addition, the government has taken decisive steps to discourage the migration of housemaids and unskilled workers, in order to upskill Sri Lanka's migrant labour force. Further, the gender composition of foreign employment is gradually shifting away from female dominance towards more male participation. These changes in the composition of migrant labour potentially affect remittance income, although it is too early to determine whether these factors will bring about a definite increase or a decline in future remittance income flows.[31] Nevertheless, the extent to which the country can continue to rely on remittances as a source of foreign exchange that plays a crucial role in cushioning trade and balance of payment deficits is now called into question.

3.5.4 Capital Inflows: FDI and Capital Market Trends

In recent years, Sri Lanka has struggled to attract FDI inflows despite geographic and structural advantages. Inflows have faced volatility due to the sensitivity of investor confidence to domestic issues. Although there was a gradual increase in inflows in the immediate aftermath of the war with inflows peaking at USD 1,528 in 2014, the next two years witnessed a sharp decline in FDI due to policy uncertainty, uncertain tax policies and dull global investment sentiments (Figure 3.14). However, there has been a sharp recovery in FDI to Sri Lanka in 2017, with inflows peaking at USD 1,710 million amounting to 1.9 per cent of GDP. This is the highest recorded FDI figure for Sri Lanka up to date, with inflows growing by more

[31] Weeraratne, Bilesha. (2016). *Research papers: National symposium on labour and employment.* Colombo, Sri Lanka: Ministry of Labour and Trade Union Relations.

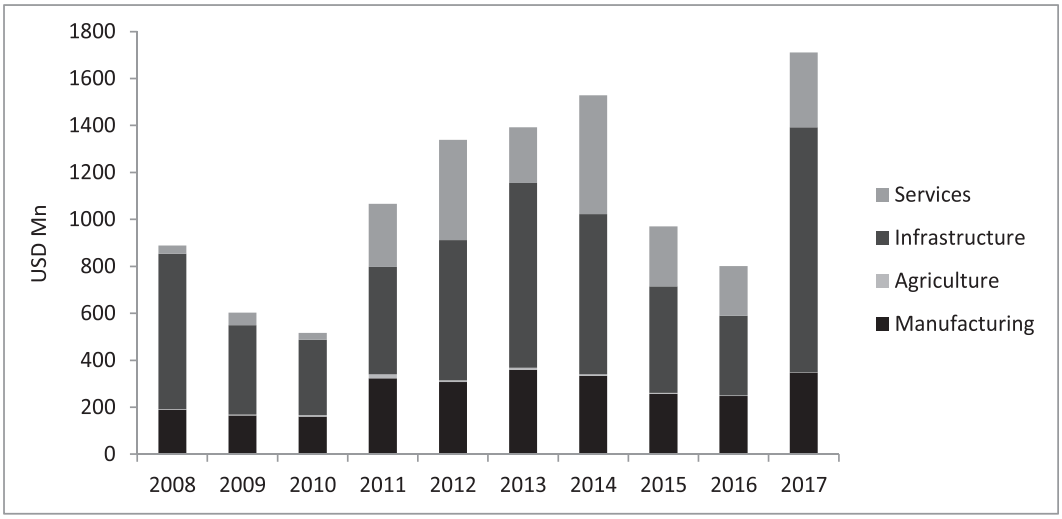
than double from 2016. Nevertheless, this trend signals a rebound in inflows to levels experienced in 2014, rather than a meaningful upsurge.

As in previous years, the composition of FDI inflows is dominated by infrastructure projects in 2017 (Figure 3.14). Although there was a notable contraction in infrastructure projects in the 2015-2016 period, inflows to the sector have doubled in 2017 from the previous year. In addition, investments in the services sector have shown a notable expansion in post war years. FDI to the manufacturing sector has remained somewhat stagnant over the past decade.

In recent years, FDI (excluding foreign loans) to Sri Lanka has been dominated by China, Singapore and India (Figure 3.15). Inward flows from China rose sharply to USD 407 million in 2017. Likewise, FDI from Singapore also experienced a similar hike, accounting for USD 241 million in 2017, up from USD 48 million in 2016. Comparatively, growth in FDI from India remained steady, with USD 181 million in 2017. FDI has largely been led by China in 2017, accounting for a share of 30 per cent of total inflows. This is primarily from receipts to the Hambantota Port and Colombo Port City projects. There is reason to believe that China's and India's high value investment agreements pertaining to Hambantota and Trincomalee Ports and Investment Zones will lead to stronger inflows in future. However, Sri Lanka's dependence on Chinese infrastructure projects as a primary source of investments is not sustainable. If the country is to follow a trade and investment led growth strategy, more diverse sources and types of inward investments are desirable.

To this end, policy priority has been placed towards better positioning Sri Lanka in global value chains through FTAs with regional partners, with the objective of encouraging inward investments to the country from more diverse sectors. In addition, the government plans to gradually phase out para-tariffs which can hinder investment inflows. As a starting point, over 1,200

Figure 3.14
Annual FDI and FDI Composition



Source: Data from CBSL - *Annual report 2017* & BOI.
Note: Includes loans, excludes inflows to non-BOI companies and direct investments in listed companies in the CSE.

Figure 3.15
FDI Inflows of Top Four Source Countries



Source: Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.
Note: Excludes foreign loans to BOI companies.

tariff lines were removed in 2017.[32] Sri Lanka's poor ranking in the 'Ease of Doing Business' is a further reflection of there being potential space to improve the economic climate for FDI. The Board of Investment (BOI) aims to set up a virtual application tracking system to speed up the investment approval process through improved coordination among 24 line agencies that are part of the currently fragmented investment approval process.

Apart from FDI inflows, Sri Lanka's capital market inflows have witnessed a turnaround since mid-2016, due to renewed investor sentiment. In 2017, foreign investment flows to the primary and secondary markets of the Colombo Stock Exchange (CSE) boomed, with net capital flows amounting to a surplus of Rs. 20.5 billion in 2017, up from Rs. 593 million in 2016.[33] This is a fairly significant upturn given that a cumulative net outflow of Rs. 5.3 billion was incurred in 2015. In addition, the most recent issuance of international sovereign bonds (ISBs) by Sri Lanka in April 2018 is indicative of positive investor sentiment. The USD 1.25 billion offering was well received with booking exceeding USD 3 billion.[34] Investors were largely from the US (66 per cent) and EU (24 per cent). However, this positive picture can dampen in the future with markets such as Sri Lanka facing pressure due to expected US Fed rate hikes and the strengthening of the US dollar. Emerging markets are now gradually facing capital outflows, with money flowing back to the US.

In addition, Sri Lanka's external debt dependency adds a layer of complexity to the country's continued dependence on foreign financing for development assistance through loan procurements. Moreover, when put in context, borrowed capital accounts for the bulk of Sri Lanka's capital inflows, which does not position

32 Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.
33 Colombo Stock Exchange, *CSE Quarterly,* (Various Issues).
34 Central Bank of Sri Lanka. (2018). *Press release, public debt department.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

The positive global picture can dampen in the future with markets such as Sri Lanka facing pressure due to expected US Fed rate hikes and the strengthening of the US dollar.

the country favourably in terms of having the necessary policy space to mitigate external shocks.

3.5.5 Sri Lanka's Efforts towards Regional Integration

In conjunction with Sri Lanka's new National Trade Policy and Vision 2025 policy document – which aim to position the country as an export-oriented economic hub in the Indian Ocean, Sri Lanka embarked on a triumvirate of FTA negotiations with India, China, and Singapore. While the former two are still under negotiation, the Sri Lanka-Singapore Free Trade Agreement (SLSFTA) was signed in January 2018. Crucially, it is the first comprehensive agreement signed by Sri Lanka to extend beyond trade in goods, to include chapters on trade in services, investment, dispute settlement, and government procurement.[35] Beyond the SLSFTA and the agreements with India and China, Sri Lanka has shown interest in pursuing other bilateral FTAs. Thus far, Sri Lanka has made statements regarding the possibility of a FTA with Malaysia, Vietnam, and Bangladesh, among others, while potentially updating its existing FTA with Pakistan as well.

Sri Lanka's pursuit of FTAs with other Asian economies, while haphazard, is indicative of a wider economic integration attempt beyond South Asia, with regionalisation efforts concentrated more at a bilateral level with other Southeast Asian economies. Sri Lanka's network of bilateral FTAs with South and Southeast Asian economies, and China, along with an emphasis to gain observer status at the Association of Southeast Asia Nations (ASEAN) is being

[35] Institute of Policy Studies of Sri Lanka. (2018). *Straight talk on Sri Lanka – Singapore FTA: What it means for trade and investment flows.* Retrieved from http://www.ips.lk/talkingeconomics/2018/01/24/straight-talk-on-sri-lanka-singapore-fta-what-it-means-for-trade-and-investment-flows/

pursued with the end objective of establishing the necessary political and economic frameworks to eventually join the Regional Comprehensive Economic Partnership (RCEP) process.

Sri Lanka's network of bilateral FTAs with South and Southeast Asian economies, and China, along with an emphasis to gain observer status at the Association of Southeast Asia Nations (ASEAN) is being pursued with the end objective of establishing the necessary political and economic frameworks to eventually join the RCEP process.

Box 3.1
Sri Lanka - Singapore FTA

In efforts to build on the long history of close diplomatic relations, Sri Lanka and Singapore signed a FTA (SLSFTA) on January 23, 2018–making it the most comprehensive bilateral FTA for Sri Lanka since 2005. Economic cooperation between Singapore and Sri Lanka has witnessed positive growth in the past few years, increasing 27 per cent in 2017 from 2016. Aggregate bilateral trade amounted to USD 1.14 billion in 2016. As the seventh largest foreign investor, Singapore has increasingly become an important strategic partner towards the realisation of Sri Lanka's economic vision. The SLSFTA serves a dual purpose for Sri Lanka: 1) a statement of intent for improved regional economic cooperation, and 2) increased trade openness. Thus, the agreement serves as a gateway for cooperation across the region, and positions Sri Lanka for further bilateral and multilateral cooperation. The SLSFTA is an important stepping stone for greater economic linkages to ASEAN, and towards membership in the RCEP. At the time of the signing, four new investment agreements were endorsed in a range of sectors such as aquaculture, hospitality and infrastructure by the likes of Singapore SME Food Studio and Ark Holdings.

Negotiations on a FTA between the two parties were attempted in 2004, but misaligned objectives resulted in the breakdown of bilateral talks. The SLSFTA, a culmination of almost 18 months of negotiations, is therefore a milestone in economic cooperation between Singapore and Sri Lanka. The comprehensive scope of the agreement covers investment, goods, services, trade facilitation, government procurement and dispute settlement, among others. Upon entering into force, Sri Lanka has agreed to immediately eliminate custom duties on 50 per cent of tariff lines, which will progressively increase to 80 per cent over 12 years. Items in the list comprise of gold, machinery and equipment, chemicals, plastics, iron, malt and paper. Nonetheless, 20 per cent of product categories in Sri Lanka will remain on the Negative List due to revenue sensitivity, including petroleum, tobacco and alcohol. Singapore already grants duty-free access to 99 per cent of all goods imports under its commitments as the most open economy in the world. Both countries offer greater access to service sector markets in professional, environmental, construction and tourism services. The SLSFTA offers extensive provisions for the protection of investments against exportation or discrimination by either party. Clear channels for dispute settlement, i.e. the Singapore International Arbitration Centre, are listed in the agreement. Further, reduction of costs in cross-border trading, red-tape and customs processing is also addressed in the SLSFTA.

Source: Daily Mirror. (2018). Highlightsof Sri Lanka-Singapore FTA. Retrieved from http://www.dailymirror.lk/article/Highlights-of-Sri-Lanka-Singapore-FTA-145253.html; Toh, E. (2018). New FTA with Sri Lanka a boon for Singapore firms large and small. Retrieved from http://www.straitstimes.com/asia/se-asia/new-fta-with-sri-lanka-a-boon-for-spore-firms-large-and-small; Wijayasiri, J., & Hewage, K. (2018), Straight talk on Sri Lanka – Singapore FTA: What it means for trade and investment flows. Retrieved from http://www.ips.lk/talkingeconomics/2018/01/24/straight-talk-on-sri-lanka-singapore-fta-what-it-means-for-trade-and-investment-flow

3.6 Conclusion

The upturn in the global economic environment, following from a period of lacklustre trends in trade, investment and macroeconomic fundamentals, has been generally conducive for the external sector growth that Sri Lanka witnessed in 2017. The recovery of Sri Lanka's key export revenue generating sectors has largely been fuelled by an upsurge in prices in those sectors – particularly in T&G and tea. This, in addition to a policy environment that supports an outward-oriented growth strategy for the country, has contributed towards Sri Lanka achieving moderately high numbers for export earnings and FDI in 2017.

While these figures are indicators of the success of efforts towards outward-orientation, they have also largely been contingent upon changes in the global external environment. However, external economic factors continue to pose significant risks to the Sri Lankan economy as well. Sri Lanka is directly impacted by fluctuations in oil prices due to its oil import-dependency. Hence, the recent resurgence in oil prices has the potential to further aggravate Sri Lanka's rising trade deficit. In addition, political-economic factors such as the threat of trade wars between the US and China, impending Brexit negotiations and geopolitical tensions in the Middle East will undoubtedly affect Sri Lanka's trade growth, as major export and import sectors as well as remittances are largely dependent on these markets. Hence, the continuation of an upturn in trade and investments for Sri Lanka will be largely dependent upon the health of the international environment in the coming years, which is not the most favourable position for the country to be in as it prepares to meet large medium-term external debt resettlements from 2019.

CLIMATE CHANGE, FOOD SECURITY AND DISASTER RISK MANAGEMENT

4. Transitioning Sri Lanka towards a Climate Resilient Low Carbon Economy

4.1 Introduction

Recent experiences of climate-induced hazards underscore the growing risk of climate change on the Sri Lankan economy. In the past, floods, droughts or cyclones were considered as haphazard disturbances that society must learn to live with. However, it is not the case anymore. The growing understanding of climate change emphasises the necessity of planning for a risky, unruly future that is overshadowed by the persistent threat of climate change, unlike in the past.

There are unmistakable signs to indicate that Sri Lanka is a highly vulnerable country to climate change. In the recent past, the country has experienced climate-induced disasters that brought about immense losses to economic and social life on a regular basis. Economic losses and damages due to flood events in 2015 alone have been estimated at Rs. 99.8 billion.[1] During the course of 2017, Sri Lanka – together with India and Bangladesh – was hit by cyclone Roanu in May, after suffering a severe drought at the beginning of the year. There were 219 deaths reported due to these disaster incidents.[2] These deaths were the result of floods and landslides

The growing understanding of climate change emphasises the necessity of planning for a risky, unruly future that is overshadowed by the persistent threat of climate change, unlike in the past.

[1] Ministry of Disaster Management and United Nations Development Programme. (2016). Sri Lanka Rapid Post Disaster Needs Assessment : Floods and Land Slides. Colombo, Sri Lanka: Ministry of Disaster Management and United Nations Development Programme.

[2] Ministry of Disaster Management and United Nations Development Programme. (2017). Sri Lanka Rapid Post Disaster Needs Assessment: Floods and Land Slides. Ministry of Disaster Management and United Nations Development Programme.

that displaced half a million people. Such massive losses due to disasters within a relatively short period time has seen Sri Lanka climbing up the ranks to fourth place in the Global Climate Risk Index for 2018 with an annual climate risk index (CRI) of 11.50.[3] Annual losses due to climate-induced disasters have been estimated at USD 1,623 million (PPP) in 2017.

changes in the annual pattern of precipitation and a gradual change in spatial distribution of rainfall also lead to significant economic impacts such as declining agricultural productivity, rising cost of health care, and increased demand for energy which are not immediately visible as damages caused by catastrophic events. Moreover, Sri Lanka's extensive low-lying coastal belt makes



4th

in the Global Climate Risk Index for 2018 with an annual climate risk index (CRI) of 11.50.

Annual losses due to climate-induced disasters have been estimated at USD **1,623** million (PPP) in 2017.



Besides the damage caused by a continuous onslaught of disaster events, an analysis of meteorological data indicates a gradual change in climatic parameters all over Sri Lanka. An increase in ambient air temperature has been reported countrywide, and observations suggest that the established patterns of rainfall are fast becoming erratic. Recent climate projections by the Department of Meteorology (DOM) up to year 2080 indicate a growing tendency towards a more polarised pattern of rainfall distribution in the future – i.e. wet regions becoming wetter, while the dry zone gets even drier. The slow onset of changes such as rising air temperature, erratic

the country vulnerable to sea level rises in the long-run. This has the potential to cause a tremendous impact on the national economy, for which the country must prepare for.

Socio-economic impacts of projected changes in climate can be far reaching. Livelihoods in agriculture and fisheries can be disrupted by multiple impacts of climate change in short, medium-and long-term horizons. A study conducted by the Asian Development Bank (ADB) in 2014 predicted that climate change will affect rice yields negatively in seven major agro-climatic zones of Sri Lanka in a cumulative and

[3] Germanwatch. (2018). *Global climate risk index 2018*. Retrieved from https://germanwatch.org/en/14638. CRI is based on annual number of fatalities and economic losses attributed to climate-induced disasters. It is an index that ranks on descending order, the lowest CRI for the country with highest risk

progressive manner.[4] Losses could be as high as one-third of the current yield levels in certain areas by 2080. Residents in certain dry zone districts are predicted to face severe scarcity of water for economic and household uses. In the long run, economic and social lives in coastal areas could be vulnerable to a sea level rise, creating pressure for migration. It has been projected that Sri Lanka could experience economic losses in the range of 6 per cent of gross domestic product (GDP) under a 'business-as-usual' scenario for the period 2010-2050 unless proper measures of adaptation are initiated to overcome the negative impacts.

From the perspective of economic policy, the necessity of taking pro-active measures to overcome the threat of climate change cannot be underestimated. This chapter examines Sri Lanka's options to become a low-carbon, climate resilient economy that can withstand the risks posed by climate change on the national economy. The chapter is organised in the following order: it begins with an overview of climate change from the perspective of economic policy and makes an attempt to explain the problem in general terms. It is followed by a review of climate change literature in Sri Lanka, examining the nature of risks posed by the impacts of climate change on the national economy. The next section briefly discusses the current readiness to face the risks and policy challenges faced by the country due to climate change. The final section explores the mitigation and adaptation options available to Sri Lanka with a view to transition towards a low-carbon and climate resilient economy.

4.2 Climate Change and Economic Policy Options

Climate change can be considered as the greatest externality problem that humanity has ever faced. Broadly, two major strategies are available to face this challenge. These are: i) reducing greenhouse gas (GHG) emissions so that climate change can be managed within tolerable limits (i.e. mitigation), and ii) making necessary adjustments to cope with impacts associated with unavoidable changes in the climate (i.e. adaptation). The nature of the challenge is such that mitigation of climate change cannot be achieved without international cooperation of all nations, while the choice of adaptation options has to be made at national and local levels. The mitigation and adaptation choices are aimed at transforming national economies as well as the world economy as a whole towards a path of low-carbon, climate resilient development that can endure shocks caused by climate change. However, neither mitigation nor adaptation are easy options given the uncertainty and cross-cutting nature of climate change impacts that spread across geographical boundaries affecting all levels of human activity and economic sectors.

Negotiating a common course of action for climate change mitigation has been a slow and an arduous task. It took nearly a quarter of a century to reach a significant milestone in the form of the Paris Climate Agreement (PCA) in 2015. The path to the PCA had been strewn with numerous challenges. Today, emerging signals indicate that the post-Agreement era is also going to be a similar testing period. This is marked by an early setback as a result of the withdrawal of the US – one of the key architects of the Agreement – from the PCA with a new administration coming into power. The entire experience suggests that a satisfactory solution to the problem of rising global GHG emissions is no closer, and further

[4] Ahmed M., & Suphachalasai, S. (2014). *Assessing the costs of climate change and adaptation in South Asia.* Manila, Philippines: Asian Development Bank.

collaborative efforts by the world community are essential.

As far as adaptation is concerned, national and sub-national policies are necessary to face the impacts of climate change at national and local levels. Adaptations refers to adjustments in behaviour in response to actual or expected changes in climate, in order to moderate and cope with harmful impacts or to take advantage of opportunities. It is a dynamic adjustment process that takes place in response to changing circumstances of climatic conditions. Affected parties can make voluntary adaptation responses by their own choice or select adaptation options under the influence of policy – i.e. policy-induced adaptation. The key objectives of adaptation policies are to increase the adaptive capacity of vulnerable parties, and to create incentives for affected parties to adopt effective response strategies. Government interventions in adaptation may include soft approaches (e.g. regulations, standards, information) and hard approaches (e.g. supportive infrastructure facilities).

Successful adaptation requires an evaluation of the impacts of climate change on different sectors of the economy at national and local levels, identifying suitable adaptation options and implementing these through effective institutional mechanisms. The evaluation of impacts needs careful assessments of both negative and positive aspects of physical effects and their socio-economic outcomes. The impacts of climate change can be broadly categorised as 'extreme events (rapid onset impacts)' and 'slow onset impacts'. Extreme events are sudden shocks that occur within a relatively short period of time. Tropical cyclones, flash floods and landslides are examples of extreme events. These can cause major impacts on livelihoods and the economy. In contrast, slow onset impacts unfold gradually over

Successful adaptation needs evaluation of impacts of climate change on different sectors, identifying suitable adaptation options and implementing these. Evaluation of impacts needs careful assessments of both negative and positive aspects of physical effects and their socio-economic outcomes.

months or even years. Examples are an increase in atmospheric temperature, desertification, loss of biodiversity, land and forest degradation, glacial retreat, ocean acidification and sea level rise. Slow onset events can lead to various impacts on different sectors in the economy in the form of short run failures in production, damages to economic assets, a long run decline in productivity and disturbances to livelihoods.

The growing literature on climate change suggests that unprecedented economic losses and damages can occur as a result of both the extreme events as well as slow onset impacts. Losses are the changes in economic flows after a natural event that may extend over a relatively long time period. These can be valued at current prices, given that sufficient information is available. Damages are the total or partial destruction of physical assets which occur during the event itself. These can be measured in physical units and valued on the basis of replacement cost. Losses and damages are negative effects on the economy and society that need to be countered through suitable adaptation measures aimed at raising the adaptive capacity of affected parties. The losses and damages that cannot be managed within the adaptive capacity of affected sections of the population should be identified and suitable risk management and risk transfer measures to be developed to address them. An example of a market-based risk transfer measure is climate insurance schemes.

Rapid and slow onset impacts are interconnected and usually evolve simultaneously. Losses and damages associated with these can accumulate over time crossing ecological thresholds. In such circumstances, losses and damages can aggregate beyond the impacts on individual livelihoods and businesses to generate macroeconomic effects that cannot be addressed through adaptation measures focussing on one or a few sectors of the economy. An ecological threshold is a tipping point 'at which there is an abrupt change in an ecosystem quality, property, or phenomenon, or where small changes in one or more external conditions produce large and persistent responses in an ecosystem.'[5] When such a situation occurs, it can pose severe challenges on adaptation.

Hence, the timing of adaptation is a crucial factor. Based on the timing of adaptation responses, two broad classes of adaptation measures can be identified. These are reactive adaptation and anticipatory adaptation. Reactive adaptations, also known as ex-post adaptations, are actions which are taken in response to impacts that have already taken place. Ex-ante adaptation requires some foresight of climate events and an ability to anticipate their impacts so that appropriate measures of adaptation are already in place when the impacts are occurring. Anticipatory adaptation policies are necessary to avoid catastrophic outcomes that may arise due to crossing thresholds, leading to macroeconomic effects.

This chapter mainly focusses on the potential impacts of climate change on the national economy and adaptation measures for overcoming them. In the case of mitigation, response strategies are largely shaped through growing international cooperation and are guided and directed by evolving global mechanisms. While acknowledging the necessity of fulfilling national contributions towards global efforts on mitigation, and the benefits that may arise from transforming into a low-carbon economy, recent experiences of adverse climate impacts on the economy

[5] Allen, C. D., Birkeland, C., Chapin, I. F., Groffman, P., Guntenspergen, G., Knapp, A., & Sugihara, G. (2009). Thresholds of climate change in ecosystems: *Final report, synthesis and assessment product 4.2*. Lincoln: Publications of the US Geological Survey, University of Nebreska.

and emerging signs of increased vulnerability underscore the necessity of preparing for the challenge. Unlike mitigation, decisions on adaptation choices have to be taken nationally and locally, and informed policies are necessary to facilitate adjustments to emerging changes on an urgent basis. Hence, mainstreaming climate change adaptation into national development policies can be considered as an urgent priority.

4.3 Economic Risks of Climate Change

Assessing the economic risk of climate change involves three major steps; projecting likely future changes in climate, identifying physical impacts of projected changes on different economic sectors, and economic assessment of losses and damages associated with physical impacts. This section makes an attempt to outline the economic risk of climate change on the economy of Sri Lanka. It begins with a review of projected changes of climate in Sri Lanka followed by an account of their physical impacts. An outline of economic risks that can be expected according to projected changes and their physical impacts comes next. Given the limited availability of information and the wide-ranging nature of impacts associated with climate change on different sectors, the assessment is mainly focussed on the agriculture sector.

Recent studies indicate that the normal pattern of climate in Sri Lanka is undergoing changes. Two major sources, namely, observed changes and projected changes, provide evidence on climate change. Observed changes are based on past meteorological data recorded from different locations of the country over several years. Projected changes are predictions on future trends in climatological parameters that are based on global climate models.

4.3.1 Projected Changes in Climate

Sri Lanka has a topical climate with no significant seasonal variation in temperature within a year, even though regional variations in temperature can be observed due to elevation. Hence, the average pattern of climate is determined mainly by the seasonal variation in rainfall. Based on the annual distribution of rainfall, four major rainfall seasons can be identified in the country.[6]

- First inter-monsoon season (FIM): March-April (268 mm, 14 per cent)
- Southwest monsoon season (SWM): May-September (556 mm, 30 per cent)
- Second inter-monsoon season (SIM): October-November (558 mm, 30 per cent)
- Northeast monsoon season (NEM): December-February (479 mm, 26 per cent)

Sri Lanka receives a mean annual rainfall of around 1,850 mm in a normal year. Even though this can be considered as a relatively high level of rainfall compared with many other countries, problems in water availability occur due to two major reasons; high inter-annual variation and high regional variation over the range of 1,000-5,000 mm.[7] The country has been divided into three major climatic zones based on the spatial distribution of rainfall.

- Wet zone (mean annual rainfall > 2,500 mm)
- Intermediate zone (mean annual rainfall 1,750-2,500 mm)

[6] Abhayasinghe, K.R. (2007), Climate. In *The national atlas of Sri Lanka.* Colombo, Sri Lanka: Survey Department of Sri Lanka, pp. 52-53.
[7] Chandrapala, L. (2007). Rainfall. In *The national atlas of Sri Lanka.* Colombo, Sri Lanka: Survey Department of Sri Lanka, pp. 58-59.

- Dry zone (mean annual rainfall <1,750 mm)

Analysis of past weather data indicates that the process of climate change has already begun in Sri Lanka. Information from many studies suggests that ambient air temperature is increasing all over the country, which is manifested by more warm days, fewer cold days, and increased day time maximum and night time minimum temperatures.[8] Observations also indicate that the warming trend has quickened in recent years. In the case of rainfall, evidence indicates changes in the normal pattern of rainfall all over the country, even though there is no consensus over the direction of change unlike in the case of temperature. Some studies show a declining trend, with a reduction of rainfall compared with past periods that vary depending on the geographical location. However, there is no consensus on the direction of change. A study conducted by the International Water Management Institute (IWMI) finds that the annual rainfall has decreased in 76 locations, while in another 71 stations it has been increasing.[9] The IWMI studies also suggest that the changing spatial distribution of rainfall can lead to a shift of agro-ecological boundaries. Observations indicate that the intensity and frequency of extreme events (e.g. heavy rainfall events and lengthy dry spells) have increased over time, giving rise to hazardous events such as floods, landslides and droughts more frequently than before.

The DOM has recently produced projections on rainfall and temperature under the Inter-government Panel on Climate Change (IPCC) emission scenarios known as Representative Concentration Pathways (RCPs). These include projections under moderate (RCP 4.5) and high emission (RCP 8.5) scenarios.[10] The projections cover both temperature and rainfall anomalies until 2090, compared with the baseline period 1975-2005. As in the case of changes observed

Table 4.1
Projected Changes in Rainfall – Department of Meteorology 2016

Rainfall Season	2020 -2040		2040 -2060		2070 -2090	
	Medium	High	Medium	High	Medium	High
FIM	Negative Anomaly	Negative Anomaly	Negative Anomaly	Negative Anomaly	Positive Anomaly	Negative Anomaly
SWM	Positive Anomaly	Positive Anomaly	Positive Anomaly	Positive Anomaly	Positive Anomaly	Positive Anomaly
SIM	Negative Anomaly	Positive Anomaly	Positive Anomaly	Positive Anomaly	Positive Anomaly	Positive Anomaly
NWM	Negative Anomaly	Positive Anomaly	Negative Anomaly	Negative Anomaly	Negative Anomaly	Negative Anomaly

Source: Jayawardena, S., Darshika, T., & Herath, R. (2017). Observed climate trend, future climate change projections and possible impacts for Sri Lanka. NeelaHaritha: The Climate Change Magazine of Sri Lanka 2, pp. 144-151.

[8] Basnayake, B.R.S.B. (2007). Climate change. In The national atlas of Sri Lanka. Colombo, Sri Lanka: Survey Department of Sri Lanka. pp. 54-55.

[9] Mutuwatte, L.P., & Liyanage, P.K.N.C. (2013). Impacts of climate change on agro-ecological regions of Sri Lanka. Proceedings of the International Conference on Climate Change Impacts and Adaptations for Food and Environmental Security. Lunuwila, Sri Lanka; Coconut Research Institute.

[10] Jayawardena, S., Darshika, T., & Herath, R. (2017). Observed climate trend, future climate change projections and possible impacts for Sri Lanka. *NeelaHaritha: The Climate Change Magazine of Sri Lanka* 2, pp. 144-151.

from past data, future projections of temperature anomalies indicate a consistent picture of a warming trend. Table 4.1 summarises the projected changes in rainfall.

According to the projections, an overall increase in annual rainfall can be expected even though negative anomalies are indicated for certain rainfall seasons. Negative anomalies are indicated for the FIM, SIM and NWM in the short run (2020-2040) under the medium emission scenario. A positive anomaly is shown for SWM in all time horizons, while a negative anomaly is indicated for NWM in all horizons except in 2020-2040, under a high emission scenario. In the long-run (i.e. 2040-2060 and 2070-2090) the overall tendency towards a positive anomaly appears to become stronger over the entire country, despite significant regional variations. The highest increase in rainfall can be expected in wet southwestern quarter, whereas northern and eastern dry zones will become even drier due to high negative anomalies in the NEM.

One regional study by the Asian Development Bank (ADB) that covered Sri Lanka with five other South Asian countries has produced downscaled projections under three IPCC scenarios until 2080.[11] This study indicates that the average temperature in Sri Lanka could rise by $3.6C^0$, $3.3C^0$ and $2.3C^0$ under A2, A1B and B1 scenarios respectively by 2080 (Table 4.2). According to this projection, rainfall could increases by 39.6, 35.5 and 31.3 per cent, respectively, under A2, A1B and B1 scenarios by 2080. It also predicts that the average number of consecutive dry days per year will increase progressively over time.

Based on the information from climate change studies in Sri Lanka, local and international projections available at the time, and expert views on the subject, the National Adaptation Plan for Climate Change Impacts in Sri Lanka: 2016-2025 (NAP-CCI 2016-25) identified six projected changes in atmospheric and oceanic systems that can be anticipated to create impacts over multiple sectors in the economy. These include; increased concentration of CO2, a rise in atmospheric and oceanic temperature, changes in precipitation patterns, a sea level rise and increased intensity and frequency of extreme events.[12] These anticipated changes have provided the basis for identification of various adaptation interventions in nine selected sectors in the economy.

Table 4.2
Temperature and Precipitation Projections under Different Scenarios

Climate Parameter	2030			2050			2080		
	A2	A1B	B1	A2	A1B	B1	A2	A1B	B1
Precipitation (%)	7.4	11.0	3.6	15.8	25.0	16.5	39.6	35.5	31.3
Temperature (C^0)	1.0	1.1	1.0	1.8	1.5	1.3	3.6	3.3	2.3

Source: Ahmed, M., & Suphachalasai, S. (2014). Assessing the costs of climate change and adaptation in South Asia. Manila, Philippines: Asian Development Bank.

[11] Ahmed M., & Suphachalasai, S. (2014). *Assessing the costs of climate change and adaptation in South Asia.* Manila, Philippines : Asian Development Bank.

[12] Ministry of Mahaweli Development and Environment. (2016). *National adaptation plan for climate change impacts in Sri Lanka:* 2016-2025. Colombo, Sri Lanka: Ministry of Mahaweli Development and Environment.

4.3.2 Physical Impacts of Climate Change

According to NAP-CCI 2016-25, multiple physical effects associated with each projected change can create impacts over various sectors in the economy. These physical effects involve different time horizons. It seems many are either already in effect or could take place in the short-term, while others may take time to show their effects gradually over the medium to long-term. Table 4.3 presents a summary of physical effects associated with the projected changes.

The multiple physical effects associated with each projected change can have different impacts over various sectors in the economy. The NAP-CCI identified nine vulnerable areas (some of these involve multiple sectors) which need the priority attention of policy makers. These are

Table 4.3
Projected Changes in Climate and Associated Physical Effects

Projected Changes	Physical Effects/Dimensions	Time Horizon
Increased concentration of GHG	Rising atmospheric CO_2 concentration	Short-term
	Increased concentration of climate altering pollutants (non-CO_2)	Short-term
	Progressive increase in acidity of rainfall	Long-term
	Ocean acidification	Long-term
Rising atmospheric temperature	Increased day and night air temperature	Short-term
	Increased evaporation and evapotranspiration	Short-term
	Alteration of optimal ranges of temperature for biological organisms (pests, pathogens, parasites, vectors)	Medium -term
	Increased concentration of dust/ soil particles in atmosphere	Short-term
	Heat island effect	Short-term
Rising oceanic temperature	Physio-chemical changes in oceanic environment	Long-term
Changing patterns of precipitation	Irregular/erratic changes in established pattern s of rainfall	Short-term
	Regular incidents of intense rainfall with high cloud cover	Short-term
	Regular and extended dry spells	Short-term
	Boundary shift in climatic zones	Long-term
Increased incidence and severity of extreme events	Increased frequency and severity of floods	Short-term
	Increased frequency and severity of droughts	Short-term
	Increased frequency of c yclones and high winds	Short-term
	Increased incidence of l ightening	Short-term
	Increased incidence of l andslides	Short-term
	Increased w ind and waves (turbulent weather)	Short-term
Sea level rise	Salt water intrusion	Medium -term
	Inundation of low -lying areas	Long-term

Source: Based on National Adaptation Plan for Climate Change Impacts in Sri Lanka: 2016-2025 (NAP-CCI 2016-25).

Sri Lanka's NAP identified nine vulnerable areas which need the priority attention of policy makers – food security, export agriculture, water resources, coastal and marine sector, health, human settlements and infrastructure, ecosystems and biodiversity, tourism and recreation, and industry, energy and transportation.

food security (agriculture, livestock, fisheries)' export agriculture; water resources; coastal and marine sector; health; human settlements and infrastructure; ecosystems and biodiversity; tourism and recreation; and industry, energy and transportation.

Among others, the physical impacts on biodiversity and ecosystems, human health and coastal and marine zones can have far reaching consequences. The National Biodiversity Strategic Action Plan 2016-2022 (NBSAP 2016-22) identified that biodiversity and ecosystems in the country can be affected due to number of climate change related drivers that include many physical effects mentioned in Table 4.3. Global studies indicate that ecosystems can undergo changes in species composition, alteration of habitat and species distribution, extinction of species and migration of species, and outbreaks of pest/pathogens. Even though some international studies have suggested the possible beneficial effects on forests and natural vegetation due to increased CO2 concentration in the atmosphere, projections by the ADB study on South Asia indicate that the net primary production and net biological production of vegetation in Sri Lanka may decline due to climate change under A2 and B1 scenarios (Table 4.4).

Climate change will have direct impacts on human health due to exposure to extreme conditions such as injuries/deaths due to hazardous events and heat stress. However, impacts due to increased incidence of vector-borne and water-borne diseases can have more serious repercussions than the direct impacts. Table 4.5 gives a summary of predictions by morbidity (hospitalisations) and mortality (deaths are given in parentheses) due to vector borne diseases that can increase progressively over time.

Table 4.4
Potential Changes in Ecosystems due to Climate Change

Scenario	Parameter	Period				% Change from 1991 - 2000 to 2081 -2090
		1991 - 2000	2026 - 2035	2046 - 2055	2081 - 2090	
A1B	Forest carbon pool (carbon g/sq.m)	25,832	25,795	27,253	28,093	8.7
	Net primary production (carbon g/sq.m/year)	2,014	2,106	2,488	2,028	0.7
	Net biological production (carbon g/ sq.m/year)	-104	35	163	-344	-231.3
A2	Forest carbon pool (carbon g/sq.m)	25,832	25,980	27,253	28,093	8.2
	Net primary production (carbon g/sq.m/year)	2,014	2,213	2,261	1,909	-5.2
	Net biological production (carbon g/sq.m/year)	-104	78	45	-502	-383.8
B1	Forest carbon pool (carbon g/sq.m)	25,832	27,960	26,978	27,000	4.5
	Net primary production (carbon g/sq.m/year)	2,014	1,909	2,487	1,947	-3.3
	Net biological production (carbon g/sq.m/year)	-104	-502	163	-229	-120.5

Source: Ahmed, M., & Suphachalasai, S. (2014). *Assessing the costs of climate change and adaptation in South Asia.* Manila, Philippines: Asian Development Bank.

Table 4.5
Predicted Morbidity and Mortality from Vector and Water-borne Diseases, by Year

Scenario	Dengue			Malaria			Diarrhea		
	2030	2050	2090	2030	2050	2090	2030	2050	2090
A1B	42,125 (254)	65,752 (383)	111,375 (640)	6,470 (228)	11,260 (335)	31,275 (542)	167,930 (19)	284,765 (32)	412,136 (49)
A2	61,081 (368)	115,000 (670)	353,727 (2,033)	9,381 (331)	19,694 (586)	99,329 (1,721)	234,498 (27)	498,054 (56)	1,308,944 (156)
B1	56,751 (324)	85,477 (498)	179,314 (1,030)	8,256 (291)	14,638 (435)	50,373 (873)	214,279 (24)	370,194 (42)	663,539 (79)

Source: Ahmed, M., & Suphachalasai, S. (2014). *Assessing the costs of climate change and adaptation in South Asia.* Manila, Philippines: Asian Development Bank.

A sea level rise is likely to create significant impacts over the coastal zone. Different climate change studies have predicted varied levels of sea level rise by the end of this century, under different scenarios. Sri Lanka has a low-lying coastal belt that extends over 1,700 km around the island. The major physical impacts of sea level rise may include increased coastal erosion, retreat of the shore line, inundation of low-lying areas, salt water intrusion into agricultural lands and freshwater sources, and damage to coastal eco-systems. Hazardous profiles developed by the Disaster Management Centre (DMC) of Sri Lanka estimate that district level inundation due to sea level rise by year 2100 can vary from 1,534 hectares in the Colombo district to 14,809 hectares in the Puttalam district.[13] A recent study conducted by the UNHABITAT indicated that seven out of 14 coastal towns examined (Colombo, Negombo, Mannar, Galle, Trincomalee, Batticaloa and Hambantota) will experience moderate and low level impacts of sea level rise such as inundation of low-lying areas and salt water intrusion by 2050.[14]

As far as key economic sectors are concerned, agriculture is likely to face the impacts of climate change most. The agriculture sector is the main source of employment in the country providing livelihoods for around 30 per cent of the population. Agriculture in Sri Lanka can be broadly divided into two sub-sectors, namely; food crops agriculture, and export agriculture. Food crops agriculture and irrigation play an important role in ensuring food security for the country's growing population. Export agriculture is still an important source of foreign exchange for the national economy, and a large section of the population depends on it for livelihoods and income.

Each sub-sector comprises several crops. Major food crops can be broadly divided into two categories, paddy and other food crops (OFCs). Paddy, the dominant crop covering the largest area under a single crop, is cultivated all over the country even though major producing areas are located in the dry zone. The OFCs include

Agriculture is likely to face the impacts of climate change most. It is the main source of employment in Sri Lanka providing livelihood for around 30 per cent of the population.

[13] Disaster Management Centre and United Nations Development Programme. (2012). *Hazard profiles of Sri Lanka.* Colombo, Sri Lanka: Disaster Management Centre and United Nations Development Programme.

[14] United Nations Human Settlements Program. (2017). *Mainstreaming climate change into urban planning and policy,* Unpublished study report. United Nations Conference Center, Bangkok, Thailand.

a variety of crops such as vegetables, pulses, chilies, onions, yams and tuber crops that are cultivated in different agro-ecological zones. All major food crops are short-term seasonal crops cultivated in two major seasons, Yala and Maha. The seasonal nature of food crops is a key factor that determines losses and damages which these crops may undergo due to impacts of climate change.

In contrast, export agriculture crops are perennial tree crops. Their vulnerability to impacts of climate change is different from that of seasonal food crops. Moreover, a majority of these are confined to wet zone districts, with the exception of coconut that covers a significant land area in the intermediate zone too. Optimal climatic conditions for different export agriculture crops also vary (Table 4.6).

Table 4.6
Optimal Ranges of Climate Parameters and Critical Environmental Conditions for Major Export Crops

Crop	Optimal Range		Critical Environmental Conditions
	RF (mm)	Temperature (°C)	
Tea	2,500 -3,000	18 -25°	1,200>RF>3 ,000
Rubber	1,650 -3,000	23 -28°	500 mm RF over six months
Coconut	>1,500	27°	Dry spells over two months

Source: Wijeratne, M.A., Anandacoomaraswamy, A., Amarathunga, M.K.S.L.D., Ratnasiri, J., Basnayake, B.R.S.B., & Kalra, N. (2007). Assessment of impact of climate change on productivity of tea (Camellia sinensis L.) plantations in Sri Lanka. *Journal of National Science Foundation Sri Lanka,* 35(2): 119-126.

Table 4.7
Physical Effects of Climate Change on Agricultural Sub-sectors

Effects of Climate Change	Sub - sector		
	Food Crops	Export Agriculture	Irrigation
Increased evaporation and evapo -transpiration	√	√	√
Increased day and night air temperature	√	√	√
Regular and extended dry spells	√	√	√
Increased frequency and severity of droughts	√	√	√
Increased frequency and severity of floods	√	√	√
Alteration of thermal ranges for biological organisms (pests, pathogens, parasites, vectors)	√	√	n/a
Irregular/erratic changes in established rainfall patterns	√	√	√
Regular incidents of intense rainfall with high cloud cover	√	√	√
Cyclones and high winds	√	√	√
Salt water intrusion	√	√	√
Inundation of low -lying areas	√	√	√
Rising atmospheric CO_2 concentration	n/a	√	n/a

Source: National Adaptation Plan for Climate Change Impacts in Sri Lanka: 2016-2025 (NAP-CCI 2016-25).

Both food crops and export agriculture sub-sectors are vulnerable to extreme events and slow onset impacts. The NAP-CCI 2016-25 identified specific physical effects associated with climate change that affect food crops, export agriculture and water sub-sectors (Table 4.7). Paddy, the major food crop, is closely connected to country's water resources; a significant share of available water is being allocated for irrigation of paddy. Hence, impacts of climate change on water resources also are likely to increase the vulnerability of paddy production, directly and indirectly.

4.3.3 Economic Risks of Climate Change on the Economy and Agriculture Sector

Systematic economic studies on climate change are rare in Sri Lanka. Hence, this section borrows from studies conducted in other disciplines also, to create a picture about the nature of economic risk posed by climate change to Sri Lanka's economy. The existing assessments have examined three major areas; the overall impact of climate change on the national economy, evaluation of losses and damages due to major disaster events, and economic impact on the agriculture sector.

Among the few studies that have attempted to cover the impact of climate change on the economy, a study conducted by the ADB covering six South Asian countries provide useful insights.[15] The economic assessments of this study are based on an Integrated Assessment Model (IAM) that combines downscaled high resolution climate change projections for South Asia with physical impact projections for six sectors using simulation models. The six sectors considered in the study are agriculture, coastal and marine resources, energy, forests and ecosystems, health and water. The study predicts that under a 'business-as-usual' scenario, the overall economic costs of climate change will be around 8.8 per cent of South Asia's GDP by year 2100. If the global atmospheric temperature is managed within 2^0 C, this could be reduced to 2.5 per cent GDP. Under a 'business-as-usual' scenario, Sri Lanka can expect negative macroeconomic outcomes in real GDP, total output, exports, imports and consumption due to climate change impacts. Table 4.8 provides a summary of predictions on macroeconomic outcomes.



The overall economic costs of climate change will be around **8.8%** of South Asia's GDP by year 2100.

[15] Ahmed M., & Suphachalasai, S. (2014). *Assessing the costs of climate change and adaptation In South Asia.* Manila, Philippines: Asian Development Bank.

Table 4.8
Climate Impacts on Macroeconomic Aggregates in Sri Lanka

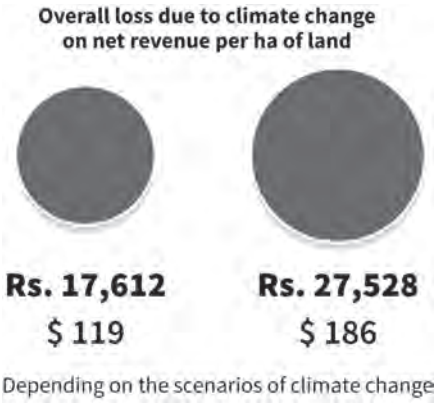
Parameter	Cumulative % Change from Baseline, 2010-2050
Real GDP	-6
Output	-25
Exports	-6
Imports	-5
Consumption	-2
Consumer Price Index	4

Source: Ahmed, M., & Suphachalasai, S. (2014). *Assessing the costs of climate change and adaptation in South Asia.* Manila, Philippines: Asian Development Bank.

The study cautions that moderate losses of around 6 per cent of GDP may not convey the real picture. The hardest hit sector will be agriculture, leading to increased food prices. As a result, a drop in output will be much higher, and the impact on food security will be more severe. This will invariably affect low-income households.

Predictions on macroeconomic outcomes while alerting policy makers to the overall economic risk of climate change, provide little guidance to sectoral policy decisions. Disaggregated level analysis that can provide information for sectoral policy decisions are required to design appropriate adaptation policies for different sectors. Among others, the agriculture sector has attracted the most research attention, given its high level of vulnerability to impacts of climate change as predicted by several studies.

A recent study by the United States Agency for International Development (USAID) which uses the Ricardian Approach,[16] has estimated that a 1^0C increase in temperature and a 1mm decrease in rainfall can reduce the net revenue of agricultural lands by Rs. 12,720 (USD 85.95) and Rs. 250 (USD 1.69) per ha, respectively.[17] According to this study, the overall loss due to climate change on net revenue per ha of land could vary around Rs. 17,612 – 27,528 (USD 119-186) depending on the scenario of climate change considered. It has been estimated that this level of net revenue losses amount to Rs. 6,027 losses per month of farm household income which can increase the number of households under the poverty line by 7.9 per cent according to the current poverty statistics. The study also informs that losses in net revenue vary across regions and will increase over time. The largest impacts have been reported from Kurunegala and Anuradhapura districts.



[16] Ricardian Approach uses econometric modelling to assess the marginal effect of climate parameters on net worth of land.

[17] United States Agency for International Development (USAID) and United Nations Development Programme (UNDP). (2016). *Economics of Climate Change Adaptation: Understanding the impacts of climate change and optimal policy response in Sri Lanka.* Bangkok, Thailand; USAID Adapt Asia-Pacific Project.

4.3.3.1 Economic Impacts on the Food Crops Sub-sector

Being seasonal crops, food crops can undergo losses and damages in several ways, depending on the types of disasters and levels of exposure. The major types of extreme events that affect food crops are excessive rainfall events such as cyclones, floods, droughts and landslides. The more common types of losses and damages to food crops due to extreme events include:

- Total or partial failures of crops due to disasters (e.g. floods, droughts)
- Decline in productivity due to disaster-related disturbances (e.g. heat stress, erratic rainfall, overcast conditions due to high cloud cover)
- Low cropping intensity (failure to cultivate total land area) due to threat of disasters (e.g. water drought stress, inundation due to floods)
- Low cropping intensity due to damages to infrastructure (e.g. irrigation reservoirs and canals)
- Low cropping intensity due to damage to farm assets and personal/life damage to farmers

Extensive losses can occur in the food crops sub-sector due to country-wide major disasters. However, such events are less frequent, while losses and damages due to localised events can take place more regularly. The evidence from climate change research suggests that the frequency and intensity of such events appear to be increasing over time.

Not only extreme events, slow onset impacts too affect food crops. Examples of slow onset impacts on food crops are rising atmospheric temperature, alteration of micro-climatic conditions in favour of weed and pest populations, desertification, sea level rise, and salinisation. Since a major share of lands under food crops in Sri Lanka is located in the dry zone, it can increase the vulnerability of food crops further. These physical impacts can lead to losses in terms of a decline in production and quality of output. Ahmed and Suphachalasai (2014) estimate that many rice growing areas in Sri Lanka are expected to

Table 4.9
Impact of Climate Change on Rice Yields (2030-2080)

Agro-climatic Zone	Current Rice Yield (kg/ha)		% Change in 2030		% Change in 2050		Change in 2080	
	Maha	Yala	Maha	Yala	Maha	Yala	Maha	Yala
Dry-Low	3,498	3,863	-4.2	-6.5	-16.1	-19.8	-29.1	-34.2
Intermediate -Low	4,885	4,612	-2.7	-3.5	-10.6	-15.1	-24.8	-31.5
Intermediate -Mid	4,992	4,761	-1.9	-3.1	-9.3	-12.7	-22.5	-30.3
Intermediate -Upland	3,492	2,955	-1.3	-2.7	-7.5	-11.4	-20.3	-27.5
Wet -Low	3,910	3,711	-0.9	-1.5	-6.0	-10.4	-19.4	-25.1
Wet -Mid	3,538	2,795	-0.8	-1.4	-3.6	-8.2	-18.3	-23.6
Wet -Upland	3,134	2,706	5.7	3.1	2.1	-2.0	-8.6	-12.4

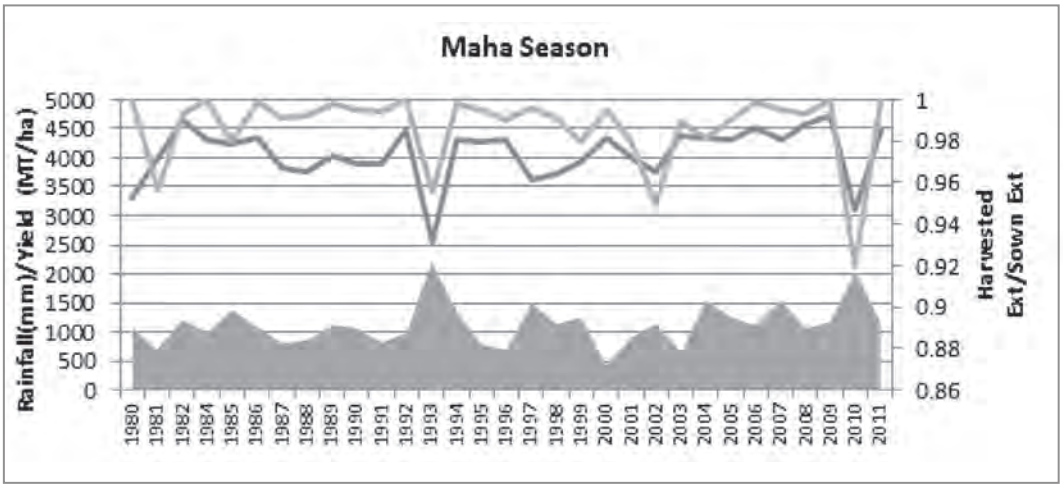
Source: Ahmed, M., & Suphachalasai, S. (2014). *Assessing the costs of climate change and adaptation in South Asia.* Manila, Philippines: Asian Development Bank.

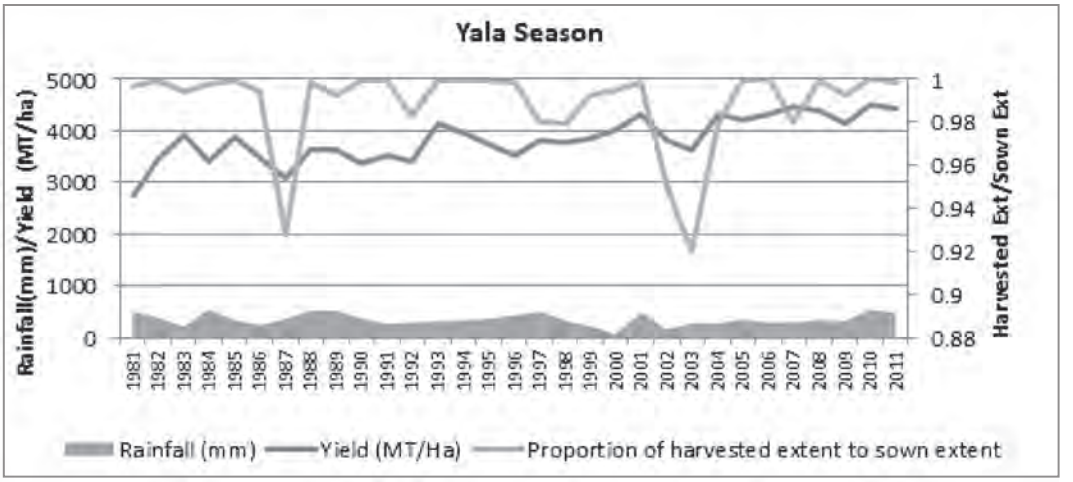
experience negative impacts due to projected changes in climate (Table 4.9). Their projections suggest that negative changes will be cumulative and progressive. The projected losses will be as high as one-third of current yield levels by 2080 in some areas.

Information on economic losses in agriculture due to impacts of climate change, either due to extreme events or slow onset impacts, is rare. However, there are proxies that can be used to assess the situation. For instance, agricultural statistics report on sown and harvested extents of paddy for each season by district. High gaps in sown and harvest extents indicate crop losses in respective seasons due to adverse weather conditions. Such information can be verified using meteorological data on local weather anomalies and statistics on local production.

Figure 4.1 shows that the average yield of paddy in the Polonnaruwa district has fluctuated dramatically in years with excessive rainfall in the Maha season, which overlapped with a low ratio of harvest to sown extents, indicating high crop losses in those seasons. Drops are prominently visible in 1993/1994 Maha and 2010/2011 Maha – years with major disaster events. On the other hand, in the Yala season relatively prominent crop losses are indicated for years 1987 and 2003. Interestingly, such losses are not associated with strikingly different variations in rainfall. It seems anomalies in the distribution rather than the amount of rainfall results in crop failures in the Yala season. Compared with disaster events in the Maha season, a decline in the average yield is also less dramatic in the Yala season. Overall, it shows that losses and damages associated with the two seasons are significantly different from each other. A gross assessment carried out for losses incurred by paddy in Polonnaruwa in 2011, with reference to the baseline year 2002 after making adjustments for annual growth of production, estimated the losses at Rs. 2.7 billion due to 92,000 tons of crop damage.

Figure 4.1
Loss and Damage to Paddy due to Disaster Events in the Polonnaruwa District (1981-2011)





Sources: Based on data from Department of Census and Statistics, Department of Meteorology and Department of Agriculture, Colombo, Sri Lanka.

4.3.3.2 Economic Impacts on Export Agriculture

The economic performance of export agriculture crops is highly sensitive to changes in weather patterns. Usually, these perform well within optimal ranges of climatic parameters, with a change of parameters beyond optimal range affecting their performance adversely. Moreover, these become susceptible to outbreaks of pathogens and pests when prevailing climatic conditions favour them. It has been estimated that productivity of tea can reduce by 30-80 kg per hectare per month owing to a reduction in rainfall by 100 mm.[18] According to the Coconut Research Institute (CRI), low rainfall can lead to a decrease in coconut yield by 32-73 million kilos per year, while high rainfall can boost yield by 42-87 million kilos.

The major types of extreme events that affect export agricultural crops are droughts, excessive rainfall and landslides. Unlike in the case of seasonal food crops which can undergo acute losses due to total or partial crop failures, the effect of extreme events on export crops (perennial tree crops) are usually chronic in nature, and so are the associated losses and damages. Major slow onset impacts that affect the export agriculture sub-sector are rising atmospheric temperature, changing rainfall patterns and land degradation. The effects of both extreme events and slow onset disasters can last for several months or years, with recovery also similarly gradual and extended over several months. The same climate impact can affect different export crops in different ways. For instance, high rainfall can increase the productivity of tea and pepper, subject to certain conditions. However, it can reduce the number of tapping days in rubber, reducing production levels.

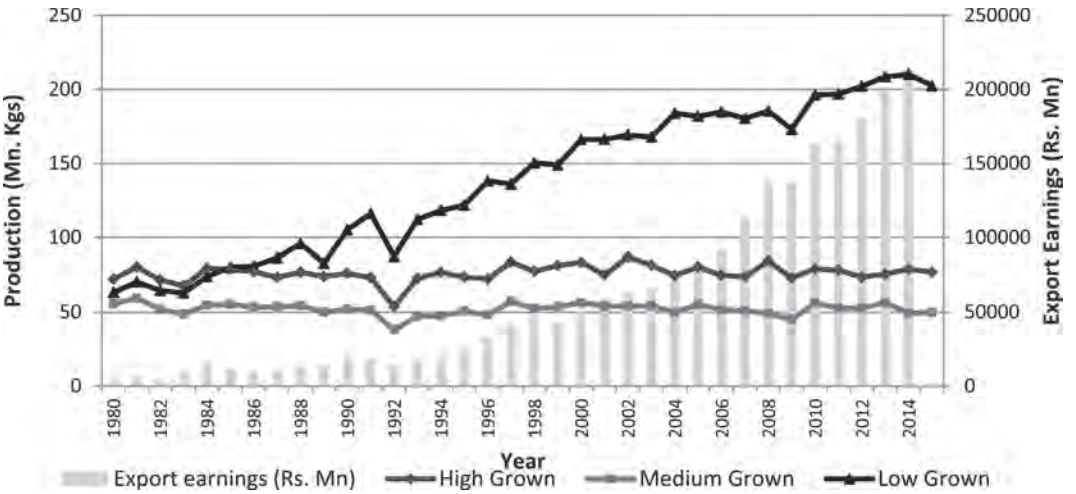
Statistics indicate that fluctuations in the production of export crops can occur due to adverse weather. Major declines in tea production were reported in the years 1983, 1989, 1992 and 2009 (Figure 4.2). The lowest production was recorded in 1992 due to the combined effect of

[18] Wijeratne, M.A., Anandacoomaraswamy, A., Amarathunga, M.K.S.L.D., Ratnasiri, J., Basnayake, B.R.S.B., & Kalra, N. (2007). Assessment of impact of climate change on productivity of tea (Camellia sinensis L.) plantations in Sri Lanka. *Journal of National Science Foundation Sri Lanka, 35(2):* 119-126.

severe drought prevailing during the early part of the year in all three tea growing areas and depressed tea prices. After year 2000, a major production loss was experienced in 2009 which was due to dry weather conditions experienced in all tea growing areas.

4.4 Policy Interventions on Climate Change and Challenges

Figure 4.2
Distribution of Tea Production and Export Earnings



Source: Based on data from Central Bank of Sri Lanka and Ministry of Plantation Industries, Colombo, Sri Lanka.

Similar losses in production due to the adverse weather conditions have been reported in rubber also. The yield declines reported in years 1989 and 1992 were the result of severe drought conditions in the early part of the respective years, and reduced tapping due to heavy rains in the third quarter. Hence, both drought and excessive rain can lead to losses in rubber, where a low number of tapping days due to relatively high rainfall in wet zones is a significant problem. In the case of coconut, drought is the more prominent disaster that causes losses in production. Production losses are usually observed with a time lag of around one year in dry and intermediate zone low country – an area prone to droughts more or less regularly. A decline in coconut yield attributed to drought has been reported in years 1984, 1988, 1993, 1998, 2002, 2010 and 2013.

At present, the issue of climate change is covered by two streams of policy interventions, namely, climate change policies and disaster management policies. Both are relatively new areas of government intervention, and hence, the national agendas in the two areas are still evolving.

The Ministry of Mahaweli Development and Environment (MMDE) has initiated several programmes to address climate change issues in Sri Lanka. The Ministry established the Climate Change Secretariat (CCS) to handle these programmes. The MMDE is also the National Designated Agency (NDE) for the United Nations Framework Convention for Climate Change (UNFCCC). Sri Lanka signed the PCA in April 2016 and submitted its

Nationally Determined Contributions (NDCs) covering national commitments on mitigation, adaptation, loss and damage and means of implementation. The National Climate Change Policy (NCCP) formulated in 2012 includes policy statements on six areas, namely: vulnerability, adaptation, mitigation, sustainable consumption and production, knowledge management, and general measures relating to institutions, technology, regulatory framework and resource mobilisation. The CCS has prepared the NAP-CCI 2016-25 as a rolling plan of adaptation actions with specific timelines, responsible stakeholders, implementation strategies and key performance indicators covering nine sectors identified on the basis of vulnerability to climate change impacts. It has also proposed an institutional mechanism for implementation, coordination, monitoring and resource mobilisation. Table 4.9 provides a summary of priority actions identified in the NAP-CCI 2016-25 for nine sectors.

Climate change policies in Sri Lanka have a comprehensive scope, covering both mitigation and adaptation interventions. Adaptation actions in the NAP-CCI 2016-25 as well as NDCs cover both extreme events and slow onset impacts. Disaster risk management policies complement climate change policies by providing an operational framework to address losses and damages due to climate-induced disasters. The country has launched a national initiative to

Table 4.10
National Adaptation Plan: Highlights of Key Sectors and Priority Actions

Sector	Priority Actions
Food Security	• Developing tolerant varieties • Water efficient farming methods • Timely communication of climate information
Water Resources	• Management plans for critical watersheds • Efficiency improvements in irrigation water • Vulnerability mapping and disaster risk management plans
Coastal and Marine Sector	• Continuous monitoring of shore line changes • Research on sea level rise • Vulnerability mapping of inundation
Health	• Moni toring of climate induced diseases • Research on vector borne and pathogenic diseases • Sharing information between disaster and health agencies
Human Settlements and Infrastructure	• Research and promotion of climate resilient building designs • Training industry stakeholders on climate resilient buildings • Hazard preparedness plans for settlements
Ecosystems and Biodiversity	• Research on climate change impacts on ecosystems and biodiversity • Adaptive management of climate sensitive ecosystems • Recovery plans for threatened ecosystems/species
Tourism and Recreation	• Awareness of industry operators on climate change impacts • Emergency communication channels • Climate resilience of tourism facilities in vulnerable areas
Export Agriculture Sector	• Tolerant cultivars/clones • Improved nursery and plant management and cropping systems • Research on climate change impacts on export agriculture crops
Industry, Energy and Transportation	• System improvements to minimi se hydropower fluctuations • Diversifying sources of sensitive agro -based raw materials • Early warning and hazard communication systems

Source: National Adaptation Plan for Climate Change Impacts in Sri Lanka: 2016-2025 (NAP-CCI 2016-25).

face disaster situations by formulating a policy framework and establishing an institutional setup.

The policy framework comprises of the Disaster Management, Act No 13 of 2005 and the National Policy on Disaster Management (NPDM) in 2010. The Disaster Management Act provided for establishing the National Council for Disaster Management (NCDM) and DMC. The DMC is the national agency mandated for disaster risk preparedness and management under the purview of the Ministry of Disaster Management (MDM). The MDM has prepared the Sri Lanka Comprehensive Disaster Management Programme 2014-2018 (SLCDMP) and is currently in the process of preparing a National Disaster Management Plan 2018-2030.

Besides the coordinating role being played by the CCS and disaster management agencies in their respective areas, there are other agencies that have mandates connected to climate change, directly and indirectly. The DOM is responsible for climate information. The DM is also the national focal point for the IPCC and the World Meteorological Organisation (WMO). The CCS, DMC and DOM are agencies with cross-cutting mandates that have to address climate change issues in all sectors. These can cover only a part of the challenge, and the impacts of climate change on different sectors have to be handled by various agencies with sector-based mandates (e.g. impacts on agriculture by the Department of Agriculture; impacts on water by the Department of Irrigation, Mahaweli Authority; impacts on biodiversity by the Forest Department, Department of Wildlife Conservation; coastal/ marine sector impacts by the Coast Conservation Department). Hence, there are several line ministries and agencies that have some role to play in addressing climate change impacts in their respective sectors.

As a result, in addition to policy frameworks, plans and institutional arrangements developed by the MMDE and MDM, there are also some sectoral plans/programmes of action that have identified climate change as a threat to be addressed through sectoral actions. A few examples are the Coastal Zone and Coastal Resources Master Plan of 2016, the NBSAP 2016-2022, and the National Action Programme for Combating Land Degradation in Sri Lanka 2015-2024. All these are multi-sector, multi-agency plans/programmes that need to be implemented by central coordinating bodies with the support of relevant stakeholders and agencies.

A higher level of awareness and readiness to take action on climate change can be observed in agriculture and water management sectors. The agriculture research system in Sri Lanka has recognised the necessity of developing varieties tolerant of extreme weather conditions long before the concerns over climate change arose. The Department of Agriculture and other crop research institutes (e.g. Tea Research Institute, Coconut Research Institute) have a long tradition of developing and recommending varieties/ clones for different climatic zones. There are also varieties/clones developed to tolerate extreme climate conditions such as droughts, floods and high salinity conditions. In the water management sector, three relatively large projects, namely; the Climate Resilience Improvement Project (CRIP), Climate Resilient Integrated Water Management Project (CRIWMP), and the Project for Addressing Climate Change Impacts on Marginalised Agricultural Communities Living in the Mahaweli River Basin of Sri Lanka are in operation with the support of the World Bank, Green Climate Fund and Adaptation Fund, respectively. The objective of these projects is to increase the resilience and adaptive capacity of vulnerable farmers in large and medium irrigation schemes and small tank

cascade systems against the adverse impacts of climate change.

4.5 Mainstreaming Climate Change Adaptation into National Development Policies

Climate change is a national development challenge with cross-cutting impacts on several economic sectors. It spreads over all levels of governance – national, provincial and local. The only way to overcome this challenge is to mainstream climate change adaptation to build up a climate resilient economy. A climate resilient economy is an economy that can cope with adverse impacts with minimum losses/damages, and recover quickly after facing a shock. In essence, it refers to an economy with a reduced risk of climate change.

A logical approach of policy interventions is necessary to build up a climate resilient economy. The economic risks of climate change can be considered as a combined outcome of exposure to impacts, vulnerability and adaptive capacity. Reducing climate change impacts cannot be achieved through national efforts alone, and successful global efforts on mitigation are required. Even in the case of successful mitigation of GHG emissions that maintains temperature within tolerable limits, some level of climate change impacts can be expected. Hence, a logical approach towards a climate resilient economy should primarily focus on reducing vulnerability, and raising the adaptive capacity of vulnerable economic sectors and communities through mainstreaming adaptation of climate change.

A climate resilient economy is an economy that can cope with adverse impacts with minimum losses/damages, and recover quickly after facing a shock. In essence, it refers to an economy with a reduced risk of climate change.

Reduced vulnerability and increased adaptive capacity through appropriate measures of adaptation can be expected to decrease the economic risk of climate change to a significant extent. The residual risk that cannot be managed through adaptation measures has to be addressed through appropriate risk management and financing methods. These can be considered also as an essential step of the mainstreaming process.

The NAP-CCI 2016-25 identifies six conditions necessary for mainstreaming adaptation; prioritised, comprehensive, informed, timely attended, coordinated and ensured with sufficient allocation of resources. Mainstreaming climate adaptation is too broad a subject to be handled effectively by a single line ministry or agency. Not only the government, but non-state actors such as the private sector, civil society organisations (CSOs) and development partners have a role to play in their respective domains to achieve the final goal of a resilient economy.

4.5.1 Increasing the Adaptive Capacity of Affected Sectors and Communities

Adaptive capacity of vulnerable sectors and Adaptive capacity of vulnerable sectors and communities has to be raised through appropriate policy interventions. This requires undertaking strategic investments in selected areas. Climate change impacts involve deep uncertainty. Hence, it is necessary to focus on investments that can offer no-regret solutions. Otherwise, it may lead to maladaptation costs. Two areas that need special attention are development of climate-smart technologies and climate information systems.

All vulnerable sectors need investments on climate-smart technologies. However, the necessity of climate-smart technologies in agriculture can be considered as more urgent. A few priority areas that need speedy attention are: development of resistant varieties/cultivars/ breeds/strains that tolerate heat stress, drought, floods, salinity and pest and disease outbreaks; introduction of resource efficient farming methods (e.g. water efficient farming methods); and increasing water use efficiency and reduction of losses in irrigation systems. Investments are necessary to develop the capacity to undertake research on climate smart-technologies in both food crop and export agriculture sub-sectors. Besides development of climate-smart technologies, research studies should also be conducted to identify impacts of climate change on crops and livestock, ecosystems and biodiversity, urban environments and impacts of sea level rise on coastal zones and habitats.

Another critical need for successful adaptation is the availability of reliable weather and climate information products (CIP), namely; short, medium, long-term, and seasonal weather forecasts. A systematic programme for development of CIPs is necessary to achieve this. The key steps of such a programme are: identification of climate information needs of stakeholders in vulnerable sectors (e.g. farmers, fishers, business managers, tour operators); designing a portfolio of short, medium, long-term and seasonal CIPs that can assist adaptation decisions of stakeholders; and, dissemination of information through appropriate communication strategies to ensure timely access to CIPs. Improving the capacity for climate modelling and the preparation of long-term projections is also an important area. The DOM has taken certain steps to increase the accuracy and reliability of existing CIPs. It has also initiated the Seasonal Monsoon Forum to share climate outlooks for oncoming seasons with relevant government stakeholders. However, capacity limitations of the DOM is a barrier to achieve better results and therefore investments to enhance institutional and technical capacity of the DOM is an essential requirement.

Box 4.1
Integrated Climate Information Management Systems (ICIMSs)

Farmers usually rely on their local knowledge and experience on climate events to make their risky decisions on farming. Probabilistic CIPs, usually available in abstract formats, are not readily understandable to farmers and lack the power of triggering farmers into action who usually rely on experience and belief-based expectations. There are also issues of effective and timely communication of probabilistic weather information products to farmers. One way to overcome these gaps is by establishing an Integrated Climate Information Management System (ICIMS) that harnesses the strengths of both the farmers' local knowledge on climate as well as probabilistic weather information products. The importance of integrating local climate knowledge and scientific climate forecasts in order to establish hybrid systems of decision making has been emphasised by a number of studies conducted in African and Asian regions.

A research consortium comprised of the Institute of Policy Studies of Sri Lanka (IPS), the Department of Meteorology of Sri Lanka (DOM), Janathakshan and South Asian Network for Development and Environmental Economics (SANDEE) launched an action research programme titled "Bridging the Climate Information and Communication Gaps for Effective Adaptation Decisions: An Integrated Climate Information Management System" to identify and pilot test replicable ICIMS models for vulnerable farming communities in Sri Lanka with potential applications in other developing regions too. The research programme is financially supported by the Opportunity Fund of the Think Tank Initiative (TTI), International Development Research Centre (IDRC) of Canada. The DOM has provided high resolution local forecasts to farmers in six selected study sites supported by the field coordination activities of Janathakshan.

The pilot project demonstrated a few important lessons. Ground level experience suggests that there is a clear demand for localised, improved climate forecasts from farmers. Feedbacks from farmers indicate localised that forecasts have increased the effectiveness of their decisions significantly. Many farmers expressed their satisfaction about the level of accuracy of forecasts which helped to build their confidence on climate information products of DOM. From the supply side, the study highlighted the strengths as well as capacity limitations of the DOM to scale up its services at a country-wide level. Results of the study call the urgent attention of policy makers towards the growing demand for climate information from farmers and supply-side limitations for meeting this demand.

Source: This is based on observations from 'Bridging the climate information and communication gaps for effective adaptation decisions: An integrated climate information management system (ICIMS), which is an ongoing research project by the Institute of Policy Studies of Sri Lanka.

4.5.2 Reducing the Vulnerability of Communities, Economic Sectors and Ecosystems

Investments on systems that can reduce the vulnerability of stakeholders in different economic sectors are also necessary. This involves improving the capacity for strategic surveillance and monitoring of impacts, and increasing the preparedness through disaster planning and management.

Establishing surveillance and monitoring facilities for early detection of climate change impacts and climate-induced hazards is an important step to reduce vulnerability. A few areas that need special attention in this regard are: monitoring of sea level rise and shoreline changes; early detection of emergence of climate induced diseases and spread of vector-borne and pathogenic diseases on humans; early detection of outbreaks of pests, diseases and emergence of weeds affecting crops and animal populations; monitoring impacts on biodiversity and ecosystems; and monitoring impacts on cultural and archeological assets.

The anticipation of climate change impacts in advance, and planning to minimise the losses and damages help to reduce the vulnerability to such impacts. Some of the key steps towards achieving this include: identification of vulnerable sectors and communities and preparation of vulnerability maps; establishment of early warning and hazard communication systems; and preparation of strategic management plans for minimising losses and damages associated with impacts.

Since the 2004 tsunami, Sri Lanka has taken significant steps to improve the disaster preparedness of the country through various policy and institutional measures. These developments are mainly aimed at facing situations that involve extreme events. However, increased preparedness through strategic planning is required to address slow onset impacts too. A few areas that demand urgent attention are preparation of management plans for critical watersheds, shoreline management plans for vulnerable locations in coastal zones, and adaptive management and recovery plans for threatened climate sensitive ecosystems.

4.5.3 Innovative Risk Management Instruments to Address Residual Risks

Increasing adaptive capacity and reducing vulnerability through appropriate measures of adaptation can be expected to decrease the economic risk of climate change to a certain degree. However, the risk of climate impacts cannot be expected to be eliminated totally, and some level of residual risk will remain to be addressed through risk management instruments. In this connection, there are two risk management instruments that have captured the attention of policy makers, namely, climate insurance schemes and fiscal mechanisms of disaster risk financing.

Climate insurance schemes refer to the introduction of suitable insurance schemes to recover losses and damage to livelihoods, properties, and infrastructure due to adverse impacts of climate change. Index-based insurance has been identified as a viable instrument for handling risks associated with climate change impacts. It is a market-based risk instrument which is being tested around the world, including in developing countries. In Sri Lanka also, a few insurance providers have come forward to test it on a pilot scale with mixed results. It is necessary to experiment with innovative schemes of climate

insurance and introduce successful schemes to the market.[19]

With regard to fiscal mechanisms for disaster risk management, the government needs to develop a national disaster risk financing strategy for Sri Lanka, with the partnership of international donors and private sector to address disaster risk losses at national and individual (business and household) levels. This should incorporate a mix of risk retention (e.g. reserve funds, contingent credit lines) and risk transfer instruments (e.g. insurance) to cover both pre-disaster as well as post-disaster financing needs.

[19] Institute of Policy Studies of Sri Lanka. (2017). Climate insurance for dry zone farmers in Sri Lanka. *Policy Insights*. Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

5. Climate Change, Food Security and Rural Livelihoods in Sri Lanka

5.1 Introduction

The fight against hunger to ensure food security has been one of the key objectives of global development agendas over the years. The Sustainable Development Goals (SDGs) that the world committed to achieve by end 2030 have given increased focus under Goal 2 to end hunger, achieve food and nutrition security and promote sustainable agriculture. Indeed, a focus on food security in development agendas in Sri Lanka can be detected in all the recent policy documents such as the Public Investment Programme (2017-2020), Multi-Sector Action Plan for Nutrition (MSAPN 2017-2020), Food Production National Programme (2016-2018) and Vision 2025.[1]

However, despite a multitude of different policies and programmes implemented by various institutions to help Sri Lanka achieve food security, the situation has not improved over the years relative to the country's progress in most human development indicators and health indicators. This is evident in the two most widely used food security indices; namely the Global Hunger Index (GHI) developed by the International Food Policy Research Institute (IFPRI) and the Global Food Security Index (GFSI) constructed by the Economic Intelligence Unit (EIU) of The Economist. According to the GHI, Sri Lanka is ranked at the 84th position among 119 countries and its hunger status is classified as 'serious' with a 25.5 GHI index score in 2017.[2] With a moderate performance from 2012 to 2016, Sri Lanka's GFSI score remains at the 65th position among 113 countries in 2016.[3]

It is clear that the objectives of food security in Sri Lanka are yet to be achieved, and that there is a gap in polices and strategies focussed on achieving food security. While the problem of food insecurity is increasingly agricultural, current food security policies lack an explicitly agricultural focus, leaving food systems with no mandate to address food insecurity.

Among the most significant reasons for increasing food insecurity and malnutrition is climate change. Climate change without adaptation can potentially affect farm livelihoods and all aspects of food security, including food access, utilisation, and

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1 World Food Programme. (2017). *National strategic review of food security and nutrition towards zero hunger,* Colombo, Sri Lanka: World Food Programme.

2 Von G., Klaus, B., Jill, H., Naomi, B., Tracy, P., Nilam, Y., & Foley, C. (2017). 2017 *Global hunger index: The inequalities of hunger.* Washington, D.C.: Bonn, Germany; and Dublin, Ireland: International Food Policy Research Institute, Welthungerhilfe, Germany and Concern Worldwide. https://doi.org/10.2499/9780896292710

3 The Economist. (2017). Global food security index 2017: *Measuring food security and the impact of resource risks,* Economist Intelligence Unit, London, United Kingdom: The Economist.

It is clear that the objectives of food security in Sri Lanka are yet to be achieved, and there is a gap in polices and strategies focussed on achieving food security.

price stability.[4] It is evident that both long-term gradual changes, such as rising temperature and erratic rainfall patterns, as well as extreme climate conditions such as severe droughts and floods, are taking place in Sri Lanka's climate. These changes threaten agricultural production, make those who are dependent on agriculture more vulnerable, and exacerbate the risks of food security.

It is in this backdrop that this chapter aims to identify the linkages between climate change and food security and to suggest possible avenues for tackling issues of climate change in ensuring food security and rural livelihoods in Sri Lanka.

5.2 Climate Change and Food Security: Concepts and Linkages

As identified by the Food and Agriculture Organisation (FAO) World Summit on Food Security 2009, food security exists 'when all people at all times have physical, social and economical access to sufficient, safe and nutritious food which meet their dietary needs and food preferences for an active and healthy life'.[5] This definition covers the four main aspects – food availability, food access, food stability and food utilisation – that are important to ensure food and nutrition security of an individual or a country.

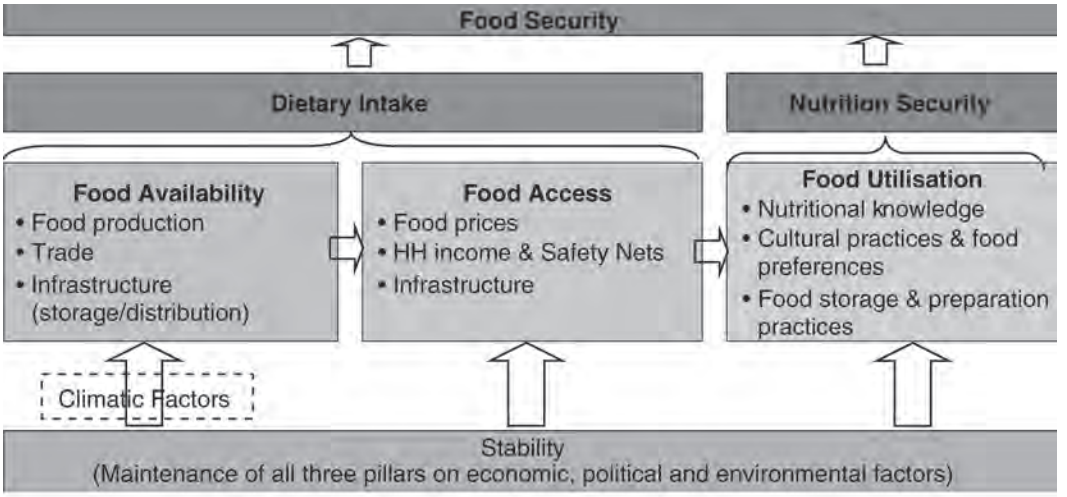
Food security is a complex phenomenon with nonlinear interrelations, and the causes of food security are multifaceted with a range of factors. Dietary intake and nutrition levels of food are often considered as the immediate causes of food security. Inadequate dietary intake can be primarily a result of insufficient food availability and poor access to food by households, while poor nutrition levels are often the result of unhealthy food utilisation, where all three causes can be affected by instability in the long-run (Figure 5.1).

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4 Intergovernmental Panel on Climate Change. (2014). *Climate change 2014: Impacts, adaptation, and vulnerability.* Part A: Global and sectoral aspects. Contribution of working group II to the fifth assessment report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom and New York Cambridge University Press. p.1132.

5 Food and Agriculture Organisation. (2009). D*raft declaration of the world summit on food security.* Rome, Italy: Food and Agriculture Organisation.

Figure 5.1
Conceptual Framework for Food Security



Source: Adapted from Thibbotuwawa, M. (2017). *The role of food system approach in tackling food security in Sri Lanka.* Paper presented at the Annual Sessions 2017, Sri Lanka Economic Association, 27-28 October 2017, Center for Banking Studies, Rajagiriya, Sri Lanka.

Food availability is basically the amount of food physically available in the country. It is determined by the local food production, trade, storage and distribution. Food accessibility depends on the individual's capability to purchase food at the household level, which is determined economically by food prices, household income and safety nets, and physically by storage infrastructure and food distribution capacity. Food stability ensures access to food at all times and covers the physiological, economic, social or political vulnerabilities of the population to food security. Food utilisation ensures proper use of the accessible food by households to absorb correct amounts of nutrients which are determined by the nutritional knowledge, cultural practices, food preferences and habits, food preparation and storage practices. The stability of all the above factors will ensure food security at all times.[6]

The impacts of climate change are most likely and the soonest to be felt on food production. However, the impacts of climate change on the other three components – food access, stability and utilisation – cannot be ignored.

[6] World Food Programme. (2017). *National strategic review of food security and nutrition towards zero hunger,* Colombo, Sri Lanka: World Food Programme.

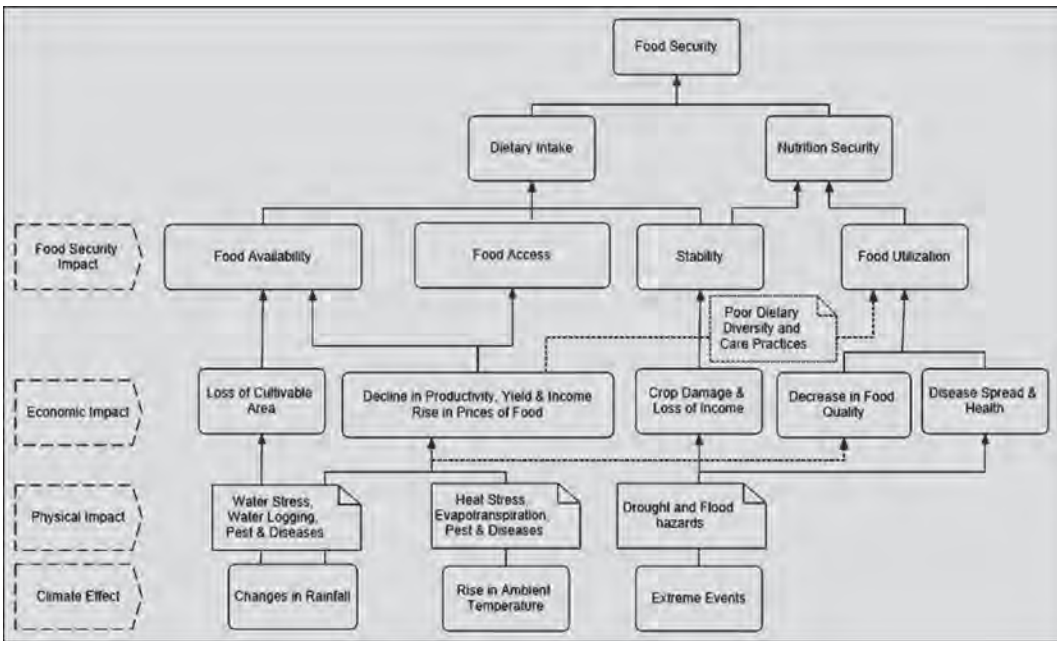
The focus on the impacts of climate change on food security has been primarily on the food availability component as seen in Figure 5.1. This is basically due to the fact that the impacts of climate change are most likely and the soonest to be felt on food production. However, climate change is expected to affect all four components that influence food security in several ways. Therefore, the impacts of climate change on the other three components – food access, stability and utilisation – cannot be ignored. The linkages between food security and climate change are more comprehensively illustrated in Figure 5.2.

Based on the observed and projected changes, Sri Lanka's climatic conditions have been facing three major types of climate effects, namely: a gradual increase in ambient air temperature; changes in the distribution pattern of rainfall; and an increase in the frequency and severity of extreme weather events. As Figure 5.2 highlights, these climatic effects can generate several physical impacts such as water stress, heat stress, droughts/floods, etc., which can eventually result in various economic impacts that affect the four major components of food security – i.e. availability, access, stability and utilisation. Hence, climate change has emerged as a major challenge in achieving Sri Lanka's food security goals. It has the potential to create significant losses to livelihoods of farmers unless these issues are addressed as a priority.

5.3 Synergies between Climate and Agriculture

Climate remains as one of the key factors in

Figure 5.2
Linkages between Climate Change and Food Security in Sri Lanka



Source: Adapted from Ministry of Mahaweli Development and Environment. (2016). National adaptation plan for climate change impacts in Sri Lanka: 2016-2025. Climate Change Secretariat. Colombo, Sri Lanka; Ministry of Mahaweli Development and Environment.

agricultural productivity in any country. Being a small tropical island, there is no significant annual variation in temperature in Sri Lanka, except for regional variations due to topographical changes. The mean annual temperature varies from 27°C in the coastal lowlands to 16°C at Nuwara-eliya in the central highlands (1,900m above mean sea level). Seasonal changes in rainfall are the main factors that determine local climatic variability. The mean annual rainfall varies from under 900mm in the driest parts (south-eastern and north-western) to over 5,000mm in the wettest parts (western slopes of the central highlands). Based on the annual rainfall variation, Sri Lanka can be characterised into four rainfall seasons as first inter-monsoon season (March-April); south-west monsoon season (May-September); second inter-monsoon season (October-November) and north-east monsoon season (December-February).[7]

Sri Lanka is divided into three climatic zones based on the mean annual rainfall as wet zone (> 2500 mm); intermediate zone (1,750-2,500 mm) and dry zone (<1,750 mm). These major climatic zones can be further sub-divided according to three elevation categories as low country (<300 m); mid country (300-900 m) and up country (>900 m). Considering all these sub-divisions along with soil types, Sri Lanka can be classified into 46 agro-ecological zones. An agro-ecological region can be considered as an area where the integrated effect of climate, soil and terrain are uniform throughout the area for crop production.[8] This classification of agro-ecological zones is being used for various agronomic decisions in the agriculture sector such as crop varietal recommendation, water management practices, fertiliser recommendation, etc.

The seasonality of rainfall is the main factor that determines the cultivation seasons of food crops. The food crops sub-sector in Sri Lanka is mainly comprised of seasonal crops that require organising all farming practices according to seasonal rainfall availability. Hence, Sri Lanka's cropping calendar has two prominent seasons, 'Maha' (the main cultivation season supported by the northeast monsoon) and the 'Yala' (supported by the northeast monsoon), identified according to the seasonal distribution of rainfall.

While agriculture in Sri Lanka has evolved in close harmony with the prevailing climatic conditions of the country, it has been made evident during recent decades that the traditional farming experiences and accumulated knowledge on weather patterns have become less useful in the process of agricultural decision making. The climate in the country has undergone a change to such an extent that the expected rainfall does not come at the correct time of the growing season, thus putting farmers in extreme difficulty. The variability of the rainfall has increased significantly during recent decades, creating both extremes – i.e. water scarcity and excess water. Meanwhile, increasing ambient temperature has also resulted in several direct and indirect negative impacts on crop growth.[9] These changes have implications on agriculture and the food security situation in the country through its four different constituents; food availability, access, utilisation and stability.

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7 Climate of Sri Lanka. (2018). Retrieved from http://www.meteo.gov.lk/index.php?option=com content&view=article&id=94&Itemid=310&lang=en

8 Agro Ecological Regions. (2015). *Sri Lanka bio diversity clearing house mechanism.* Ministry of Mahaweli Development and Environment, Retrieved from http://lk.chm-cbd.net/?page_id=176

9 Punyawardena, B.V.R. (2012). *Impact of climate change on agriculture in Sri Lanka and possible response strategies.* CLIMATEnet. Institute of Policy Studies of Sri Lanka. Retrieved from http://climatenet.blogspot.com/2012/09/impact-of-climate-change-on-agriculture_17.html

While agriculture in Sri Lanka has evolved in close harmony with the prevailing climatic conditions of the country, the traditional farming experienes and accumulated knowledge on weather patterns have become less useful in agricultural decision making.

5.4 Climate Change Impact on Food Availability

Climate change affects food availability through its impacts on food production. The direct impacts on food production come through changes in agro-ecological conditions, while the indirect impacts include changes in economic growth and distribution of income, which in turn affect demand for agricultural produce and food production.[10] Adverse climate trends such as changes in rainfall patterns can reduce the quantity of land available for crop production; increasing ambient temperature can reduce crop productivity and yield levels; in turn, the income levels of farmers will suffer.

Domestic food availability in Sri Lanka is dependent on local production and imports of food crops, livestock products and fish. Domestic agriculture provides more than 85 per cent of the food requirement. Sri Lanka is nearly self-sufficient in rice, the staple diet item of Sri Lankans. The local production of other main food sources – that include vegetables, root crops, and fruits – exceed 75 per cent of total availability (Table 5.1). While Sri Lanka also produces a variety of pulses that include mungbean, cowpea, black gram and soybean, pulses show a low share of local supply (3 per cent) due to heavy importation of dhal and chick pea. Fish and poultry meat are the major animal protein sources of the Sri Lankan diet. The domestic production share of animal protein products exceed 98 per cent, except for processed products such as dried fish, canned fish and powdered milk. Sri Lanka's food import basket mainly consists of wheat, sugar, pulses and milk powder.

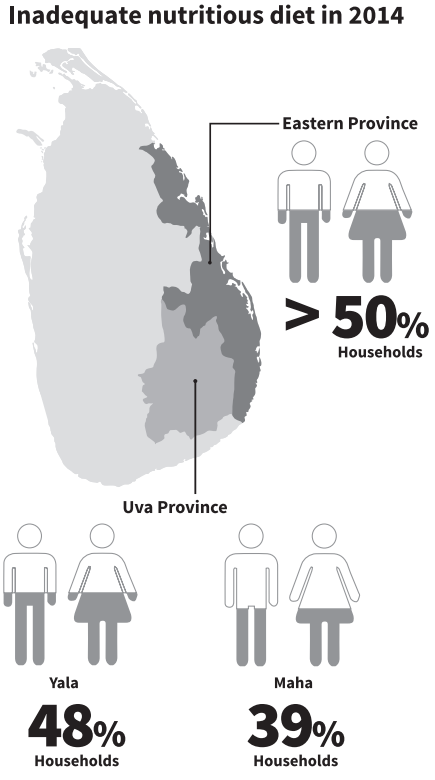
[10] World Food Programme. (2012). *Climate impacts on food security and nutrition: A review of existing knowledge.* WFP's Office for Climate Change. London, United Kingdom: Environment and Disaster Risk Reduction.

Table 5.1
Availability of Major Food Categories in Sri Lanka, 2014

Food Category	Production		Gross Imports		Available Supply[a]	Food Net[b]	Food (G/day)
	Quantity (000 ' Mt)	% Supply	Quantity (000 ' Mt)	% Supply			
Cereals	4,835.4	90.3	522.0	9.7	5,356.8	3,477.3	469.4
Roots and tubers	421.9	77.4	123.2	22.6	545.1	411.6	54.9
Sugar	54.9	9.3	539.0	90.9	592.9	556.5	75.1
Pulses and nuts	73.2	31.2	161.7	68.9	234.9	224.5	30.3
Vegetable	1,055.7	86.4	184.3	15.1	1,221.4	1,109.0	149.7
Fruits	609.8	94.8	62.5	9.7	643.1	631.9	85.3
Meat	162.1	98.3	2.8	1.7	164.8	164.8	22.3
Eggs	92.8	100.0	0.0	0.0	92.8	91.1	12.3
Fish	582.2	91.5	75.3	11.8	636.1	329.1	44.4
Milk	307.4	77.3	90.0	22.6	397.8	298.7	40.3
Oil and fats	939.4	102.4	18.5	2.0	917.5	755.2	101.9
Total	9,134.7	84.6	1,779.2	16.5	10,803.1	8,049.8	1,085.9

Notes: a: (Production + Imports) - (Change in Stocks + Exports); b: Quantities for seed, animal feed, waste, processing and manufacturing are excluded.
Source: Department of Census and Statistics. (2014). Food balance sheets 2014. Colombo, Sri Lanka : Department of Census and Statistics

Gradual changes in climatic conditions have already affected the production of domestic crops, including Sri Lanka's staple food rice, and extreme climate events threaten to worsen this. At the beginning of 2016, Sri Lanka faced the worst drought in 40 years, severely affecting the agricultural production in the country.[11] This situation was further exacerbated by severe floods in mid-2017 in the south-western parts of Sri Lanka. The impact of continuing dry spells and severe floods was disastrous for the country's food production. The Yala 2016 (May-September) – the first cultivation season following the drought – recorded a 20 per cent drop in both production as well as the extent of cultivation of rice relative to comparative figures for 2015. The main harvest season of Maha 2017 (December 2016-February 2017) achieved only a half of the rice production/ yield of Maha 2016 (Table 5.2). The Yala 2017 output too showed a further drop in production. Sri Lanka also experienced a similar drop in production/yield in other seasonal food crops too.



[11] Food and Agriculture Organisation, World Food Programme. (2017). *Special report: FAO/WFP crop and food security assessment mission to Sri Lanka*. Rome, Italy: Food and Agriculture Organisation.

Table 5.2
Recent Trends in the Production of Major Food Items (Maha 2015-Yala 2017)

Food Item	Production (Mt) 2015		2016		2017	
	Maha	Yala	Maha	Yala	Maha	Yala
Paddy	2,877	1,942	2,903	1,517	1,474	909
Kurakkan (millet)	7,410	1,510	7,060	1,500	4,468	1,106
Maize	230,870	30,240	207,070	36,890	163,733	32,011
Green gram	7,620	7,440	7,980	6,570	4,896	4,496
Cowpea	7,240	5,040	8,810	4,930	4,937	3,639
Black gram	10,610	1,290	9,000	2,200	5,207	2,082
Gingelly	3,190	10,090	2,490	9,930	2,054	5,700
Potatoes	54,310	43,080	48,540	47,260	28,381	44,977
Red onion	35,210	25,990	35,480	28,190	33,407	24,340
Big onion	4,590	84,740	7,550	57,670	3,226	50,377
Chillies (green)	42,830	20,040	50,720	21,590	30,690	21,137

Source: Department of Census and Statistics (2017). Agriculture statistics. Retrieved from http://www.statistics.gov.lk/agriculture/

A significant amount of foreign exchange is spent annually on the import of sugar, wheat, milk products and fish which are the biggest imported food items in value terms. These three items accounted for 52 per cent of total food and beverages import expenditure and 10 per cent of total imports in 2017.[12] Though Sri Lanka has almost achieved self-sufficiency in its staple food, i.e. rice, it is compelled to import rice during periods of adverse weather conditions in the country to fill the shortfall, and to control escalating prices. In its history, Sri Lanka spent the largest amount for importing rice in 2017, when production dropped by 46 per cent due to adverse weather conditions (Table 5.3).

Table 5.3
Recent Trends in Major Food Imports (Rs. Mn.) (2015 -2017)

Food Item	2015	2016	2017
Food and beverages	269,486	273,257	335,040
Sugar	34,164	49,919	39,041
Milk	34,088	36,338	48,145
Fish	29,799	34,130	32,685
Wheat and maize	48,658	36,221	54,394
Rice	17,956	1,872	45,881

Source: Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

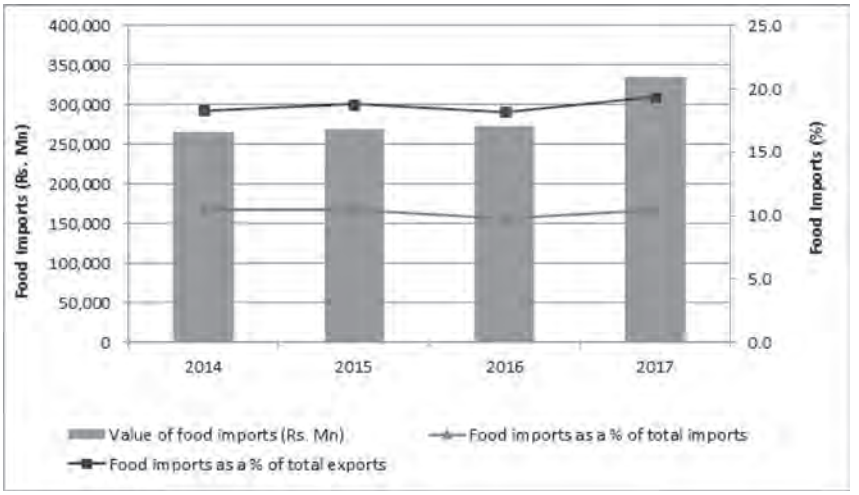
[12] Wheat and maize which have been categorized as intermediate goods in CBSL *Annual Report 2016* have been considered under food and beverages for statistical purposes.

Although food imports have been increasing in absolute terms, its share in total available supply, in total imports and total exports has been declining slightly or has been constant in recent years (Figure 5.3). Also, the value of agricultural exports was sufficient to cover the food import value without placing much pressure on the balance of payments. However, the escalation of imports due to climate change added a significant burden on the local economy.

temperature (1.0°C-1.1°C in 2030, 1.3°C-1.8°C in 2050, and 2.3°C-3.6°C in 2080) and precipitation (3.6-11.0 per cent in 2030, 15.8-25.0 per cent in 2050, and 31.3-39.6 per cent in 2080).[13] These changes, along with the increasingly frequent occurrence of extreme rainfall events such as droughts and floods, can have negative impacts on agricultural production and food availability.[14]

Studies have projected that climate change will

Figure 5.3
Values of Food Imports in Absolute and Proportional Terms



Source: Central Bank of Sri Lanka. (2017). Annual report. Colombo, Sri Lanka: Central Bank of Sri Lanka.

Crop and climate models have also been used to assess the potential impact of climate change on the yield and availability of food. The results indicate that temperature and rainfall variability are continuously increasing, and affecting land suitability and crop yields. Regional climate model projections indicate a consistent increase in

negatively affect rice yields in different agro-climatic zones of Sri Lanka (Table 5.4). The projected drop in rice yields can vary from 1.3 per cent in upcountry intermediate zones during the Maha season to 6.5 per cent in low country dry zones during the Yala season by 2030. Similar variations could be seen in 2050 and 2080

[13] Ahmed, M., & Suphachalasai, S. (2014). *Assessing the costs of climate change and adaptation in South Asia.* Manila, Philippines: Asian Development Bank.

[14] Punyawardena, B.V.R. (2012). *Impact of climate change on agriculture in Sri Lanka and possible response strategies.* CLIMATEnet. Institute of Policy Studies of Sri Lanka. Retrieved from http://climatenet.blogspot.com/2012/09/impact-of-climate-change-on-agriculture_17.html.

projections. Overall, the projected yield drop is higher in the Yala season and low country dry and intermediate zones which are predominantly agricultural, and as such is indicative of the significant impact of climate change on Sri Lanka's food production.

5.5 Climate Change Impact on Access to Food

Climate change can affect food access – i.e. the ability of individuals to obtain sufficient quantities

Table 5.4
Impact of Climate Change on Rice Yields in Different Agro-climatic Zones in Sri Lanka

Agro-climatic Zone	Current Yield (Kg/ha)		% Change in 2030		% Change in 2050		% Change in 2080	
	Maha	Yala	Maha	Yala	Maha	Yala	Maha	Yala
Dry-Low	3,498	3,863	-4.2	-6.5	-16.1	-19.8	-29.1	-34.2
Intermediate-Low	4,885	4,612	-2.7	-3.5	-10.6	-15.1	-24.8	-31.5
Intermediate-Mid	4,992	4,761	-1.9	-3.1	-9.3	-12.7	-22.5	-30.3
Intermediate-Upland	3,492	2,955	-1.3	-2.7	-7.5	-11.4	-20.3	-27.5
Wet-Low	3,910	3,711	-0.9	-1.5	-6.0	-10.4	-19.4	-25.1
Wet-Mid	3,538	2,795	-0.8	-1.4	-3.6	-8.2	-18.3	-23.6
Wet-Upland	3,134	2,706	5.7	3.1	2.1	-2.0	-8.6	-12.4

Source: Ahmed, M., & Suphachalasai, S. (2014). *Assessing the costs of climate change and adaptation in South Asia.* Manila, Philippines: Asian Development Bank.

Other seasonal crops too will face similar consequences from climate change. Temperature and rainfall variability was found to influence maize production, which is the second largest cereal crop grown in the country. Higher temperature negatively affects the maize yield, while higher rainfall has a positive influence. Research indicates that each 10C increase in temperature reduced yield by 5 per cent during the period 1990–2010.[15] Since the temperatures in the major maize-growing areas are above the optimum temperature, further increases in temperature will potentially have significant negative impacts on maize production in the future.[16]

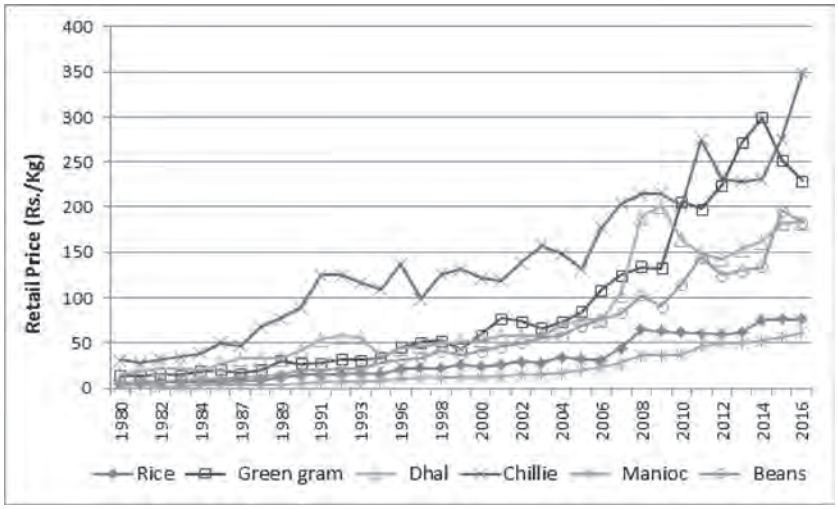
of good-quality food. Food prices and income are the two major factors determining the access to food by households. Climate change induced low levels of agricultural production can result in diminished income for farmers and higher food prices for consumers. Figures 5.4 and 5.5 illustrate the nominal and real prices of selected food crops. Over the last thirty years, despite the rise in nominal prices, all these crops have witnessed a price decrease in real terms over the same period.

While this might have increased the purchasing power in Sri Lanka, recent market volatility,

[15] Karunaratne, A., & Wheeler, T. (2015). Observed relationships between maize yield and climate in Sri Lanka. *Agronomy Journal,* 107(1), 395–405.

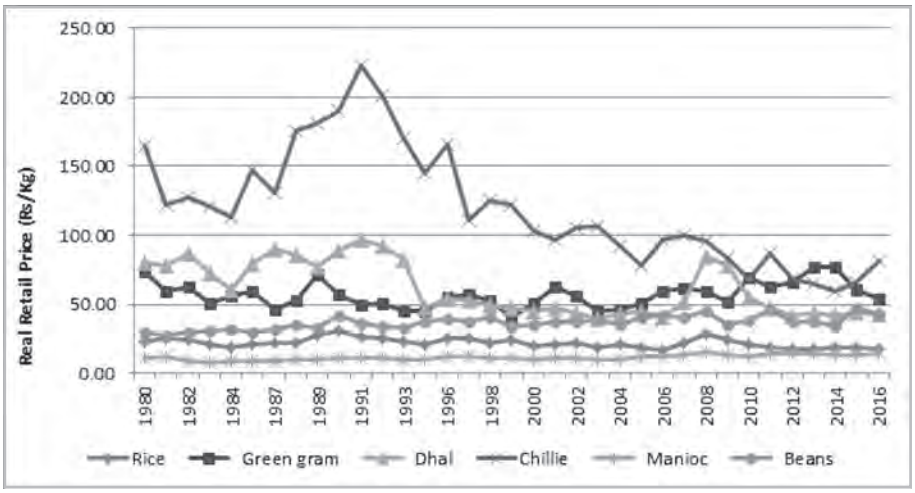
[16] Jacobs, B., Esham, M., & Siddighi, B. (2017). Climate change and food security: *A Sri Lankan perspective.* Environment Development and Sustainability. DOI 10.1007/s10668-017-9945-5

Figure 5.4
Average Nominal Consumer Prices of Some Selected Food Commodities



Source: Central Bank of Sri Lanka. (Various Years). *Economic and social statistics of Sri Lanka.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

Figure 5.5
Average Real Consumer Prices of Selected Food Commodities (Rs./Kg)



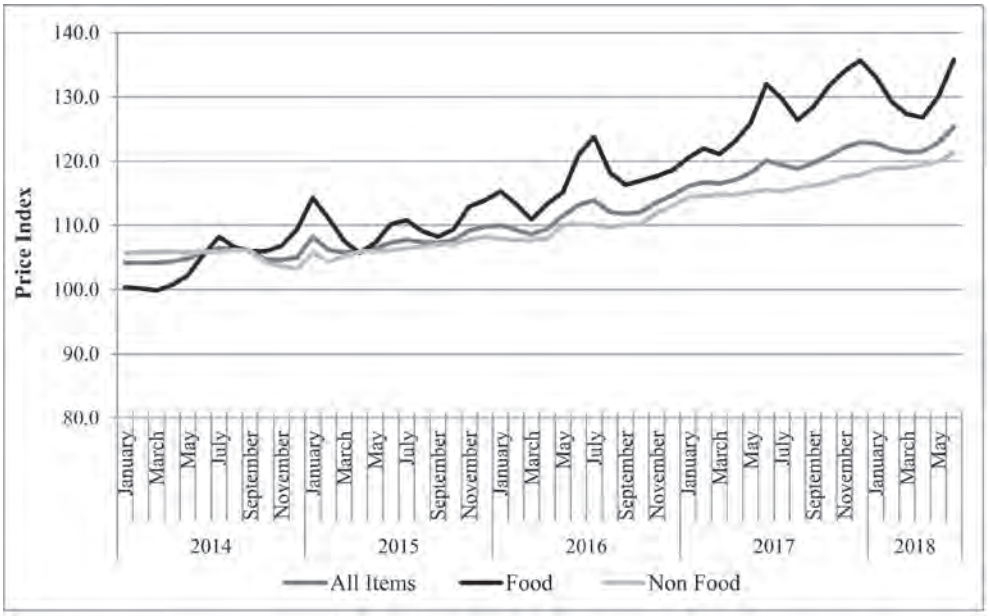
Source: Central Bank of Sri Lanka. (Various Years). *Economic and social statistics of Sri Lanka.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

especially due to climate change, has highlighted the vulnerability of poor and marginalised households to price shocks. Both of these consequences undeniably reduce the purchasing power of people, and thereby limit their access to food. The rural poor are especially vulnerable.

The Food Price Index (FPI) relates the changes in cost and economic access to food by consumers. Up until 2015, the FPI was moving in parallel to the Non Food Price Index (NFPI) and All Item Price Index (AIPI) as seen in Figure 5.6. However, since then, the FPI started to deviate from the NFPI and AIPI with the impacts of climate change on domestic food production. The FPI increased by a staggering 22 per cent from 104.3 in 2014 to 127.5 in 2017, compared to a 10 per cent increase in the NFPI during the same period.

Climate change can also have an impact on rural incomes because agriculture is highly sensitive to climate patterns, and changes in temperature and rainfall can reduce food production and thereby rural incomes.[17] Historically, climate is highly correlated to agricultural incomes. Therefore, non optimal temperatures and erratic precipitation are likely to result in lower rural incomes, and thus higher levels of rural poverty.[18] The lack of access to sufficient nutritious food due to high cost and low income is a key factor contributing to food insecurity and malnutrition in Sri Lanka. Also, there are regional and seasonal differences when it comes to the affordability of a nutritious diet. The minimum Cost of Diet (COD) estimate of the World Food Programme (WFP) finds that more than 50 per cent of households in the Eastern Province of Sri Lanka could not

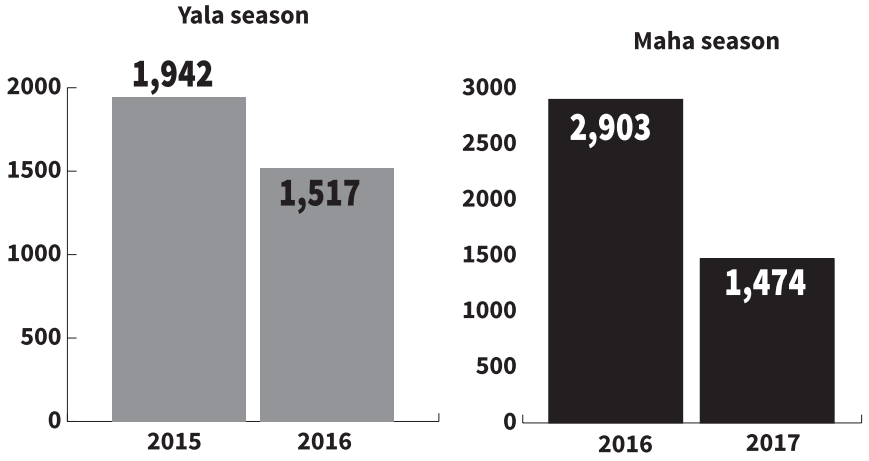
Figure 5.6
Movement of Price Indices (Food, Non Food and All Items)



Source: Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

[17] Morton, J.F. (2007). The impact of climate change on smallholder and subsistence agriculture. *Proceedings of the National Academy of Sciences of the United States of America.* 104(50), 19680-19685. https://doi.org/10.1073/pnas.0701855104

[18] World Food Programme. (2012). *Climate impacts on food security and nutrition: A review of existing knowledge.* WFP's Office for Climate Change, London, United Kingdom; Environment and Disaster Risk Reduction.



afford an adequately nutritious diet in 2014, while this ranges from 39 per cent and 48 per cent (between the Yala/Maha cultivation and harvesting seasons) in the Uva Province.[19]

5.6 Climate Change Impact on Proper Food Utilisation

Nutrition insecurity is a consequence of improper food utilisation, which in turn results from a decrease in food quality, poor dietary diversity, inadequate care, disease spread and poor health conditions (see Figure 5.2). These underlying causes of nutrition security are determined by environmental, economic, and socio-political contextual factors, with poverty having a central role. Climate change can worsen nutrition insecurity.[20] Climate change can also have an impact on food and nutrition security by lowering food availability and access, and thereby affecting calorie consumption that results in poor nutrition outcomes. Increases in food prices due to climate change can reduce dietary diversity and nutritional value of the diet, which impacts on nutritional status. Empirical evidence suggests that climate-related shocks (particularly droughts) impact dietary diversity and reduce overall food consumption with long-term detrimental effects on stunting.[21]

Climate change might have impacts on different diseases including diarrhoea, respiratory illness, as well as water-borne and food-borne diseases through changes in environment suitability.[22] These diseases will demand more nutrition for the affected people, while simultaneously reducing the absorption of nutrients and their utilisation by the body. Further, health can be impacted through disease spread as a result of extreme climate events. This situation becomes worse

[19] World Food Programme, Ministry of Agriculture, Hector Kobbekaduwa Agrarian Research and Training Institute. (2015). *Minimum cost of nutritious diet Sri Lanka* - October 2013-September 2014. Colombo, Sri Lanka; World Food Programme.
[20] World Food Programme. (2012). *Climate impacts on food security and nutrition: A review of existing knowledge.* WFP's Office for Climate Change. London, United Kingdom: Environment and Disaster Risk Reduction.
[21] Intergovernmental Panel on Climate Change. (2007). *Fourth assessment report.* Cambridge, United Kingdom: Cambridge University Press.
[22] *Ibid*

when women suffer from such diseases because women's health is very important to provide proper care to children in order to reduce the risk of under nutrition. Moreover, difficulty in accessing clean drinking water and proper sanitation due to climate change **c**an exacerbate inadequate care practices.

The impacts of poor utilisation of nutritious food are clearly visible in recent national and global food security indicators. Malnutrition is a good indicator to determine whether households are food secure. Average data for 2014-2016 indicate that nearly 4.6 million people, equivalent to 22 per cent of the total population in Sri Lanka, are estimated to be undernourished.[23] The Global Nutrition Report 2016 ranks Sri Lanka among the countries with the highest wasting (low weight for height) prevalence (21.4 per cent).[24] FAO data indicate a comparatively higher level of underweight (26.3 per cent) in Sri Lanka. Moreover, according to the National Strategic Review of Food Security and Nutrition, severe regional disparities exist in the prevalence of malnutrition, with highly vulnerable farming areas representing the highest levels of malnutrition. For example, Kilinochchi, Monaragala, Mullaitivu, Polonnaruwa and Trincomalee show the highest prevalence of wasting and underweight in Sri Lanka.[25]

Rising temperatures and rainfall variability can expand pest and disease problems and affect the quality of food production, and thereby the quality of food consumption. Moreover, rainfall variability and extreme rainfall events have serious implications on pre and post-harvest handling and operations, as dry conditions are required for these operations. This determines the quality of the final product that goes to the end consumer. Storage losses due to climate impacts such as high temperatures and extreme rainfall events can deteriorate the quality of food products, and affect proper utilisation of nutritious food by the people. [26]

5.7 Stability and Climate Resilience

Despite improved food availability and access in Sri Lanka, whether the country is producing enough food for its future is a serious challenge due to the constantly rising national requirement, owing to population growth and the growth of real per capita income. Climate change affects both the food supply stability and food consumption stability through its impacts on food production, access to food and food utilisation. Thus, improving climate resilience for farmers to manage the shocks with no long lasting adverse effects is very important to achieve the stability aspect of food security. However, the GFSI shows that Sri Lanka's resilience to natural resource and climate-related risks is at an average level, posing long-term threats to food security in the country (Figure 5.7).

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[23] Food and Agriculture Organisation of the United Nations. *FAOSTAT.* Retrieved from http://www.fao.org/faostat/en/#data/FS[24] World Food Programme. (2012). *Climate impacts on food security and nutrition: A review of existing knowledge.* WFP's Office for Climate Change. London, United Kingdom: Environment and Disaster Risk Reduction.

[24] International Food Policy Research Institute. (2016). *Global nutrition report 2016: From promise to impact: Ending malnutrition by 2030.* Retrieved from http://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/130354/filename/130565.pdf

[25] World Food Programme. (2017). *National strategic review of food security and nutrition towards zero hunger.* Colombo, Sri Lanka: World Food Programme.

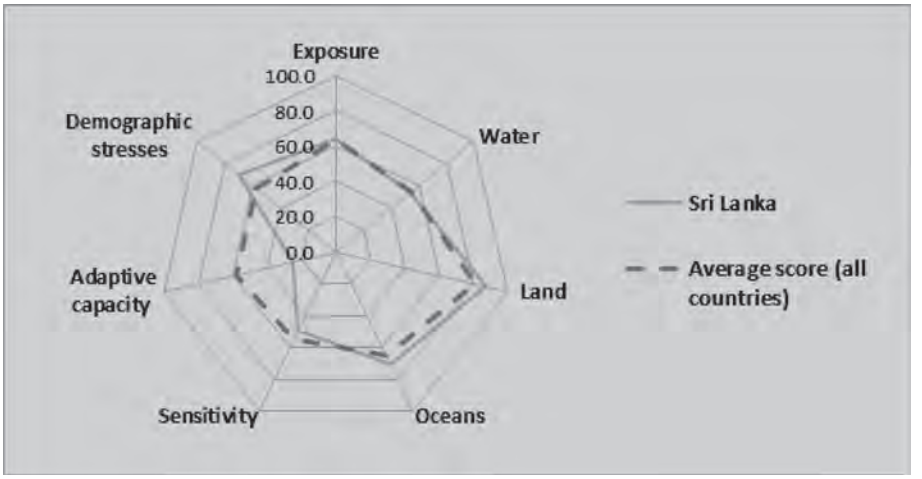
[26] Jacobs, B., Esham, M., & Siddighi, B. (2017). *Climate change and food security: A Sri Lankan perspective.* Environment Development and Sustainability. DOI 10.1007/s10668-017-9945-5.

While the Mahaweli mixed farming and live-stock zone and the coconut triangle zone have relatively better food security, higher livelihood diversity and less climate sensitivity, the livelihood resilience of these zones can be easily challenged by extreme climate conditions such as droughts.

Nearly 80 per cent of Sri Lanka's population is considered rural, and those rural livelihoods are greatly reliant on agriculture and allied industries. Based on 20 different livelihood zones identified by the WFP, the most resilient livelihood group in Sri Lanka belongs to the Mahaweli mixed farming and livestock zone and the coconut triangle zone, primarily due to high diversity of income and food sources, relatively good access to major economic cities and access to micro tanks.[27] While these zones have relatively better food security, higher livelihood diversity and less climate sensitivity, the livelihood resilience of these zones could be easily challenged by extreme climate conditions such as droughts. The least resilient groups are the poor households in the north, tea estates and south-eastern parts of the country. Northern fishers have low resilience due to frequent storms and cyclones, while the poorest households in the tea estates have low resilience due to very limited livelihood diversity. The south-eastern rain-fed farming zone also has poor levels of resilience due to the high sensitivity of their income source to climate variability.

[27] World Food Programme and Ministry of Economic Development. (2015). *Atlas of Sri Lanka: Livelihoods, food security and resilience.* Colombo, Sri Lanka: World Food Programme.

Figure 5.7
Resilience to Natural Resource and Climate-related Risks



Note: Score 0-100 where 100 is the best.
Source: The Economist. (2017). Natural resources and resilience ranking. Retrieved from https://foodsecurityindex.eiu.com/Index/AdjustmentFactorRankings

5.8 Way Forward

Food security in Sri Lanka still remains an unachieved social and economic goal in spite of numerous interventions by consecutive governments to rectify the situation. This situation is undoubtedly a consequence of the inherently multi-dimensional nature of the problem that calls for simultaneous action from multiple directions by numerous organisations, which is lacking at present. There is an emerging consensus that climate change, particularly a rise in temperature, rainfall variability and extreme events, can have detrimental impacts on food security of the most vulnerable people with poor resilience, in the absence of adaptation. While Sri Lanka is trying to move in the right direction to achieve SDGs by 2030, the challenges posed by climate shocks have made it difficult to reach the goals pertaining to sustainable agriculture and food security. Since climate change is the current reality, agricultural systems must adapt accordingly to avoid the harmful consequences of climate risks. Achieving the goal of food security requires urgent action to make the food production systems both climate resilient and nutrition sensitive.

Climate-smart agriculture (CSA) is an approach that transforms agricultural systems to effectively support farming livelihoods and ensure food security in the current context. CSA can prevent the worst impacts of climate change on farm livelihoods, and help make people less vulnerable to food insecurity and poverty. CSA highlights that climate threats can be reduced by increasing the adaptive capacity of farmers, as well as by increasing the resilience and efficiency of resource use in agricultural production systems. While reducing the agriculture sector's contribution to climate change is less of a priority for Sri Lanka, more importantly, farming communities need to adjust their livelihood patterns to sustainably increase their production and income. This

demonstrates that the solutions for climate risks and food insecurity can be derived from making agriculture climate smart.

Sri Lanka is off to a good start when it comes to making agriculture climate smart. The government has developed a National Adaptation Plan (NAP) to help adapt to climate change. The National Agriculture Policy, undertaken by the Ministry of Agriculture includes climate change adaptation as a main priority. While different CSA strategies, including developing tolerant varieties, promoting water efficient farming methods, and adjusting cropping calendars according to climate forecasts have been proposed, Sri Lanka is still behind in terms of developing systems for timely issuing and communication of climate related information to farmers. Moreover, even though resilience is embedded in traditional knowledge, none of the policy responses to climate change support and enhance indigenous resilience. Therefore, CSA practices should be tailored to the specific characteristics of the local farming systems and local socio-economic conditions. This requires a well-articulated information management system coupled with improved small holder access to finances, resources and markets.

Large numbers of different government agencies and institutions have been involved in enforcing food and nutrition policies and implementing the programmes under these. This has resulted in serious problems of coordination, collaboration and implementation failures. In any attempts to achieve the food security goal in Sri Lanka, this fundamental problem of coordination and inter-agency friction has to be eliminated. If the number of agencies and institutions cannot be reduced, the overall food security and nutrition initiative of Sri Lanka should essentially be placed under the command of a capable personality at the highest level of authority.

While different climate-smart strategies such as developing tolerant varieties, promoting water efficient farming methods, and adjusting cropping calendars to climate forecasts have been proposed, Sri Lanka is still behind in timely issuing and communication of climate related information to farmers.

A positive start has been made with the establishment of a National Nutrition Council under the purview of the President of Sri Lanka and the preparation of a MSAPN within which different ministries and other stakeholders have specific mandates to implement within their policy frameworks and strategies. However, there is still little cross-sectoral collaboration at the community level across health, agriculture, education, and poverty reduction/social development sectors. Also, harmonisation of food security related activities under the National Agricultural Policy and Action Plan, the MSAPN, NAP and other plans and programmes in individual ministries related to food security and nutrition in Sri Lanka needs to be undertaken.

6. Climate Change and Disasters: Managing Risks in Sri Lanka

6.1 Introduction

Natural disasters which have now become more recurrent have multiple impacts on Sri Lanka's economic development process. Erratic rainfall patterns followed by floods and droughts in the recent past have brought about notable economic destruction in numerous ways. Thus, disaster risk management (DRM) can no longer be a second priority for Sri Lanka. Given the escalating impacts of natural disasters on the economy and development prospects, comprehensive DRM should be viewed unquestionably as a necessity.

Natural disaster risks are a key element among overall risks and uncertainties faced by Sri Lanka. As per the Inform Global Risk Index that measures the risk of humanitarian crises and natural disasters in 191 countries, Sri Lanka's risk index for natural disasters is recorded as 4.9 as opposed to a risk index of 4.0 for human related risks. The index takes into account hazard and exposure, vulnerability and capacity to cope. Among climate-induced natural disasters, the highest risk index is for floods (6.2) followed by droughts (3.6) and tropical cyclones (3.5).[1]

The impacts of disasters are felt disproportionately among economic sectors and across socio-economic segments. Agriculture and associated food security sub-sectors were hit hard by recent floods and droughts in Sri Lanka. The resultant impacts were notable both at macro and micro levels. Sri Lanka's food import bill increased as crops in many agricultural districts were destroyed due to the disaster events. At the micro level, farmers continue to face severe socio-economic problems due to loss of income from agriculture over several seasons sequentially. While, DRM aspects pay attention to all economic sectors, the agriculture sector should receive more emphasis due to the resultant food security impacts and an array of other social and economic impacts within the sector and beyond.

Systematic approaches are a must in moving towards a disaster resilient economy and ensuring that disasters have a minimal impact on possible delays in meeting development targets. This should cover all aspects, starting from disaster preparedness to post-disaster recovery activities. Though notable policy improvements have taken place in DRM in Sri Lanka, there are many more aspects that need policy attention.

In this background, this chapter aims to understand the specific economic and social costs of climate-induced disasters on the Sri Lankan economy in general, and on the agriculture sector more specifically. While assessing the current situation and gaps in improving disaster resilience, the

[1] Inform Global Risk Index 2018. Retrieved from http://www.inform-index.org/

chapter also outlines the policy implications for improving disaster resilience in the country.

6.2 Economic and Social Costs of Climate-induced Disasters

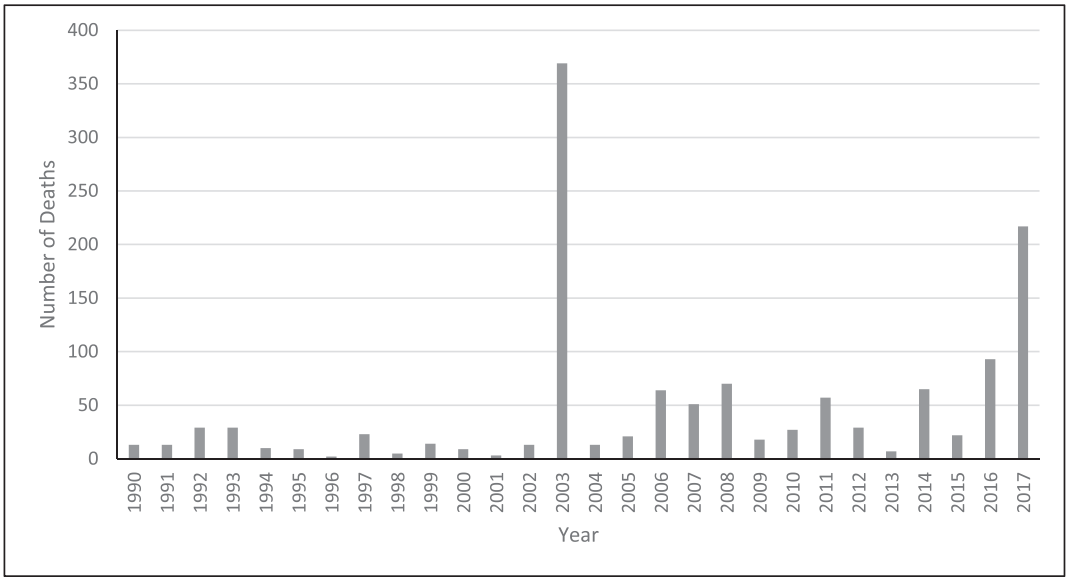
Natural disasters bring in an array of social and economic costs, which are often hard to quantify in an inclusive manner. These include social and economic costs.

6.2.1 Social Costs

Social costs of disasters mainly include loss of lives, injuries and loss of assets. Over the last couple of decades, the loss of lives due to climate-induced disasters (floods, cyclones, landslides, heavy rains) has become considerable in Sri Lanka due to the more recurrent nature of such disaster incidents (Figure 6.1). A large number of people were directly and indirectly affected by these natural disaster events. These also lead to loss of assets, which are difficult to recover, particularly for low-income households.

The Post Disaster Needs Assessment (PDNA) carried out for floods and landslides that impacted Sri Lanka in May 2016 shows that disaster effects are felt more by the social sectors, as opposed to productive sectors, infrastructure sectors and cross-cutting sectors.[2] The social sectors covered by the PDNA include i) housing, land and settlements; ii) health and nutrition; and iii) education. Out of the total estimated impact of the disasters, the impact on social sectors is quantified as 57 per cent.

Figure 6.1
Number of Deaths due to Natural Disasters (1990 – 2017)



Notes: Natural disasters here include floods, cyclones, landslides and heavy rains. This excludes tsunami incident in 2004.
Source: Retrieved from www.desinvetar.lk

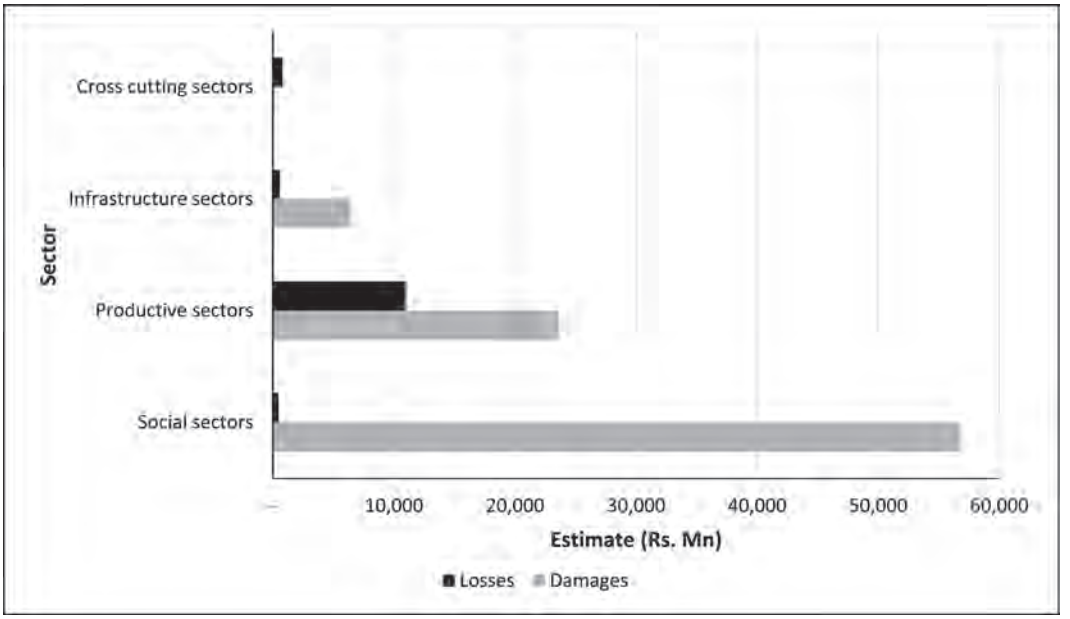
[2] Sri Lanka Post Disaster Needs Assessment. (2016). *Floods and landslides – May 2016.* Colombo, Sri Lanka: Ministry of Disaster Management, Ministry of National Policies and Economic Affairs.

With regard to social sectors, it is notable that estimated damages – i.e. total or partial destruction of physical assets during the disaster event – are significantly higher when compared to the estimated losses – i.e. changes in economic flows that occur after the event over a relatively longer time period (Figure 6.2). Social sector damages are mainly accounted for by the impacts on housing, land and settlements.

6.2.2 Economic Costs

There have been several efforts to quantify the macroeconomic costs of recent natural disasters in Sri Lanka. A preliminary analysis carried out using historical direct and indirect losses arising from physical and property damage and relief assistance shows that annual aggregate losses due to natural disasters (flood, landslides, and cyclone) excluding the 2004 tsunami, amounts

Figure 6.2
Estimated Losses and Damages of Floods and Landslides in 2016, by Sector



Source: Sri Lanka Post Disaster Needs Assessment. (2016). *Floods and landslides – May 2016.* Colombo, Sri Lanka: Ministry of Disaster Management, Ministry of National Policies and Economic Affairs.

Undeniably, the losses in the productive sectors are significantly higher than that of the social and infrastructure sectors. This is because the disaster impacts of productive sectors – which include food security, agriculture, livestock, fisheries and industry and services – are felt more in terms of economic flows in the aftermath of disasters, as losses.

to 0.5 per cent of gross domestic product (GDP) or equivalent to 3 per cent of government expenditure (Table 6.1). The breakdown by peril shows that costs are relatively high in the case of floods.[3]

Climate-induced disasters have become a major risk factor particularly in Sri Lanka's agriculture

[3] World Bank. (2016). *Fiscal disaster risk assessment and risk financing options Sri Lanka.* Washington D.C.: World Bank.

Table 6.1
Annual Aggregate Housing/Roads/Relief Losses for Sri Lanka, by Peril

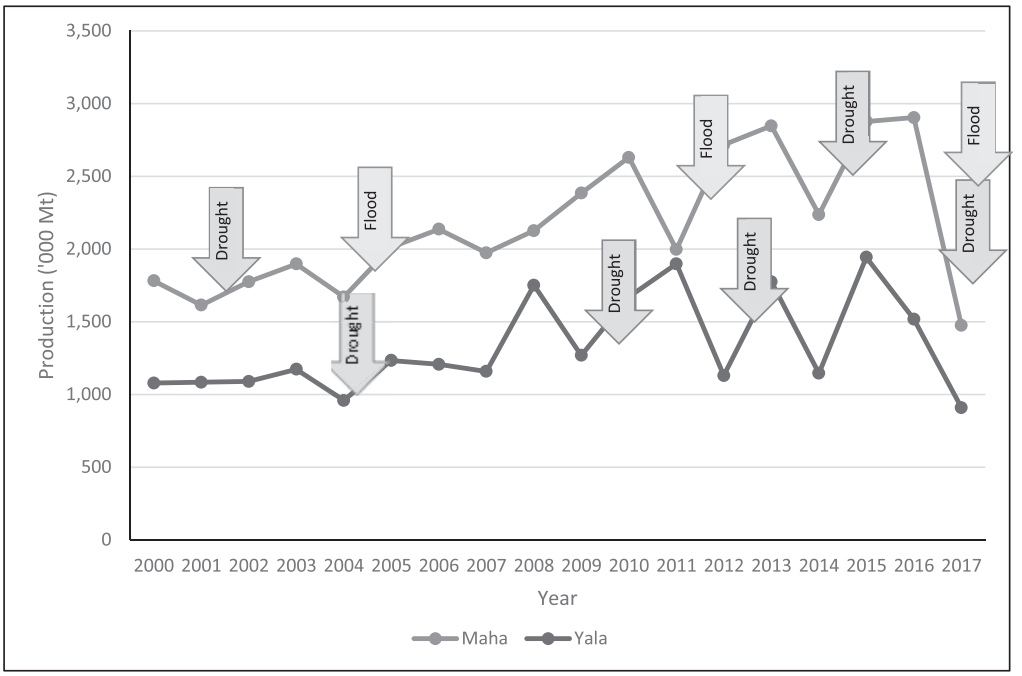
Loss measurement	Flood	Landslide	Drought	Cyclone	Total
Loss (Rs.billion)	31.70	1.80	5.20	10.9	50.0
Percentage of GDP	0.32	0.02	0.05	0.11	0.50
Percentage of total government expenditure	1.90	0.11	0.31	0.65	3.00

Source: World Bank. (2016). *Fiscal disaster risk assessment and risk financing options Sri Lanka.* Washington D.C.: World Bank.

sector, especially over the last few years. Frequent natural disasters have increased the risks and uncertainties associated with agriculture. Clear production losses can be observed in cultivation seasons which are affected by droughts or floods. For instance, the variation in paddy production by season confirms the sector's susceptibility to natural disaster incidents (Figure 6.3).

The estimated total damages and losses for the agriculture sector due to floods and landslides experienced in 2016 were recorded as Rs. 1,698 million and Rs. 1,902 million respectively, as per the PDNA carried out in the aftermath of these disasters. This is inclusive of crop cultivation, livestock, fishery and aquaculture sub-sectors. The estimated cost for loss of paddy alone is Rs.

Figure 6.3
Paddy Production in Sri Lanka, by Season (2000 - 2017)



Source: Department of Census and Statistics. (2017). Statistical abstract. Colombo, Sri Lanka: Department of Census and Statistics; Central Bank of Sri Lanka. (Various Years). Annual reports. Colombo Sri Lanka: Central Bank of Sri Lanka.

553 million. The districts of Jaffna, Anuradhapura, and Mullaitivu were the most severely affected.

A survey carried out in the Anuradhapura district reveals that climate related disasters and rainfall uncertainties are prominent among a number of risks/uncertainties faced by farmers (Table 6.2). The impact of a drought which prevailed in 2016/2017 in Sri Lanka indicated that food insecurity became a major problem in the affected areas. This is mainly due to the impact on the household economy. The same assessment estimates that more than one-third of income had been lost for over 60 per cent of the drought affected households. Further, more than 20 per cent of farmers were found to lack seed paddy for cultivation in the next season.[4]

Farmers often adopt ineffective risk management strategies, due to lack of availability of proper DRM strategies. The vicious cycle of debt among farming communities has been a long discussed issue, and continues to be a prominent problem in these communities. Borrowings remain the main risk management strategy of farmers in the aftermath of natural disasters (Table 6.3). Notably, borrowing from formal sources such as banks, community-based organisations (CBOs), non-governmental organisations (NGOs) is considerably less; most farmers opt to borrow by pawning jewellery and tapping into other informal sources.[5]

Table 6.2
Risks and Uncertainties faced by Farmers in the Anuradhapura District

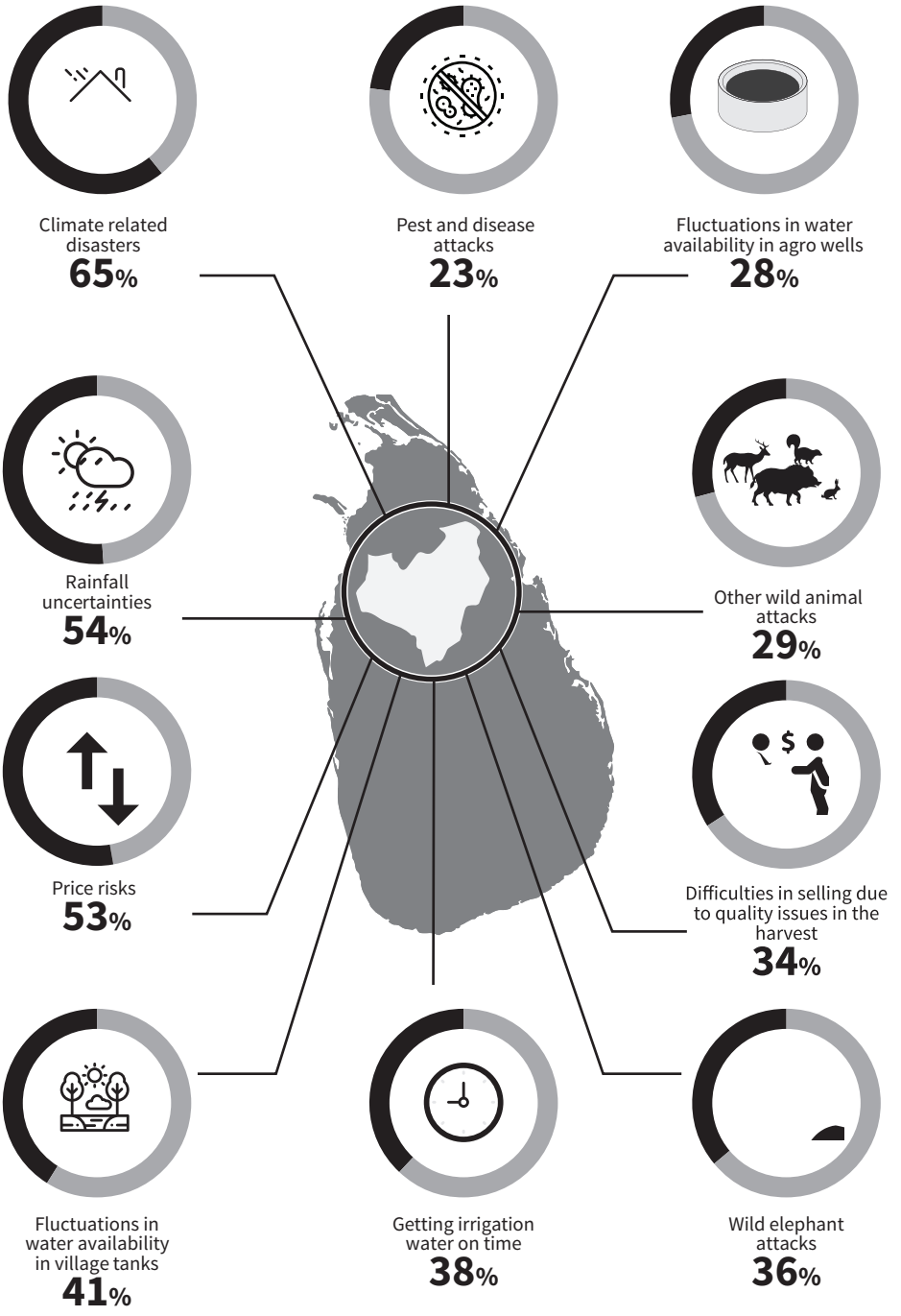
Risk/Uncertainty	Percentage of Respondents
Climate related disasters	65
Rainfall uncertainties	54
Price risks	53
Fluctuations in water availability in village tanks	41
Getting irrigation water on time	38
Wild elephant attacks	36
Difficulties in selling due to quality issues in the harvest	34
Other wild animal attacks	29
Fluctuations in water availability in agro wells	28
Pest and disease attacks	23

Source: Wickramasinghe, K. (2017). Climate insurance for dry zone farmers in Sri Lanka. Policy Insights, Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

[4] Ministry of Disaster Management, National Disaster Relief Services Centre, Disaster Management Centre and Hector Kobbekaduwa Agrarian Research & Training Institute, United Nations World Food Programme. (2017). *Sri Lanka joint assessment of drought impact on food security and livelihoods.* Colombo, Sri Lanka: United Nations World Food Programme.

[5] Wickramasinghe, K. (2017). Climate insurance for dry zone farmers in Sri Lanka. Policy Insights, Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

Risks and Uncertainties faced by Farmers in Anuradhapura District



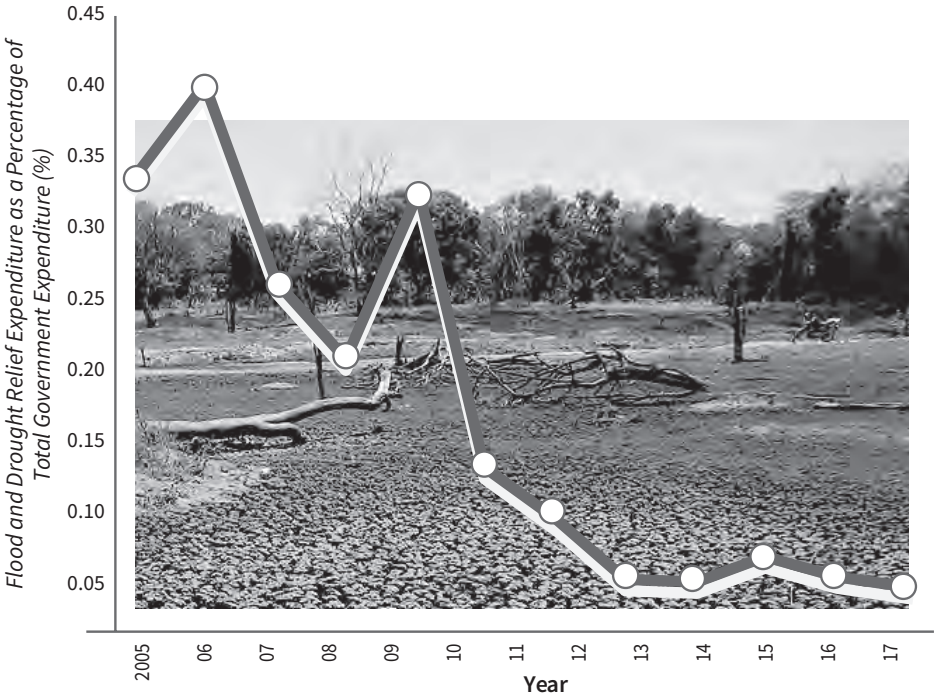
Source: Wickramasinghe, K. (2017). Climate insurance for dry zone farmers in Sri Lanka. Policy Insights, Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

Table 6.3
Risk Management Strategies of Farmers in the Anuradhapura District

Risk Management Strategy	Percentage of Respondent Farmers
Sources of Borrowing	
(a) Pawning jewellery	47
(b) Agricultural loans from formal banks	07
(c) Agricultural loans from CBOs	04
(d) Agricultural loans from NGOs	01
(e) Agricultural loans from informal sources	03
Working as labourers	
(a) Agricultural activities	08
(b) Non -agricultural activities	02
Selling paddy allocated for household consumption	06
Selling vehicles (motorbikes etc.)	01
Other income generating activities	01
Investing money	01
Agricultural insurance	01
Outmigration seeking employment	01

Source: Wickramasinghe, K. (2017). Climate insurance for dry zone farmers in Sri Lanka. *Policy Insights,* Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

Figure 6.4
Flood and Drought Relief Expenditure as a Percentage of Total Government Expenditure (2005 – 2016)



Source: Illustrated using data from Annual Report 2016, Ministry of Finance Sri Lanka.

The government has been incurring significant costs in assisting flood and drought affected households. However, the percentage of flood and drought relief expenditure out of total government expenditure shows a declining trend during the last decade (Figure 6.4). Since climate-induced disasters are becoming more frequent, it is important to take appropriate precautionary measures, in addition to providing relief after a disaster occurs.

6.3 Policy Gaps in Overcoming the Cost of Climate-induced Disasters

Improving disaster resilience has been a key discussion topic in many policy forums in Sri Lanka. Based on the availability of resources and capacities of the agencies involved, the Ministry of Disaster Management (MDM) has developed

Box 6.1
National Targets for DRM Efforts of Sri Lanka (2015 – 2030)

National Target A:	Halving the annual average disaster mortality per 100,000 by 2030 compared to the annual average disaster mortality in the period 2005-2015.
National Target B:	Halving the number of affected people by 2030 compared to the annual average number of affected per 100,000 in the period 2005-2015.
National Target C:	Approximately 50 per cent reduction of direct disaster economic loss in relation to GDP by 2030 compared to the annual average direct economic loss in relation to GDP during the period 2005-2015.
National Target D:	Approximately 75 per cent reduction of disruption of education of children during a disaster by discouraging the use of school buildings as a safe centre.
National Target E:	Over 80 per cent of local authorities located in high risk areas have adopted DRM strategies and plans by 2025.
Global Target F:	Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030.
National Target G:	Total population at risk is covered by multi-hazard early warning systems by 2030.

Source: Ministry of Disaster Management. (2017). Sri Lanka national disaster management plan 2018 – 2030. Colombo, Sri Lanka: Disaster Management Centre, Ministry of Disaster Management.

national targets for disaster risk reduction (DRR) as discussed in Box 6.1. The targets are based on the Sendai Framework for DRR 2015–2030. These cover specific aspects related to reducing the human impacts – in terms of disaster mortality and the number of people affected – as well as the economic impact, the impact on education and local authorities, and enhancing the presence of all-inclusive early warning systems.

In this background, significant policy gaps can be observed in terms of increasing investments in DRM, disaster financing, and insurance sectors. The following sub-sections deal with these aspects in detail.

6.3.1 Investment Planning

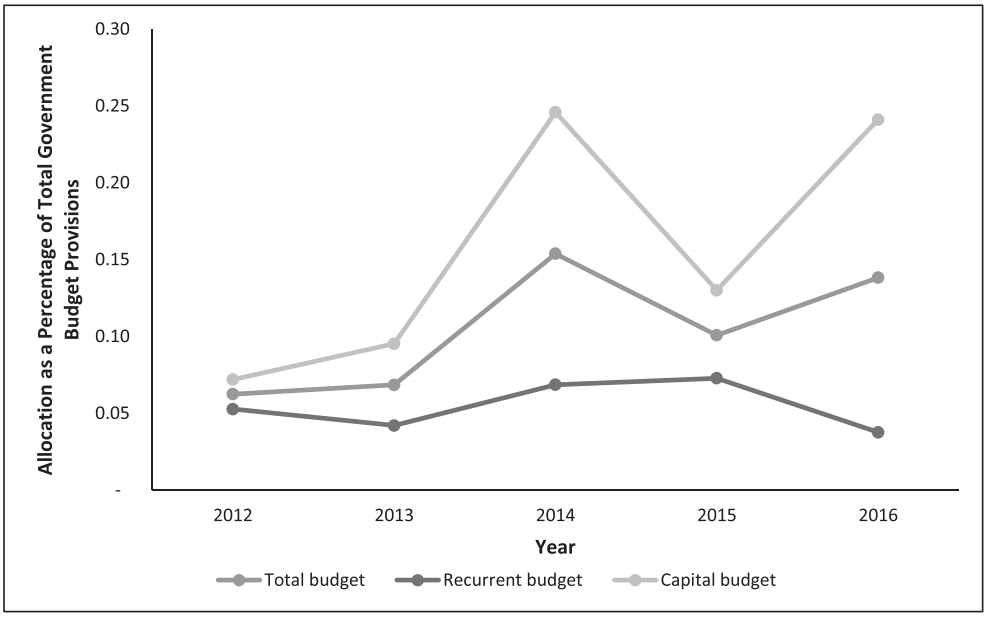
Appropriate investments are a key aspect in reducing disaster risks. Disaster resilience has to be a national priority in Sri Lanka and as such, special emphasis needs to be given to disaster related investment planning.

Disaster resilience has to be a national priority in Sri Lanka and as such, special emphasis needs to be given to disaster related investment planning.

The budget allocation for the MDM as a percentage of total government budget provisions varies across years, but shows an increasing trend in recent years (Figure 6.5). The proportion of capital budget provisions allocated to the MDM (out of total government capital budget provisions) is higher than the proportion of recurrent provisions. In 2016, around 85 per cent of the total budget was allocated for capital expenditure which is utilised for investment related activities of DRM.

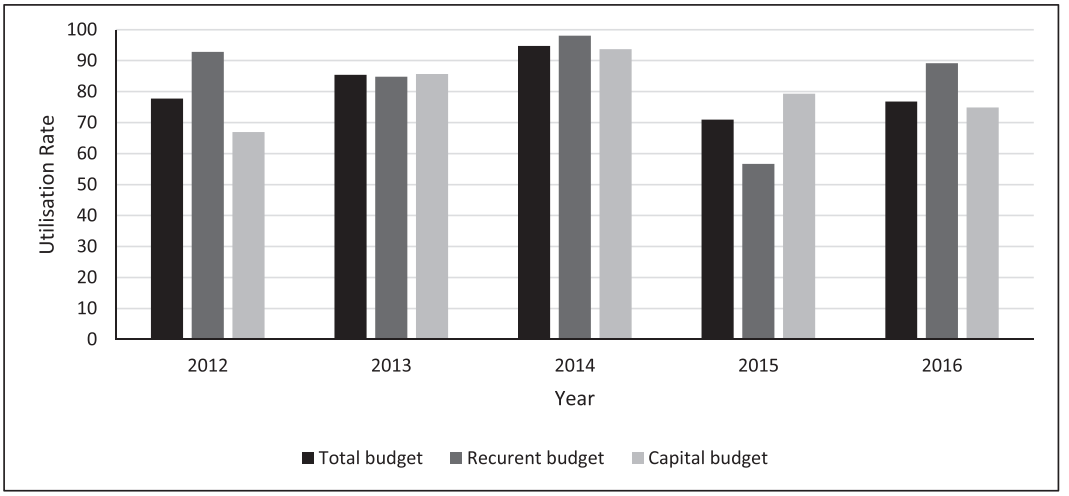
The budget utilisation rate out of the total allocated amounts to the MDM shows that the amount has not been fully utilised for both recurrent and capital expenses (Figure 6.5). For instance in 2015 and 2016, less than 80 per cent of the allocated amounts were spent. Utilisation rates have been also lower for the capital expenditure component in most years. Inadequacy of staff

Figure 6.5
Budget Allocations for the MDM as a Percentage of Total Government Budget Provisions



Source: Illustrated using data from Annual Report 2016, Ministry of Finance Sri Lanka (Various Years).

Figure 6.6
Utilisation Rates of Budget Allocations of the MDM



Source: Illustrated using data from Annual Report 2016, Ministry of Finance Sri Lanka (Various Years).

and issues in formulating project estimates and project implementation are also reasons for the above mentioned underutilisation.

A major reason for underutilisation of the capital budget in 2016 is because donor funded projects have borne capital investment costs directly to avoid possible delays. Consequently, such capital budget allocations for the MDM are largely utilised. Further, due to disaster situations which prevailed in 2016, the disaster training activities planned for the year 2017 had not been conducted. Delays in procurement processes have also impacted underutilisation of the capital budget in the same year.[6] This suggests that there is room on the financial front to expand investments in the area of DRM. Ideally, the allocated funds should be channelled for important and prioritised activities to reduce disaster risks, while taking necessary measures to eliminate the bottlenecks that are usually encountered when implementing the same.

Investments can be made in both structural and non-structural approaches to reduce the impacts of disasters. Structural measures are intended to provide physical protection from disaster impacts and involve a significant amount of funds. Non-structural measures focus on reducing exposure and vulnerability to natural disasters in terms of planning and adaptation. The preparation of hazard maps is an example of this. Such measures generally require lesser amounts of funds.

Preferably, an appropriate policy mix of structural and non-structural measures should be in place to reduce disaster risks effectively. However, as

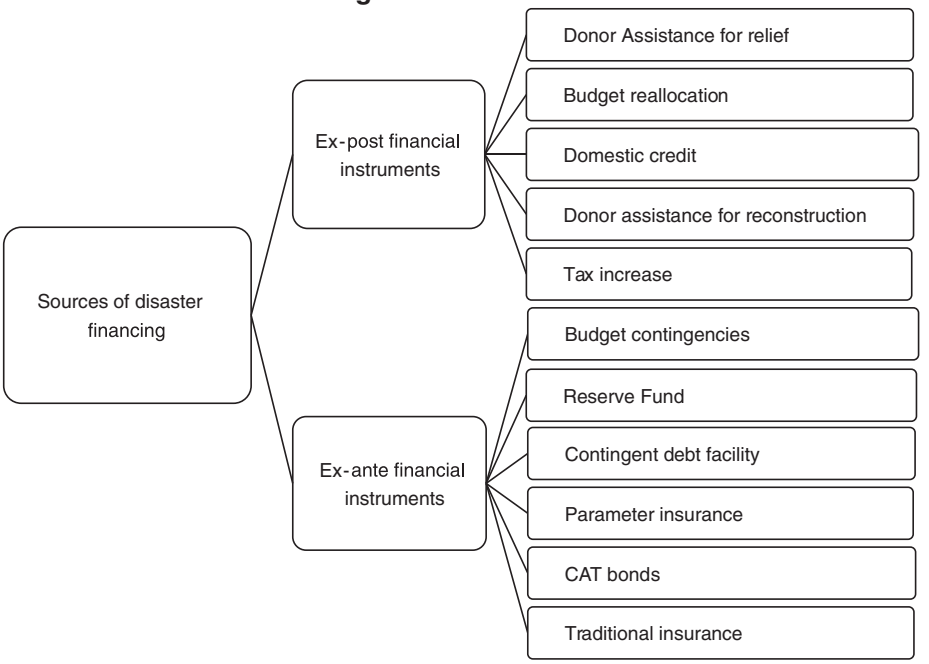
Preferably, an appropriate policy mix of structural and non-structural measures should be in place to reduce disaster risks effectively. But, as the National Disaster Management Plan highlights, investments on structural measures are quite low.

[6] Ministry of Disaster Management. (2017). *Sri Lanka national disaster management plan 2018 – 2030*. Colombo, Sri Lanka: Disaster Management Centre, Ministry of Disaster Management.

highlighted in the National Disaster Management Plan (NDMP 2018-2030), investments on structural measures are quite low. Floods and landslides result in high economic costs. As such, investments are crucial for mitigating floods and landslides in disaster mitigation, which in turn lower the costs of disasters.

Ex-ante budget planning using effective financial tools is always encouraged in disaster financing. This ensures that funds are available, enabling immediate liquidity for post-disaster relief and recovery efforts.

Figure 6.7
Sources of Disaster Financing



Source: Olivier, M., & Ghesquiere, F. (2010). *Financial protection of the state against natural disasters: A primer.* Policy Research Working Paper 5429, Washington, D.C.: World Bank.

6.3.2 Disaster Financing

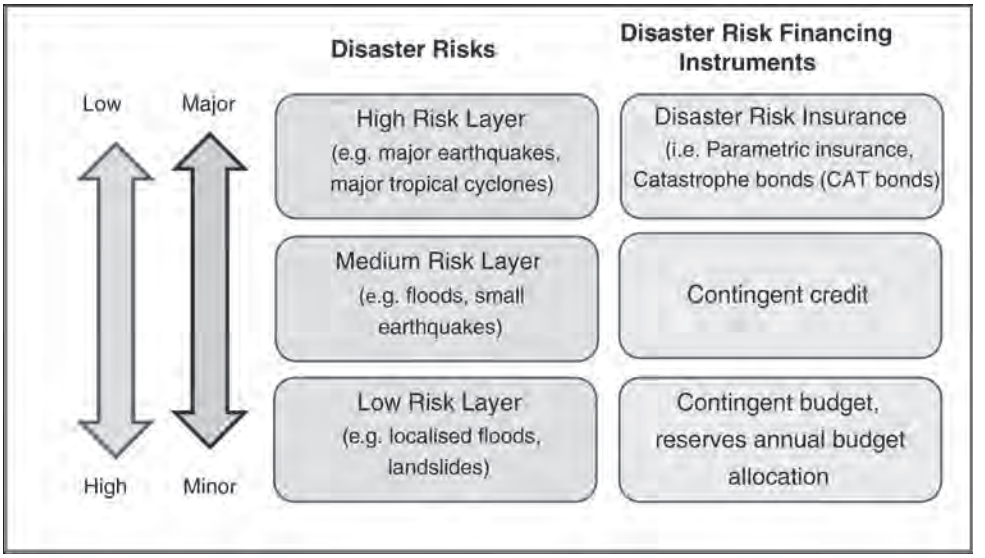
Financial protection is a vital element of a comprehensive DRM strategy.[7] It helps the government to reduce long-term fiscal impacts of disasters on the economy. Financing instruments for DRM could be either ex-post or ex-ante (Figure 6.7). Ex-post instruments do not involve advance planning and include donor assistance, budget allocations, domestic and external credit.

Generally, the disaster financing mechanism can include several instruments which can respond to various layers of risks. Risk layers are defined as per the frequency and severity of the events (Figure 6.8). Reserves and contingency budgets can be important with regard to lower risk layers. For intermediate risk layers, budget allocation and contingent credit are important. Risk retention and risk transfer mechanisms are important for high risk layers.[8]

[7] Olivier, M., & Ghesquiere, F. (2010). *Financial protection of the state against natural disasters: A primer.* Policy Research Working Paper 5429, Washington, D.C.: World Bank.

[8] Global Facility for Disaster Reduction and Recovery (GFDRR) and World Bank (2012). *Disaster risk financing and insurance program.* Washington D.C.: Disaster Reduction and Recovery and World Bank.

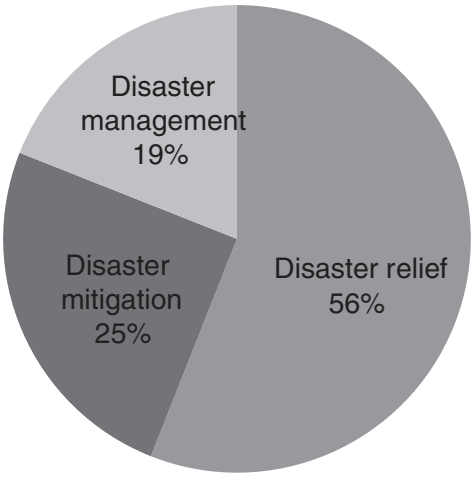
Figure 6.8
Risk Financing Instruments for Different Disaster Risk Layers



Source: Global Facility for Disaster Reduction and Recovery (GFDRR) and World Bank (2012). D*isaster risk financing and insurance program.* Washington D.C.: Disaster Reduction and Recovery and World Bank.

As at now in Sri Lanka, disaster related funds are allocated by the National Budget Department of the Ministry of Finance (MOF) to the MDM and other line ministries. The miscellaneous vote of the budget is used to finance necessary relief and rehabilitation activities if the budget allocation is inadequate. These are based on extraordinary requests to the Treasury via the National Budget Department. Out of the total allocation for the MDM in 2018, a major share (56 per cent) is assigned for disaster relief activities (Figure 6.9). Disaster mitigation activities have received only one-fourth of the budget. While disaster relief is an essential component that helps victims to recover, disaster mitigation should be a priority in order to minimise possible future costs of natural disasters.

Figure 6.9
Budget Allocations for the MDM in 2018, by Category



Source: Budget Estimates 2018 based on Ministry of Finance, Sri Lanka.

When the fund requirements of a disaster event cannot be met using the miscellaneous fund of the Treasury, delays in the financial process can take place. In such situations, the following mechanisms are adopted and these are usually time consuming.

1. Transfer additional funds between budget lines by the heads of department and secretaries with the approval of the Treasury.
2. Submit supplementary estimates to the Parliament for approval.

Consequently, post-disaster relief and recovery activities can often be delayed.[9] In addition, considerable improvements are needed in the relief distribution mechanism to avoid existing inefficiencies. The respective issues were highlighted during the natural disaster events that occurred in 2016 and 2017 (Box 6.2).

Sri Lanka received a Development Policy Loan with 'Catastrophe Deferred Drawdown Option' facility from the World Bank in 2014. It provides an opportunity for the country to prepare for a natural disaster by securing access to a financing source before a disaster happens. Under this, funds can be disbursed in the event of a declaration of a state of emergency due to a natural disaster. This loan offers a 3-year drawdown period and is renewable. Also, the borrowing country should implement a DRR programme which is monitored by the World Bank. In 2016, the government obtained nearly USD 103 million to support recovery programmes following the disasters.[10] As a state of emergency following a disaster was last declared in Sri Lanka in 2014, this loan has not been utilised since then.

Despite these attempts, Sri Lanka does not have a dedicated fund to finance disaster management.

Box 6.2
Disaster Relief Provisions in 2016 and 2017

Significant targeting issues were observed in providing relief to people affected by natural disasters in 2016 and 2017. The provision of relief for food, water and medicine for the affected groups did not take place in an inclusive manner due to the absence of key socio-economic information pertaining to the affected groups. The issue was more prominent with regard to provision of relief for highly vulnerable groups such as infants, women and elderly. Also, the areas which were less accessible following disasters were largely ignored. There were delays and even cancellations of relief distribution as the exact locations of the displaced people could not be identified. Such issues call for the need to identify possible locations as relief centres to ensure that relief distribution takes place in an effective manner. A proper relief system has to be formulated with a clear criteria for relief distribution.

Source: Ministry of Disaster Management, Ministry of National Policy and Economic Affairs, United Nations, World Bank, European Union. (2017). *Sri Lanka rapid post disaster needs assessment floods and landslides -May 2017.* Colombo, Sri Lanka: Ministry of Disaster Management, Ministry of National Policy and Economic Affairs.

[9] World Bank. (2016). *Fiscal disaster risk assessment and risk financing options Sri Lanka,* Washington D.C.: World Bank.
[10] Bernard, G., Kirbyshire, A., Le Masson, V., Lovell, E., Patel, S., Peters, K., Twigg, J., & Wilkinson, E. (2017). *Delivering DRM by 2030: Country case studies. London,* United Kingdom: Overseas Development Institute.

The absence of such a fund leads to interruptions and inefficiencies in post-disaster activities. The Sri Lanka Disaster Management Act No. 13 of 2005 includes provisions to have a fund in place under the National Council for Disaster Management. Additionally, the government's policy document 'Vision 2025' identifies the need to establish a 'National Disaster Reserve Fund' for financing post-disaster reconstruction. Given the increasing impact of natural disasters on various sectors of the economy, expediting the establishment of such a fund is an important need.

6.3.3 Disaster Insurance

Disaster insurance is increasingly being recognised as an important tool in DRM. Considerable policy attention is paid in promoting disaster insurance in Sri Lanka both at the national and sectoral levels. The National Natural Disaster Insurance (NNDI) was introduced as a country-wide initiative. Insurance companies also cover certain disaster risks in their policies. There are a couple of initiatives with regard to disaster related insurance for the agriculture sector, namely loan protection insurance and index-based insurance, in addition to traditional crop insurance products.

National Natural Disaster Insurance: The NNDI Insurance was launched in April 2016, in order to cover loss of human lives and property damages. The insurance programme is implemented by the National Insurance Trust Fund (NITF). All the damages caused to lives and properties due to cyclones, storms, floods, landslides, hurricanes, earthquakes, tsunami or victims of lightning, falling objects/trees due to heavy winds, collapse of retaining walls induced by rain or any other

Given the increasing impact of natural disasters on various sectors of the economy, expediting the establishment of a National Disaster Reserve Fund is an important need.

natural perils, excluding droughts, are covered.[11] Death compensation is Rs. 100,000 (except for fishermen). For fishermen registered under the Department of Fisheries, the death compensation amounts to Rs. 1 million, as this value had been previously declared by the Ministry of Fisheries. The limit for property damages is Rs. 2.5 million. In addition, the insurance covers the damages that may occur to small business establishments, of which the annual turnover does not exceed Rs. 10 million up to a maximum coverage of Rs. 2.5 million.

In the event of a disaster, the Divisional Secretaries of the affected division have the responsibility to send the disaster assessment reports and other details to the District Secretaries. The District Secretaries submit their recommendations to the NITF which in turn releases benefits to the beneficiaries accordingly.[12] The scheme had experienced a 66 per cent increase in total claims in 2016 due to severe floods, as opposed to total claims in 2015.[13]

For droughts which are not covered under the NNDI, the Divisional Secretaries through respective District Secretaries submit the requirements to the Secretary of the MDM. Accordingly, relief provisions are allocated by the Treasury. Provision of drinking water is also covered by the Treasury in case of an emergency situation of a drought. Provision for small scale reconstruction activities in rural infrastructure facilities such as roads, small tanks, anicuts, bridges etc., are authorised by the Treasury and the Divisional Secretaries have to take necessary actions regarding these. With regard to large scale reconstruction activities, the relevant line ministries bear the respective responsibilities. The ministries can obtain funds from the General Treasury after submitting the cost estimates for each district.

As highlighted in the Insurance Board of Sri Lanka (IBSL) Annual Report 2016, the promotion of a Natural Disaster Insurance Scheme and the contribution made by the private insurance companies might have an impact on raising awareness amongst the general public on the need and importance of disaster related insurance. It is also viewed as a positive encouragement for the insurance companies to focus more on natural disaster insurance coverages. However, the absence of pre-disaster data information has led to disputes and delays in disbursing insurance compensation in the event of floods and landslides that occurred in 2016. The issue was prominent with regard to damages to housing and small and medium enterprises (SMEs) which were covered by the NNDI. Further, a common, systematic methodology was not adopted for compensation payments across all the affected districts in 2017. Lack of capacity of relevant officers at the ground level was a major reason for this. In addition, lack of awareness about the insurance programme and its benefits among the general public were also an issue.[14] This prevents needy groups receiving the intended benefits in a timely manner.

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[11] National Budget Circular No. 03/ 2016 by the Ministry of Finance, Sri Lanka.
[12] National Budget Circular No 03 / 2016 (II) by the Ministry of Finance, Sri Lanka.
[13] Ministry of Finance Sri Lanka. (2016). *Annual report*. Colombo, Sri Lanka: Ministry of Finance.
[14] Ministry of Disaster Management, Ministry of National Policy and Economic Affairs, United Nations, World Bank, European Union. (2017). Sri Lanka rapid post disaster needs assessment floods and landslides -May 2017. Colombo, Sri Lanka: Ministry of Disaster Management, Ministry of National Policy and Economic Affairs.

Education and awareness creation among the general public should be a key strategy in promoting disaster insurance.

As natural disasters have come to a point where they occur much more frequently than before, it is important to adopt a systematic approach for paying compensation. This also has to be supported with an updated database on socio-economic characteristics of vulnerable groups, housing information and information on SMEs.

Non-life Insurance Products of Private Insurance Companies: Natural perils are one of the risks covered under non-life insurance offered by the insurance companies. There are six insurance companies that offer non-life insurance only, and 12 insurance companies that offer both life and non-life insurance (out of a total of 21 insurance companies in operation in 2016). Natural perils covered under these include atmospheric perils, earthquakes, floods, tsunamis, tidal waves and volcanic eruptions. The risks of these natural perils occurring are calculated by the insurance providers based on surveys, historical events, and geographical and weather patterns from the Disaster Management Centre (DMC) as well as from policyholders' experience on past claims. Premiums for a particular peril is increased if it is found to be of high risk, and natural perils coverage is provided free of charge for low risk cases. However, landslides and slope failures are not covered by non-life insurance.[15]

The fire insurance segment which also covers natural perils had shown a growth of 13 per cent in 2016 due to the occurrence of several natural disasters sequentially.[16] The general insurance companies face challenges in the event of natural disasters for insurance policies that are under their cover. The claim ratio of the fire insurance business has increased from around 23 per cent in 2015 to 95 per cent in 2016 due to flood claims.

Agricultural Loan Protection Insurance: The NITF also implements an Agricultural Loan Protection Insurance to cover the agricultural loan payments obtained by the farmers from financial institutes. The financial institutes that contribute to the 'Crop Levy' which came into operation in 2013 are covered under this. These include the institutes

[15] World Bank. (2016). Fiscal disaster risk assessment and risk financing options Sri Lanka. Washington D.C.: World Bank.
[16] Insurance Board of Sri Lanka. (2016). *Annual report.* Colombo, Sri Lanka: Insurance Board of Sri Lanka.

that are under the purview of the Banking Act No. 30 of 1988, Finance Companies Act No. 78 of 1988 and Regulation of Insurance Industry Act No. 43 of 2000. The levy is credited to the NITF. The financial institutes can claim the loan amount in the event of a natural disaster, where farmers are unable to repay the loan. The amount of the claims paid per acre is Rs. 10,000 if the damage takes place close to the time of harvesting. Thereafter, the payment is 40 per cent if the damage occurs within 30 days after planting, and 60 per cent if the damage takes place thereafter up to the blooming stage. However, the NITF has not done any compensation payments to financial institutes so far as it appears to have not received proper claims. Lack of awareness on this programme among regional branches of financial institutes is a key reason for not utlising this facility.[17]

Index Insurance for Agriculture: The Budget 2018 proposals indicated the need for implementing weather-based index insurance programme for Sri Lanka. This covers six crops namely paddy, maize, soya, big onion, potato, and chilli. Index-based insurance products have been developed and are now being implemented at pilot level in the Vavuniya district by the Agriculture and Agrarian Insurance Board (AAIB). Previous experience with regard to index-based insurance in Sri Lanka shows that successful implementation of index-based insurance is largely constrained due to lack of data availability with regard to weather parameters such as rainfall. This is an important area that needs attention in promoting index-based insurance.[18] The 2018 Budget proposals also provide an allocation to upgrade technology and elevate the capacity of personnel at the Department of Meteorology (DOM). This allocation is intended to support the implementation of index-based insurance.

Crop Insurance: Traditional indemnity-based crop insurance is being implemented by the AAIB for several decades. A private insurance company also implements an indemnity-based insurance programme. However, the coverage provided by both schemes is very low. Major issues related to indemnity-based crop insurance include lack of knowledge and understanding and lack of trust.

6.4 Integrating DRM into Economic Planning and Decision Making

Comprehensive disaster related information is vital for effective DRM. Disaster information can be in the form of loss and damage assessments, research findings, hazard and vulnerability assessments, disaster forecasts, early warnings and weather data. Disaster loss and damage data are particularly important to understand the specific economic impacts of disaster events. The Desinventar database managed by the DMC is the only available source for disaggregated data. However, the database does not encompass all the important information related to damages and losses. Such information is very useful in understanding the DRM tools and prioritising disaster related investment.

As the NDMP 2018-2030 highlights, there are notable gaps in terms of research-based information on natural disasters. These gaps

[17] Interview with the Chief Executive Officer Mr. Sanath de Silva of National Insurance Trust Fund, July 2018.
[18] Wickramasinghe, K. (2017). Climate insurance for dry zone farmers in Sri Lanka. *Policy Insights.* Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

include lack of research, technological innovation, and investigations on various aspects of DRM. Research-based information is required in disaster related policy making, investment planning and project formulation. Therefore, research-based disaster information is useful for a number of stakeholders, including policy makers, private sector, donors and citizens. The absence of an effective mechanism to share the available research findings is also a setback, which needs to be overcome. Development of a repository with online facilities could be a way forward for this. Effective sharing of research-based information helps to integrate such information in decision making.

Risk assessments and hazard and vulnerability mappings are required for almost all aspects of DRM including investment planning, financing and awareness creation on disasters. The World Bank (2016) highlights that Sri Lanka lacks risk assessment tools which are necessary for investment planning.[19] Disaster vulnerability maps have been prepared to a certain extent in Sri Lanka, but need to be further developed. Besides, the already-developed assessments and mappings have to be made available to the relevant users, including the private sector and general public.

Effective dissemination of disaster forecasts and early warning should also be an important area in improving disaster resilience. Disaster forecasts are particularly important in relation to the agriculture sector. Sri Lanka has already made attempts to develop early warning systems. However, still there are gaps in terms of providing localised early warnings for vulnerable communities.[20] This was particularly an issue in the flood affected areas, where the victims were dependent on information provided through informal sources. Due to the inadequacy and clarity of information about forthcoming disaster incidents, people were reluctant to evacuate which ultimately caused loss of lives in certain localities.

There have been several deaths and incidents of damage in the recent past where vulnerable communities were not duly informed about the expected disaster incidents. In the Ratnapura district, though early warnings on possible landslides were disseminated, the communities found it difficult to comprehend and absorb the real risk level of their own localities. Further, in a few locations, communication with the affected villages was not possible following the landslide. Warnings issued by the national media were not sufficient to provide risk levels at local levels. Poor public awareness and lack of clarity are still major issues with regard to early warning of disasters in Sri Lanka.[21]

In addition to issues in early warning, disaster experiences in the last couple of years indicate that vulnerable communities were not adequately prepared to respond to the early warnings and thereby act accordingly. Also, the local level DRM plans prepared after the 2004 tsunami are now outdated and barely implemented. In certain locations, there were capacity gaps amongst local officers in coordinating the activities. These call for the need to enhance local level capacities.[22]

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19 World Bank. (2016). *Fiscal disaster risk assessment and risk financing options Sri Lanka.* Washington D.C.: World Bank.

20 Jayasingha, P. (2016). Social geology and landslide DRM in Sri Lanka. *Journal of Tropical Forestry and Environment,* 6(2),1-13.

21 Ministry of Disaster Management, Ministry of National Policy and Economic Affairs, United Nations, World Bank, European Union. (2017). *Sri Lanka rapid post disaster needs assessment: Floods and landslides -May 2017*. Colombo, Sri Lanka: Ministry of Disaster Management, Ministry of National Policy and Economic Affairs.

22 Ministry of Disaster Management, Ministry of National Policy and Economic Affairs, United Nations, World Bank, European Union. (2017). *Sri Lanka rapid post disaster needs assessment: Floods and landslides -May 2017.* Colombo, Sri Lanka: Ministry of Disaster Management, Ministry of National Policy and Economic Affairs.

Further improvements in the early warning system can minimise the disaster related social costs such as mortalities and injuries. Effective disaster financing and investment planning are crucial for achieving disaster resilience in the medium and long run. The need to have a dedicated fund for DRM has been already highlighted. Disaster mitigation should receive more attention in disaster financing and investment planning. Though government relief expenditure has being decreasing over time, still a major share of fund allocations are spent on disaster relief activities.

Developments in disaster insurance are particularly important for the agriculture sector. With regard to index-based insurance, improving the availability of weather data is a necessity. Rainfall data collection is mainly undertaken by several government agencies, including the DOM. The need for a data sharing mechanism to ensure that data are shared with all users, including the insurance providers without delays, is much felt. In addition, education and awareness creation among the general public should be a key strategy in promoting disaster insurance.

Disaster resilience should be a key element in development activities at all levels. It is vital that meaningful consideration is paid to the impact of development activities on the occurrence and intensity of disasters, and on the other hand to the relevant disaster vulnerability impacts on development activities. Integrating disaster resilience aspects into policies, plans and programmes at the national and sectoral levels are prerequisites in this regard. For instance, the occurrence and severity of landslides are aggravated due to unsustainable land use activities in vulnerable areas. In this regard, effective implementation of policies (including the Land Use Policy) and regulations related to land sector are very important.

Further, disaster resilience should be mainstreamed in the formulation and implementation of development projects. Suitable policy and planning guidelines are crucial in this regard.[23] The draft National Physical Planning Policy and Plan 2050, takes disaster risks into account and it can serve as the basis for development projects at the national level. Disaster related aspects can be introduced at the initial stages of planning and obtaining approvals for projects. The Initial Environment Examination (IEE) and Environmental Impact Assessment (EIA) should be revised to include elements of disaster resilience. These aspects are useful in reducing possible social and economic costs of disasters and enhancing disaster resilience.

6.5 Conclusion

The economic costs of natural disasters clearly show an increasing trend during the recent past in Sri Lanka. The agriculture sector was significantly affected by a series of floods, droughts and landslides in recent times. Climate related impacts rank very high among overall risks and uncertainties faced by the agricultural communities in Sri Lanka. Despite this, effective DRM is not perceived as a national priority at present.

[23] Institute of Policy Studies of Sri Lanka. (2017). Mainstreaming climate change into urban planning and policy, a report submitted to the UN-Habitat. Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

Though there has been a notable improvement in DRM over the years, there are significant gaps that need prioritised attention. Inadequate emphasis on disaster prevention, absence of effective disaster financing mechanisms and issues in insurance mechanisms to cover disaster impacts are key areas in this regard. Further, improvements in post-disaster relief mechanisms are needed to help the affected parties revive better.

Disaster related information such as loss and damage assessments, climate data and research-based inputs are pivotal in supporting these actions. Comprehensive awareness programmes are particularly required for better functioning of insurance programmes that cover natural disaster risks.

Overall, mainstreaming disaster resilience aspects into developmental planning at all levels is a prerequisite for successful implementation of all DRM activities.

Disaster related information such as loss and damage assesments, climate data and research-based inputs are pivotal in supporting disaster risk management actions.

7. China's Belt and Road Initiative (BRI): A Sustainable Partnership for Sri Lanka?

7.1 Introduction

Ever since the introduction of China's ambitious Belt and Road Initiative (BRI) – an ambitious trade and investment project – there have been concerns over its potential impact on climate change. This is not surprising in view of its scale and scope, encompassing mega infrastructure investments covering over 70 countries. It has the potential to be a propellant to global warming and climate change if not strategically planned to be more sustainable and environmentally friendly.

In Sri Lanka too, Chinese infrastructure investments in the energy sector, seaports, airports and large scale land reclamation have raised numerous concerns regarding possible environment impacts. Nonetheless, as links between Sri Lanka and China – economic relations in particular – have grown exponentially during the last decade, the BRI is seen to be presenting both opportunities and challenges that the country must learn to navigate.

China has become a significant economic partner of Sri Lanka with the BRI seen as a closely connected part of this growing relationship. China has invested large sums of money to develop infrastructure (mega projects) and trade routes for what it believes is a mutually beneficial programme. On the one hand, Sri Lanka gains key infrastructure, capital and skills that could put it well ahead in connectivity and trade facilitation. Combined with these are the added benefits of trade and investment promotion, development of an economic hub, participation in global value chains (GVCs), employment generation, and technology and knowledge transfer that will help with economic growth in the foreseeable future. On the other hand, there is concern around geopolitical and sovereignty issues that may arise when taking on significant amounts of debt in the BRI partnership with China.

This chapter aims to investigate the economic relationship between China and Sri Lanka. In particular, it examines the impact of BRI on the Sri Lankan economy. The chapter is organised as follows: it will provide a historical overview of BRI as well as the relationship between China and Sri Lanka; it will then examine some of the projects/activities linked to BRI in Sri Lanka, their implications for Sri Lanka, and highlighting the benefits and concerns.

7.2 Background to the BRI

The USD 4 trillion BRI is considered to be China's most ambitious foreign trade and investment project to date. The project was initially named as One Belt One Road (OBOR) and then later renamed as the BRI as the term 'one' in OBOR implies only a single network while BRI would better reflect the project's numerous network of clusters. In October 2017, BRI was written into the Communist Party's constitution at the 19th National Congress of the Communist Party of China (CPC), a sign of the project's policy significance for China and its current leadership.

The BRI is China's attempt at rebuilding the network of the Ancient Silk Route, which was a trade route connecting China to Europe through both land and sea routes. Xi Jinping, President of the People's Republic of China unveiled the project in late 2013 during a visit to Astana, Kazakhstan and Southeast Asia. The BRI focusses on improving connectivity and cooperation among Asian countries, Africa, China and Europe. The emphasis is on enhancing land as well as maritime routes through a network of roads, rail lines and sea ports. This is mainly done through large scale infrastructure projects to improve ports and trade transport. The project spans over 65 countries and about 60 per cent of the world's population.[1] The funding for the project comes through the Asian Infrastructure Investment Bank (AIIB) and the Silk Road Fund, which is a USD 40 billion development fund created for the initiative.

One arm of the BRI, 'Silk Road Economic Belt' (the Belt) extends overland from China to Europe through Central Asia and the other, '21st Century Maritime Silk Road' (the Road), links China to Southeast Asia, the Middle East, East Africa and Europe along the Mediterranean, the Indian, Atlantic and Pacific Oceans connecting over 20 countries.[2] Sri Lanka has been an important stop on the Maritime Silk Road since ancient times. It lies along one of the world's busiest trade routes, connecting Asia with Europe, and plays a key part in China's BRI. The 'Belt' is a series of overland corridors connecting China with Europe, via Central Asia and the Middle East.

The initiative was motivated by concerns in regard to the slowdown of the Chinese economy as it transitioned from an investment led growth model to a consumer demand growth model. With China experiencing overcapacity in sectors across the country, seeking market access abroad was seen as a method to address this problem at home. Also, the initiative will allow Chinese enterprises to access opportunities to undertake various projects and commerce in the BRI countries, assisting them to be globally competitive and become global brands through joint ventures, technology transfers and public-private partnerships (PPPs). The BRI is considered to be an open and inclusive initiative allowing every country to take part in its development.

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1 As cited in CBSL, Annual Report 2015, Central Bank of Sri Lanka, Colombo.

2 Igbinoba, E. (2017). *Empirical assessment of trade engagements: Africa, China and the maritime belt and road initiative.* Working Paper 17-07. Korean Institute for International Economic Policy.

Box 7.1
The BRI and Climate Change

Ever since the introduction of the BRI, there have been concerns over its potential impact on climate change, particularly regarding the coal power plant projects that are part of the BRI. However, increasingly it seems that the BRI may be a driver towards greener economies and more sustainable global growth. China is now the world leader in domestic clean energy investments. In 2016, seven of China's 19 overseas clean energy investments were recorded in the BRI countries from Egypt to Vietnam, with a total value of USD 11.8 billion.

An infrastructure investment of this size covering over 70 countries has the potential to be a propellant to global warming and climate change, if not strategically planned to be more sustainable and environmentally friendly. The successful implementation of the Paris Clinate Agreement and the Sustainable Development Goals (SDGs) will be impossible if the huge amount of capital invested under the BRI is inconsistent with tackling climate change and ensuring sustainable development. Thus, having a greener BRI has to become a priority.

China is currently the largest emitter of greenhouse gases. However, its carbon footprint has fallen since the economic reforms in the late 1970s. China now emits 73 per cent less carbon dioxide per unit of real gross domestic product (GDP) than it did 35 years ago, though it accounts for around a quarter of total global greenhouse gases.[2] This comes as no surprise as China is the most populated nation and has been one of the fastest growing economies. When comparing to the industrialisation of the western nations and its emissions leading to the current environmental crisis, the growth and industrialisation of China and Asia through the BRI has not performed better and bear many similarities.

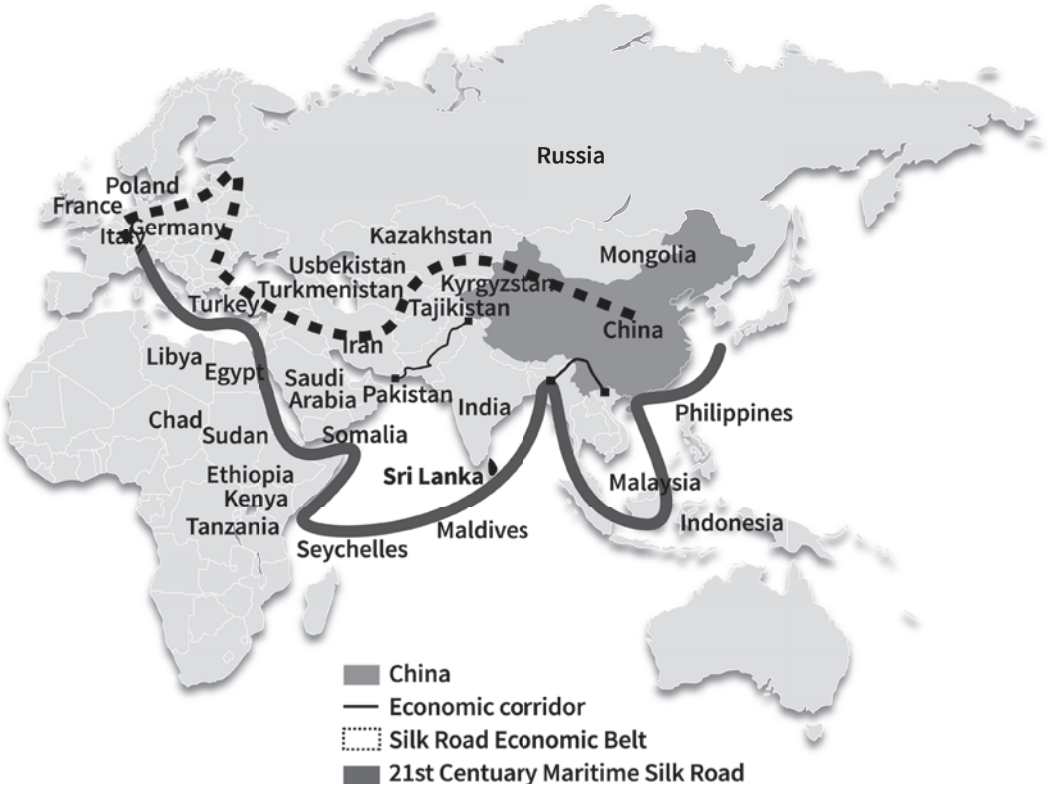
'Greening the Belt and Road Initiative' report prepared by the World Wildlife Fund (WWF) outlines a series of recommendations for sustainable investments. These include limiting investments to sustainable infrastructure, which complies with environmental standards; transparency and monitoring of impacts; and avoiding development which would negatively impact natural habitats. The report also makes recommendations to the financial sector to integrate sustainability in decision making, to scale up sustainable infrastructure and demonstrate the business opportunities from sustainable approaches.

The exact impact of the BRI on climate change is yet to be seen. However, with the intense global focus on climate change and sustainability, it has the potential to be a driver in greener investment.

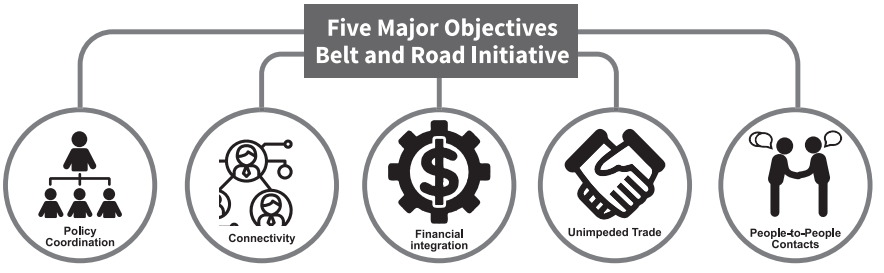
Sources: Zhang, C. (2018). *The climate change promise of china's belt and road*. Retrieved from https://thediplomat.com/2018/01/the-climate-change-promise-of-chinas-belt-and-road-initiative/; Chan, W. (2018). *How the belt and road initiative can be China's path to green leadership*. Retrieved from http://www.scmp.com/comment/insight-opinion/article/2129647/how-belt-and-road-initiative-can-be-chinas-path-green ; Healy, E. (2015). *Industrialisation, pollution and policies: Comparing England and China*. Retrieved from https://history.libraries.wsu.edu/spring2015/2015/01/18/carbon-emissions-since-the-time-of-the-industrial-revolution/; World Wildlife Fund. (2018). *Greening the belt and road initiative*. Retrieved from https://www.sustainablefinance.hsbc.com/our-reports/greening-the-belt-and-road-initiative

[2] Igbinoba, E. (2017). *Empirical assessment of trade engagements: Africa, China and the maritime belt and road initiative*. Working Paper 17-07. Korean Institute for International Economic Policy.

Figure 7.1
Regions Covered by the BRI



The BRI has five key objectives, namely, policy coordination, connectivity, unimpeded trade, financial integration, and people-to-people bonds. The BRI expects to achieve policy coordination through intergovernmental cooperation on macroeconomic policies and increased connectivity by developing trade infrastructure as well as through trade and investment cooperation. Financial integration is expected to be achieved through joint efforts to establish the AIIB and BRICS New Development Bank, and signing of MOUs on cooperation in bilateral financial regulation to establish an efficient regulation coordination mechanism in the region. The objective of developing people-to-people bonds is expected to be achieved through cultural and academic exchanges and tourism, among others.



Southeast Asia and South Asia are expected to be key beneficiaries of the BRI.[3] For the former, it is partly due to the proximity to China and a higher state of development, and partly due to the demand for better infrastructure. For the latter, the size of population and vast market potential are noteworthy. Amongst the other beneficiaries include Europe, Russia and Central Asia and Africa. So far, infrastructure has attracted more funding than other sectors although it also encompasses investments in manufacturing and trade, as well as softer investments in tourism and culture.

One of the primary challenges the initiative has faced includes obtaining the support and cooperation of other emerging economies, mainly India. Western powers also remain sceptical of the initiative and view it as a means of China increasing its geopolitical power and influence. Despite this, it has received a high level of cooperation from many nations including those in South Asia (Bangladesh, the Maldives, Nepal, Pakistan and Sri Lanka) and Southeast Asia.

Since its launch, the BRI project in the past four years has grown in size in terms of investment and the number of countries involved. In May 2017, the Belt and Road Forum for International Co-operation was held in Beijing. It was attended by heads of states of 29 governments, representatives from 130 countries and representatives of more than 70 international organisations. This event was the highest level meeting of its kind since the BRI was proposed in 2013.

The BRI initiative has also extended to the Americas (North and South); Chinese investments in Latin America continue to rise. In little over a decade, China has jumped from being one of Latin America's smallest trading and investment partners to being one of its largest.

One of the primary challenges the BRI has faced includes obtaining the support and cooperation of other emerging economies, mainly India. Western powers also remain sceptical of the initiative

[3] Deloitte. (2018). *Embracing the BRI ecosystem in 2018.* Retrieved from: https://www2.deloitte.com/cn/en/pages/soe/articles/embracing-the-bri-ecosystem-in-2018.html

7.3 Sri Lanka's Historical Relationship with China

Sri Lanka-China relationship is centuries old, and has been historically strengthened by shared religious and cultural values in addition to trade and commerce. For many centuries, Sri Lanka had been at the centre of the historical Silk Road connecting Europe and China. Although the initial Silk routes were over land, following the fall of the Mongol Empire in the 14th Century, China shifted its approach to include a stronger emphasis on maritime trade.[4] Sri Lanka has been part of the maritime trade route of China since then. It has been noted that Sri Lanka was an emporium where traders from West and East exchanged wares and the discovery of many Roman coins in some parts of the country bear testimony to it.

The Rubber/Rice Pact between Sri Lanka and China was signed in December 1952, marking a significant milestone in the bilateral ties between the two nations. This was also one of the first agreements that China signed with a non-communist country (Kelegama, 2014). In fact, it was signed five years before the two countries established formal diplomatic relations.[5] Through this Pact, Sri Lanka guaranteed to import 270,000 metric tons of rice each year while China agreed to purchase 50,000 tons of rubber each year for a period of five years. The Pact was renewed every five years until 1982. It is considered to be one of the most useful trade agreements that Sri Lanka had negotiated in the past, as it ensured that China offered 40 per cent more than the market price for rubber, while Sri Lanka provided rice for less than a third of its market value. It is also considered to be one of the most successful and durable South-South trade agreements in the world.[6] Moreover, this Pact paved the way for increased formal diplomatic relations between the two countries during the post-colonial rule. The Pact was signed despite the protests made by the US which threatened to invoke the Battle Act and withdraw aid from Sri Lanka. The US Vice President, Richard Nixon, visited Sri Lanka in November 1953 to dissuade the country from continuing to trade with China, arguing that Sri Lanka was selling strategic material to a communist country during the height of the Korean War. Nixon spent three days in Colombo and after discussions with Sri Lankan authorities, he was convinced that the Pact was signed mainly for economic reasons and not because of sympathies with communism.[7]

In February 1957, formal diplomatic relations were established with China, and thereafter in 1962, the two nations signed the first agreement on Economic and Technological Cooperation. The following year, a maritime agreement guaranteed that all commercial vessels engaged in cargo and passenger services between the two countries and a third country will be treated on the Most Favoured Nation (MFN) status.

Another milestone in the Sri Lanka-China relationship was the state visit to China of the then Prime Minister Sirimavo Bandaranaike in 1972. This resulted in the gradual increase in Chinese bilateral aid packages along with the

[4] Seneviratne, U. (2016). Ancient trade activities in Sri Lanka. Retrieved from: https://www.scribd.com/doc/64450499/Ancient-Trade-Activities-in-Sri-Lanka.
[5] Samaranayake, H.M.S., N. Lantra, N., and C. Jayawardena (2013), "Forty Six Years of Organized Tourism in Sri Lanka (1966 -2012)", Emerald Group, 5(5), pp. 423-441.
[6] Kelegama, S. (2014). China–Sri Lanka economic relations. *China Report,* 50(2), 131-149.
[7] Watson, E. (2010). South Asia and the Cold War: Vice President Nixon's Forgotten Trip to Ceylon. *South Asian History and Culture,* 2(1), 37-54.

initiation of the construction of the Bandaranaike Memorial International Conference Hall (BMICH). Since then, there have been numerous high level visits to China from Sri Lanka. The Chinese side reciprocated and some notable visits include Premier Chou En Lai visits in 1957 and 1964, and more recently the first ever visit by a Chinese President, Xi Jinping, to Sri Lanka in 2015. These visits further nurtured the decades of friendship and cooperation.

Furthermore, the Sri Lanka-China Society was formed in 1981 with an aim to strengthen friendship.[8] Additionally, the Sino-Lanka Joint Trade Committee and the Sino-Lanka Economic and Trade Cooperation Committee were signed in 1982 and 1984, respectively. These were then amalgamated in 1991 to form the Sino-Lanka Joint Commission for Economic and Trade Cooperation. In addition, the Sri Lanka-China Business Cooperation Council was formed in 1994, adding to the growing attempts to strengthen economic relations between the two nations.

The Sri Lanka-China relationship reached another significant milestone under the post-2005 administration. Relations between both countries during this era resulted in many agreements and saw closer relations due to Sri Lanka's increasingly pro-China stance. For example, during a state visit to China in 2007 by President Rajapaksa on the occasion of the Golden Jubilee celebrations of diplomatic relations, eight bilateral agreements and MOUs were signed with China. These included agreements on economic and technical cooperation, the establishment of a Friendship City Relationship between Guangzhou and Hambantota, investment promotion cooperation, cooperation in the film industry, academic exchanges, etc. Sri Lanka also became one of the first countries to openly support the BRI since it was aligned to the country's national development strategy.

Even following a change of government in Sri Lanka in 2015, after initial hiccups, relations remain strong with Sri Lanka interested in balancing both the Chinese and Indian interests in the country. Sri Lanka's relations with China continue to strengthen as demonstrated by rising Chinese investments in Sri Lanka and the country's support of China's position in the South China Sea dispute. The Sri Lankan government has also expressed its willingness to participate in the BRI and leverage the country's geographical position to become an economic hub in the Indian Ocean.

7.4 Economic Cooperation between Sri Lanka and China

7.4.1 Trade Relations

In 2016, China surpassed India to become the largest source of imports to Sri Lanka; Sri Lanka imported goods valued at USD 4,270 million from China, accounting for 22 per cent of Sri Lanka's total imports (Table 7.1). Items classified under electrical machinery, and mechanical machinery are the main imports from China to Sri Lanka, while it is also a large provider of iron, steel, cotton and mineral fuels (Figure 7.3). The amount of trade between the two countries, particularly imports by Sri Lanka have grown significantly over the last few years, as shown in Figure 7.4.

[8] Jayasekara, D., & Tennakoon, T. (2007). *Conference on China-Sri Lanka relations: To mark the 50th anniversary of diplomatic relation (Vol. Ed.).* Colombo, Sri Lanka: Bandaranaike Centre for International Relations.

Table 7.1
Sri Lanka's Top 10 Export and Import Markets, 2016 (000's)

		Exports	% of Exports		Imports	% of Imports
	World	10,545,893	100.0	World	19,500,757	100.0
1	USA	2,810,220	26.6	China	4,270,756	21.9
2	UK	1,045,080	9.9	India	3,824,968	19.6
3	India	753,481	7.1	UAE	1,067,273	5.5
4	Germany	509,881	4.8	Singapore	1,030,316	5.3
5	Italy	428,902	4.1	Japan	949,829	4.9
6	Belgium	338,187	3.2	Malaysia	642,030	3.3
7	UAE	292,867	2.8	USA	539,987	2.8
8	China	215,493	2.0	Thailand	514,463	2.6
9	Netherlands	208,334	2.0	Taiwan	495,929	2.5
10	Japan	203,819	1.9	Hong Kong	465,914	2.4

Source: Trade Map Database. Retrieved from http://www.trademap.org/Bilateral.aspx?nvpm=1|156||144||TOTAL|||2|1|1|2|1|1|1|1|1

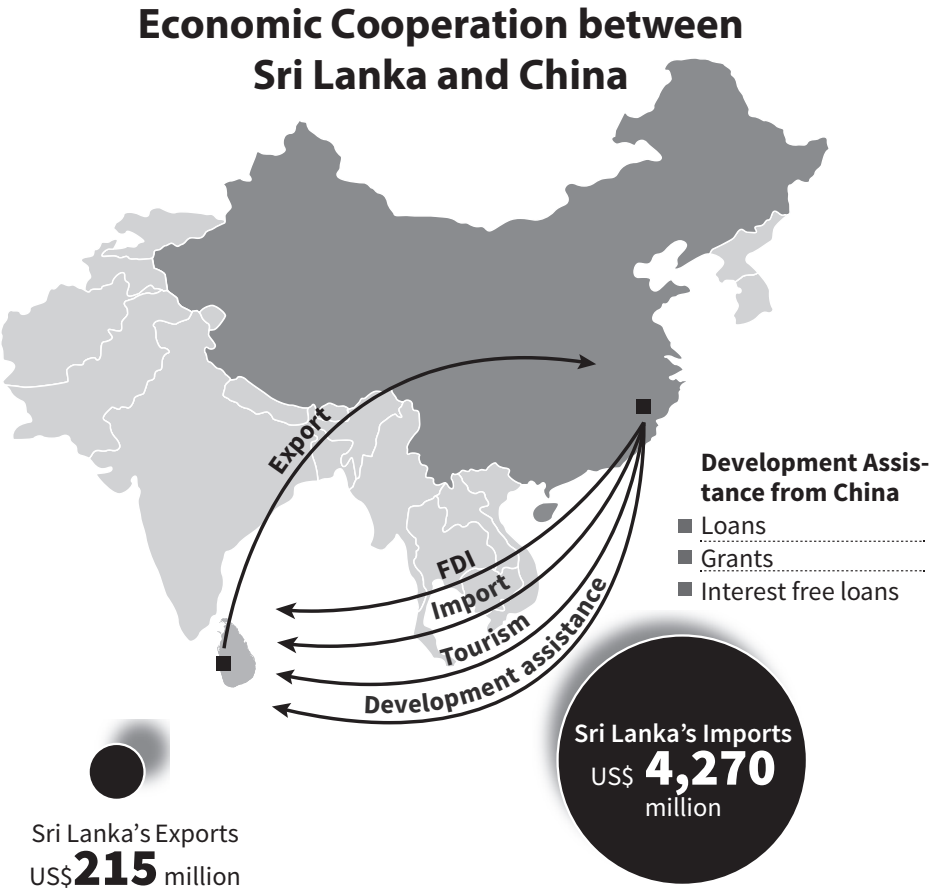
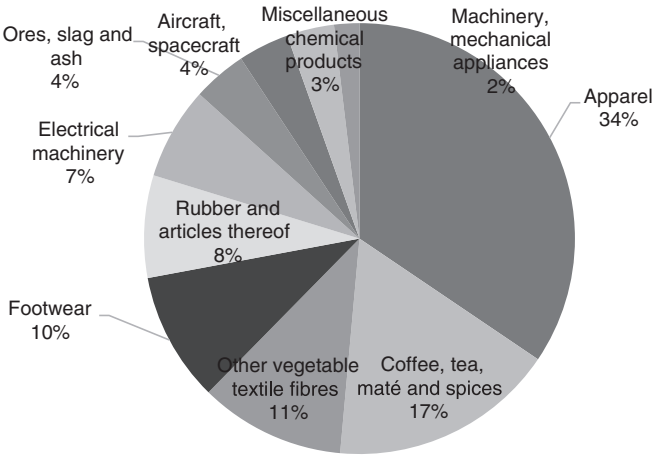
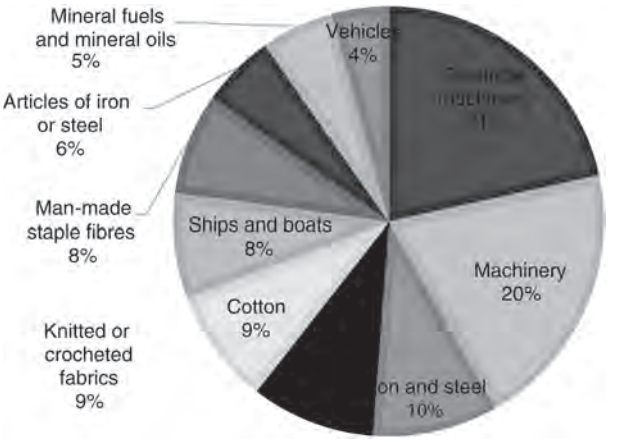


Figure 7.2
Composition of Sri Lanka's Exports to China, 2016



Source: Trade Map Database.

Figure 7.3
Composition of Sri Lanka's Imports from China, 2016



Source: Trade Map Database.

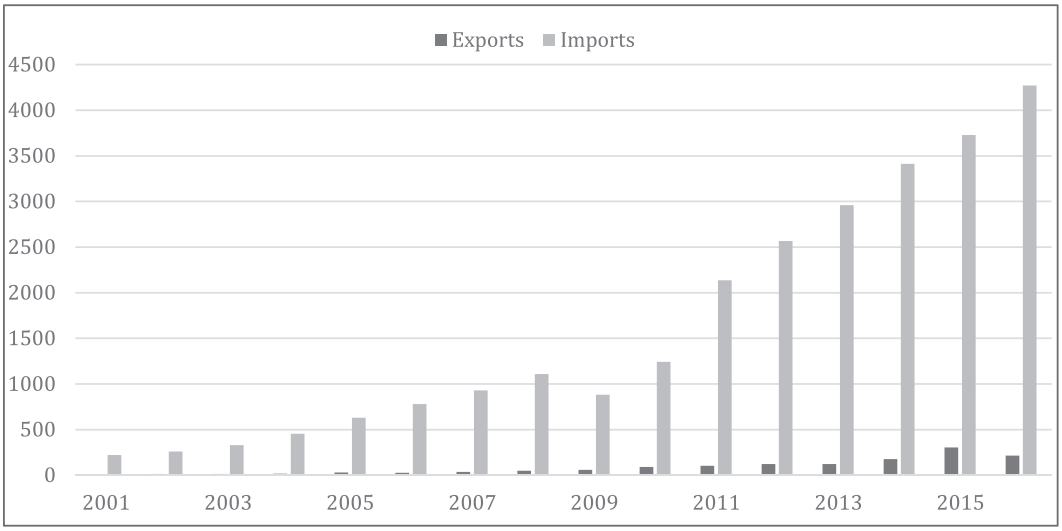
As an export market, China is largely insignificant to Sri Lanka, accounting for only 2 per cent of Sri Lanka's exports by value in 2016 (USD 215 million). In terms of importance, it ranks at the eighth place as an export market (Table 7.1). This flow has also seen a modest growth over the last few years; however, exports from Sri Lanka to China have not grown at the same rate as imports from China into Sri Lanka. Weak export performance relative to imports from China is not surprising given Sri Lanka's overall weak export performance in recent years.

The largest exports from Sri Lanka by market value include textiles and apparel (34 per cent of total exports to China) and tea (Figure 7.2). Other exports include footwear/headgear, and chemicals and transportation. Although overall, China is not a key market for Sri Lankan exports, there is potential for export growth. According to a study of the Institute of Policy Studies of Sri Lanka (IPS), Sri Lanka has a comparative advantage in 565 products in the world.[9] However, it is currently exporting only 243 such products to China. Thus, there are almost additional 300 new products that have the potential to be exported to China. Such export opportunities could provide some scope in addressing the growing trade deficit with China which stands at USD 4 billion. The trade deficit with China has been growing year on year since the 1980s. [10]

While Sri Lanka has been actively engaging in all multilateral negotiations, it has entered into a few bilateral and regional agreements to date. Some of these include agreements to China. For instance, Sri Lanka is a founding member of the Asia Pacific Trade Agreement (APTA), formerly Bangkok Agreement, which is the oldest preferential trade agreement in Asia. China joined the APTA in 2001.

Sri Lanka and China began negotiations on a free trade agreement (FTA) in November 2014 and to date, a number of rounds have been completed. From the point of view of Sri Lanka, the FTA would provide better access to the biggest export market in the world with a population of over 1.3 billion as well as attract export-oriented investments into the country, which would help Sri Lanka to penetrate the Chinese market.

Figure 7.4
Trade between China and Sri Lanka, 2001-2016 (USD Mn.)



Source: Trade Map Database.

[9] Institute of Policy Studies of Sri Lanka. (2015). *China-Sri Lanka free trade: Priorities for negotiations.* Retrieved from http:// www.ips.lk/wp- content/uploads/2017/01/IPS_PI_China_SL_FTA_Nov2015.pdf

[10] Abeyratne, S. (2017). Bilateral economic ties: Sri Lankan perspective. In Palihakkara, H.M.G.S. (Eds.). *The island of the lion and the land of the dragon.* Colombo, Sri Lanka: Pathfinder Foundation.

A Joint Feasibility Study on the FTA in 2015 stated that it would increase bilateral trade of particular interest to Sri Lanka such as tea, rubber, fish, textiles and clothing, coconut products, gems and jewellery, fruits and vegetables, and machinery and electronics. While potential trade benefits from a FTA with China, there are a number of challenges in negotiating a FTA. These include the coverage of products under the Agreement; speed of the liberalisation programme; special and differential treatment; comprehensiveness of the Agreement; and treatment of non-tariff measures (NTMs) in the Agreement.[11] In addition, there are general issues that need to be addressed including increasing Sri Lanka's capacity to increase exports and undertaking policy reforms to strengthen the country's competitiveness and improve the investment climate.

7.4.2 Chinese Investments in Sri Lanka

Sri Lanka performed poorly in attracting foreign direct investment (FDI) till 2011, with annual flows under USD 1 billion. However, since then, there has been a significant upturn in FDI into Sri Lanka with a notable portion of it coming from China (as part of the BRI). Aggregate FDI flows from China accounted for as much as 15 per cent of total FDI in the last five years (Table 7.2). In 2017, China, Singapore, India, the UK and Japan were amongst the top five foreign investors in Sri Lanka. Chinese investments in Sri Lanka have been made in the following sectors: logistics, transport, and real estate.[12]

Table 7.2
Ten Major Sources of Foreign Direct Investment in Sri Lanka, 2013-2017

	USD Million	% of Total
China	723	15.1
Singapore	531	11.1
India	491	10.3
Netherlands	417	8.7
Hong Kong	348	7.3
Malaysia	312	6.5
United Arab Emirates	291	6.1
Mauritius	186	3.9
Australia	155	3.2

Source: Statistics from Central Bank of Sri Lanka. (2017).

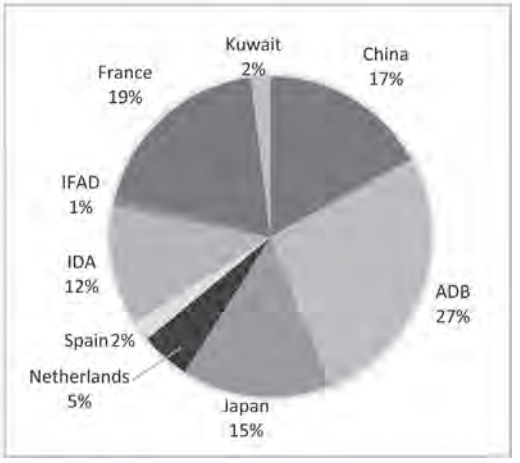
[11] Institute of Policy Studies of Sri Lanka. (2015). *Barriers beyond tariffs: Sri Lanka's exports to China*. Retrieved from http://www.ips.lk/wp-content/uploads/2017/01/Policy-Insights.pdf

[12] American Enterprise Institute and The Heritage Foundation (n.d.). *Global investment tracker.* Retrieved from http://www.aei.org/china-global-investment-tracker/

7.4.3 Development Assistance to Sri Lanka

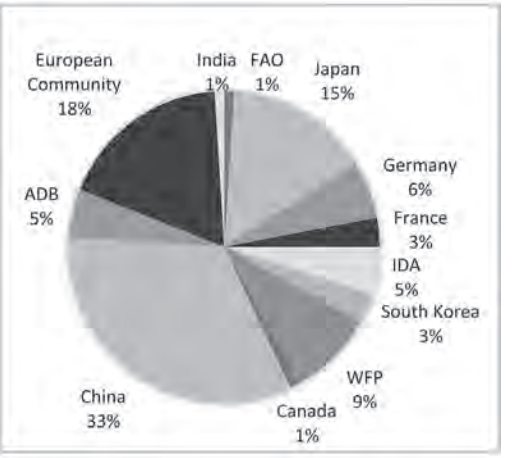
China has provided financial assistance to Sri Lanka to support various development needs of the country. Development assistance from China has come in three major forms, namely; loans, grants and interest free loans. Loans are made out by the state owned enterprises (SOEs) such as the EXIM Bank of China, the China Development Bank (CDC) and the Industrial and Commercial Bank of China (ICBC). Grants and interest free loans are provided directly by the government of China through its Ministry of Commerce.

Figure 7.5
Loan Commitments, 2016



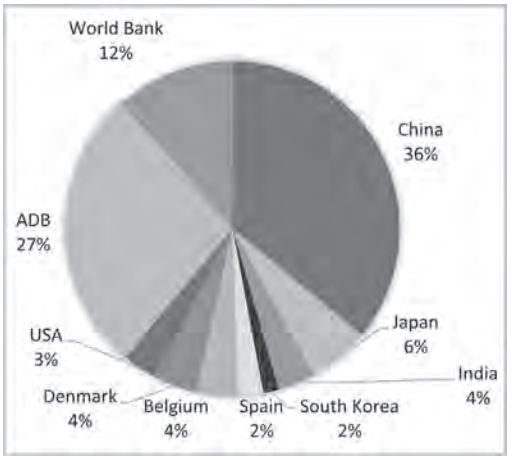
Source: Statistics from Department of External Resources of Sri Lanka. (2016).

Figure 7.6
Grant Commitments, 2016



Source: Statistics from Department of External Resources of Sri Lanka. (2016).

Figure 7.7
Total Disbursements, 2016



Source: Statistics from Department of External Resources of Sri Lanka. (2016).

More recently, China has emerged as the largest provider of bilateral development assistance, overtaking Japan in 2010. Till 2010, Japan was the single largest bilateral lending partner of Sri

Lanka,[13] with the position since then taken over by China. According to data available from the Department of External Resources of Sri Lanka, total commitments made from China for the five year period from 2012 to 2016 was USD 4,217.7 million. In 2016, the highest commitment by a bilateral donor was China, followed by France and Japan (Figure 7.5). Annual disbursement by China amounted to over USD 400 million since 2012.[14] Out of the total disbursement recorded from bilateral development partners in 2016, the major portion was disbursed by China (USD 440.8 million), followed by Japan and India, which contributed USD 74.4 million and USD 44.1 million, respectively (Figure 7.7).

A number of projects have been financed by China through loans for power generation, irrigation and water supply, ports, airports, railways, expressways and highways. China also provides financial assistance in the form of grants. It was the leading contributor of grants in 2016 with 33 per cent of the total grants received being from China, followed by the EU and Japan with 18 per cent and 15 per cent, respectively (Figure 7.6). The assistance from China mainly focusses on non-revenue generating projects such as public sector services (i.e. health sector) and also other projects that are of historical importance to the relationship between the two countries such as the BMICH, Nelum Pokuna National Performing Arts Theatre and Superior Courts Complex. However, as a result of the substantial financial assistance provided for the implementation of various development projects, 9 per cent of Sri Lanka's outstanding debt is owed to China as of 2016.[15]

As a result of the substantial financial assistance provided for the implementation of various development projects, 9 per cent of Sri Lanka's outstanding debt is owed to China as of 2016.

[13] Jayasundara, P.B. (2017). Sri Lanka China economic cooperation. In Palihakkara, H.M.G.S. (Eds.). *The island of the lion and the land of the dragon.* Colombo, Sri Lanka: Pathfinder Foundation.

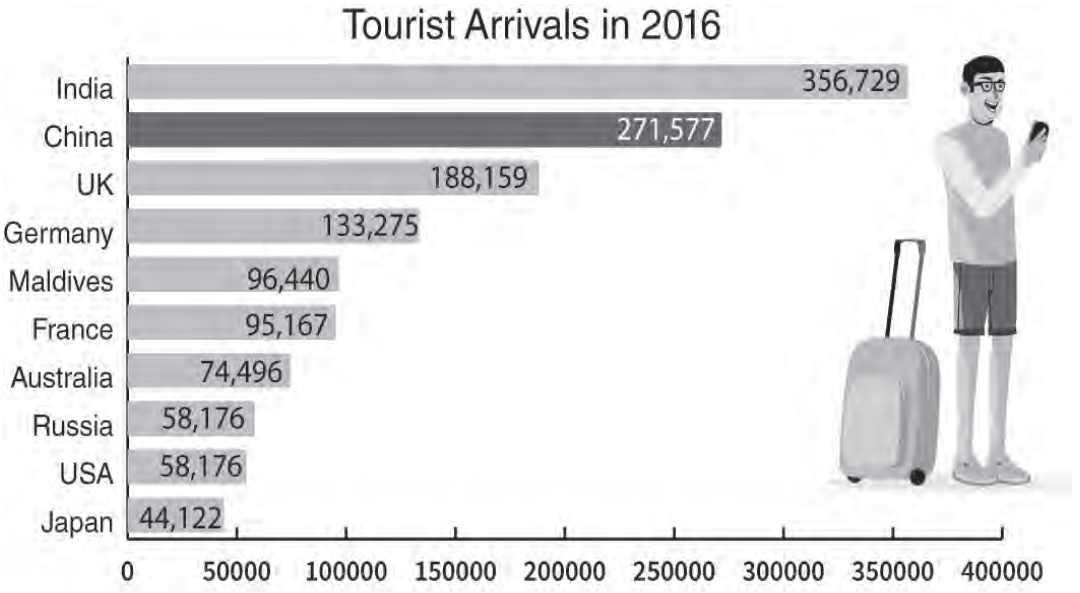
[14] *Ibid.*

[15] Department of External Resources of Sri Lanka. (2016). *Performance report.* Retrieved from: http://www.erd.gov.lk/index.php?lang=en#

7.4.4 Connecting through Tourism

Sri Lanka has become an emerging tourist destination among Chinese travellers with tourism authorities hoping to attract at least 1 million Chinese tourists per year by 2020. Over recent years, India has been the leading source market for tourism to Sri Lanka. Currently, China remains the second largest source market for tourism, with a rapid increase of Chinese tourists since 2009. In 2016, there were 271,577 tourist arrivals from China, accounting for 13 per cent of total arrivals to the country compared to 17,013 arrivals from China five years back (Table 7.3). A majority of the Chinese tourists (90 per cent) came for vacation, followed by visiting friends and family, business and meetings, incentives, conventions exhibitions (MICE). On average, Chinese tourists spend 9.5 days in the country; the average figure for tourists from Asia is 8.8 days which is lower than the figures for North America and Western Europe. This increase in Chinese tourist arrivals to Sri Lanka has been facilitated by increased air connectivity between Colombo and opening up of a number of destinations in China, operated by airlines of both countries.

Table 7.3
Top 10 Sources of Tourists to Sri Lanka, 2016



Source: Statistics from the Sri Lanka Tourisms Development Authority (2016).

The growth rate of tourist arrivals shows the growing significance of China as a tourism partner of Sri Lanka. Chinese tourist arrivals grew by 72.5 per cent in 2010-2016 – albeit from a low base – while Indian and UK tourist arrivals increased by only 19.3 per cent and 10.3 per cent, respectively. However, Sri Lanka is not a top travel destination for Chinese tourists when compared to other countries. Southeast Asia, Japan and South Korea are the most popular destinations for Chinese tourists. Thus, there remains ample room for Sri Lanka to take steps to increase tourism from China. However, this should be matched by addressing challenges within the industry such as poor coordination among stakeholders, inadequate industry research, ineffective planning, inadequate human resource and infrastructure development, and price competitiveness.[16]

As Sri Lanka-China ties continue to improve through the BRI initiative, tourism between the two countries has much potential to further improve. With increased connectivity through BRI development in ports, airports and road networks along with the development of hotels, the Sri Lankan tourism industry stands to benefit from the spillovers.

7.5 Belt and Road Initiatives in Sri Lanka

The BRI has five major objectives, which include policy coordination, connectivity, unimpeded trade, financial integration, and people-to-people contacts. Already with regards to connectivity, this has been met by China investments in a number of mega projects in Sri Lanka to develop

Sri Lanka is not a top travel destination for Chinese tourists when compared to other countries. Southeast Asia, Japan and South Korea are the most popular destinations for Chinese tourists. There remains ample room for Sri Lanka to take steps to increase ourism from China.

[16] Propelling Tourism in Sri Lanka. *State of the economy 2017.* Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

Sri Lanka's connectivity with the rest of the world. With regards to trade, currently China and Sri Lanka are negotiating a FTA. With regards to financial integration, Sri Lanka is already a member of the AIIB while the Bank of China, one of the largest state-owned commercial banks in China with 600 branches overseas and links with 1,600 financial institutions worldwide, opened its first branch in Sri Lanka in 2018. With regards to people-to-people exchange, there have been a number of cultural and academic exchanges between China and Sri Lanka over the years, as well as an influx of Chinese tourists into Sri Lanka. This has furthered people-to-people bonds.

As mentioned earlier, the focus of the BRI programme is split between two main initiatives – a revitalised land route between China and Europe via Russia, and the Maritime Silk Road which aims to connect a multitude of countries via new sea routes and infrastructure. Sri Lanka's involvement has largely been with the latter of these initiatives given its geographical location in the middle of the Indian Ocean, with an emphasis on Sri Lanka becoming a hub facilitating easy transit of goods from China to Sri Lanka and other Southeast Asian economies and beyond. Currently, China's energy imports (from the Middle East) and mineral imports (primarily from Africa) pass through Sri Lanka. [17]

To this effect, the majority of BRI investments in Sri Lanka have been to facilitate this maritime effort and a number of major infrastructure projects have kicked off.[18] Under the BRI project, Sri Lanka has currently secured up to USD 8 billion of financing from China. The Chinese government and the China sponsored AIIB

The BRI programme is split between two main initiatives – a revitalised land route between China and Europe via Russia, and the Maritime Silk Road which aims to connect a multitude of countries via new sea routes and infrastructure.

[17] Palit, A., & Spittel, G. (2013). *South Asia in the new decade: Challenges and prospects.* Singapore: World Scientific Publishing.
[18] Hillman, J.E. (2018). China's belt and road initiative: Five years later. Center for Strategic and International Studies. Retrieved from https://www.csis.org/analysis/chinas-belt-and-road-initiative-five-years-later-0

have recently proposed additional funding of up to USD 32 billion for further infrastructure projects.[19] Some of the notable BRI projects in Sri Lanka include the Colombo International Financial City (CIFC), the Hambantota Port and adjoining Industrial Estate, and the Colombo Port Expansion Project.

The CIFC, formerly known as the Colombo Port City, is an instrumental part of China's BRI and aims to build a new city and financial centre along the existing Colombo coastline that will serve as Sri Lanka's financial and business district by 2030. This development is meant to support the main port and provide ancillary services that support the shipping industry including insurance, financial and logistical services. With an initial investment of USD 1.4 billion in the first phase of the project, which includes reclaiming 269 hectares of land and a planned second level building complex of USD 13 billion, it is the largest FDI project in Sri Lanka to date. It is expected to create more than 80,000 jobs. After the change of government in Sri Lanka in 2015, its construction got suspended for more than a year but resumed in 2016.

Another important initiative is the Hambantota Port and adjoining Industrial Estate. Sri Lanka is located at a strategic point for the BRI. The port of Hambantota is indispensable for China's energy security because the country imports two-thirds of its oil through shipping lanes south of the port.[20] This initiative was aimed to build a secondary port at the coastal town of Hambantota, to alleviate capacity and crowding concerns with the primary port in Colombo. The project was initially kicked off in 2008 by Sri Lanka on the basis of Chinese finance with the intention that Sri Lanka would operate the facility. However, recently China has taken over the project with provision of additional funding and in turn taking a 70 per cent stake in the joint venture with the Sri Lanka Ports Authority (SLPA) which holds the remaining shares.

In addition to this, the latest investment gives China control over 15,000 acres of land adjacent to the port for the development of an industrial zone in Hambantota. The feasibility study for the industrial park identified the development of shipping services, processing of seafood, agricultural products and other processing/ manufactured industries as potential ventures. [21]

Another BRI project in Sri Lanka is the expansion and modernisation of the Colombo Port – the Colombo International Container Terminal, a Sino-Sri Lanka joint venture. The port, which serves as Sri Lanka's primary hub for freight has faced capacity concerns and as part of a joint venture with Chinese investors, the construction of a new South Container Terminal was started in 2011.

In addition to seaports, China has also funded the construction of airports. The Mattala Rajapaksa International Airport (MRIA) is located in Hambantota, 241 km south-east of Sri Lanka's capital city, Colombo. The MRIA is the second international airport in Sri Lanka. The construction of phase one began in 2009 and MRIA was opened in 2013 with USD 209 million spent on the

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[19] Economic Times. (2017). *China willing to give Sri Lanka $ 24 Billion more as part of OBOR.* Retrieved from https://economictimes.indiatimes.com/news/international/business/china-willing-to-give-sri-lanka-24-billion-more-as-part-of-obor/articleshow/58716674.cms

[20] Nikkei, G.Y., & Palma, S.(2018). *Is China's belt and road working? A progress report from eight countries.* Retrieved from https://asia.nikkei.com/Spotlight/Cover-Story/Is-China-s-Belt-and-Road-working-A-progress-report-from-eight-countries

[21] Shida, W. (2017). Bilateral economic ties between China and Sri Lanka. In Palihakkara, H.M.G.S. (Eds.). *The island of the lion and the land of the dragon.* Colombo, Sri Lanka: Pathfinder Institute.

project, of which USD 190 million was provided by the Chinese government via the Exim Bank of China. A second stage of expansion was planned but has not commenced; it was expected to expand terminal capacity from 1 million to 5 million passengers per year,[22] but the project is widely perceived to be a white elephant.

China has also invested heavily in other infrastructure development projects. These include a USD 460 million development of the Norochcholai Coal Power Plant to provide about 40 per cent of Sri Lanka's electricity supply; a USD 250 million Colombo-Katunayake Expressway between the country's main airport and city, facilitating the travel and tourism industry; the Moragahakanda Project which is the biggest reservoir in Sri Lanka; and the Southern Railway and Expressway linking Colombo and Hambantota by the end of 2018. More recently, China has approved USD 1 billion for funding phase one of the Central Expressway through a loan.

7.6 Implications of the BRI for Sri Lanka

This section aims to evaluate how the BRI could potentially have a positive impact on Sri Lanka. Concerns with the initiative are presented in the subsequent section.

7.6.1 Benefits of the BRI for Sri Lanka

The BRI holds out the prospect of helping to bridge the significant infrastructure financing gap, increase connectivity, link local markets to regional and GVCs, and thereby increase trade and investment in the participating countries. The BRI's impact can be framed in broad terms like trade, investment, tourism, and other flows between China and Sri Lanka.

Higher trade flows can be one of the important gains. As the world's second largest economy, China is one of the biggest traders in the world. While Sri Lanka is not an important trading partner of China, China has emerged to become Sri Lanka's second largest trading partner after India, in terms of Sri Lanka's total trade with the world. Initiatives, such as the BRI will enhance trade routes between both countries and facilitate trade bilaterally and beyond. Trade agreements have been placed under the BRI banner as well. Chinese officials have described a network of FTAs that would support the BRI, but to date, China appears primarily focussed on bilateral trade deals. The FTA between Sri Lanka and China is expected to boost bilateral trade. The Feasibility Study of the China-Sri Lanka Free Trade Agreement identifies nine potential products from Sri Lanka which would benefit from a FTA with China.[23] According to feasibility estimates, liberalisation of imports by China will increase exports from Sri Lanka by 3-112 per cent, depending on the export good/product.

The development of an industrial zone in Hambantota is likely to attract Chinese foreign investment, boost jobs, tax revenues and the local economic base, contributing to expansion of bilateral and regional trade. The benefits of the Maritime Silk Road stretch beyond infrastructure development by facilitating trade with new markets. The initiative focusses on increased

[22] Airport Technology. (n.d). *Mattala Rajapaksa (formerly Hambantota) international airport.* Retrieved from https://www.airport-technology.com/projects/hambantota-international-airport/

[23] China FTA Network. (2014). *Joint feasibility study on a China-Sri Lanka free trade agreement.* Retrieved from http://fta.mofcom.gov.cn/inforimages/201407/20140731094816710.doc

cooperation between the BRI countries which could help with the removal of trade barriers and promote regional trade and the formation of value chains.

Attracting more FDI can be a big gain, which remains a priority for Sri Lanka. In countries like Sri Lanka, which has attracted limited investor interest in the past, BRI is a welcome development. As part of the BRI, there have been significant China investments in Sri Lanka already. Existing investments in Sri Lanka as part of the BRI amount to approximately USD 8 billion, while China has offered up to an additional USD 24 billion in financing. The latest project to secure investment from the Chinese government is the building of a coastal rail link and a USD 500 million liquefied natural gas (LNG) plant near the Hambantota Port and Industrial Zone.[24]

With increased trade and growth realised under the BRI, it is anticipated that additional investments to Sri Lanka can be attracted. For example, the CIFC once completed, is estimated to bring in over USD 13 billion in FDI. This can take the form of government led investment in infrastructure (as is the case with BRI) or as investments by private institutions. The outward investment can come from a combination of newly formed funds, such as the AIIB, the New Development Bank and Silk Road Funds, and from state-owned and private companies. Both of these approaches will enlarge the availability of capital, facilitating growth and further investment.

Improvements to hard and soft infrastructure can be another positive outcome. Speaking at the OBOR Leaders' Roundtable in 2017, Sri Lanka's Prime Minister noted that "the Belt and Road Initiative will provide the much-needed hard and soft connectivity in the Indian Ocean region required for rapid economic and social development."

The BRI has created significant opportunities for countries and companies to participate in a range of projects, especially those involved in construction or infrastructural works. Asia's infrastructure is clearly in need of it; a recent ADB report highlighted that 45 Asian countries should invest USD 26 trillion between 2016 and 2030 to fix their infrastructure shortfall.[25] For countries needing infrastructure, the BRI holds the promise of investment in new railways, roads, ports and other projects, improving connectivity within and between countries.

To date, China has completed a number of infrastructure projects in Sri Lanka in sectors such as transportation, water, electricity, ports, etc., and has made important contributions to the socio-economic development of Sri Lanka. For example, the introduction of the Katunayake Expressway connecting the city of Colombo to the airport has facilitated the faster transport of perishable goods (such as agricultural produce). The build-up of infrastructure as part of the initiative will ensure that not only will trade flow more freely, but local enterprises can also leverage it to ensure domestic market access.

Fostering connections between Sri Lanka and China is important and should go beyond infrastructure links to include 'soft infrastructure'.

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[24] Reuters. (2018). *Sri Lanka approves $500 million LNG plant near Chinese-Controlled port.* Retrieved from https://in.reuters.com/article/sri-lanka-china-lng/sri-lanka-approves-500-million-lng-plant-near-chinese-controlled-port-idINKBN1I60GH

[25] Deloitte. (2018). *Embracing the BRI ecosystem in 2018.* Retrieved from: https://www2.deloitte.com/cn/en/pages/soe/articles/embracing-the-bri-ecosystem-in-2018.html

For countries needing infrastructure, the BRI holds the promise of investment in new railways, roads, ports and other projects, improving connectivity within and between countries.

The BRI aims at enhancing economic relations and people-to-people contacts by deepening cooperation on education, science, technology, sport, health, etc. For example, China has granted more than 1,200 scholarships, training programmes and internships to Sri Lanka annually since 2015.[26]

The BRI can also support Sri Lanka's efforts to become an economic hub. Sri Lanka is striving to build itself as an economic hub in the Indian Ocean, leveraging its strategic location and connectivity. Such a development goal is in line with the Maritime Silk Road. The BRI can help Sri Lanka's aspirations of becoming a major regional logistics and trading, and even a production hub.

Currently, Sri Lanka's main Colombo Port is classed as number 30 out of 145 ports globally. The top 20 shipping lines in Asia all dock at the Colombo Port. Sri Lanka has a significantly strong feeder connection to other ports in South Asia and Africa. These ports do approximately 30 per cent of their trade via Colombo. The increased investment in capacity, port technology, warehousing and support services means that there is significant potential to attract new and larger shipping vessels, leading to significantly greater income for Sri Lanka.

In addition to Colombo, the government has already commenced the development of two major ports – Hambantota and Trincomalee – and the two international airports – Colombo and Mattala. These initiatives together with the BRI can transform Sri Lanka into a logistics and trading hub. To support this, the new CIFC is being developed with the aim to provide support services including banking, brokerage, insurance, logistics and technology. Although the BRI is helping kick-start this development, the skills and service sector developed through this will also help serve numerous other sectors of the Sri Lankan economy. However, making a success of the BRI will require more than just building physical infrastructure. Soft infrastructure is critical, which means facilitating the movement of people, goods and services across borders.

[26] Xianliang. Y, (2017). *A brilliant future for China-Sri lanka cooperation under the belt and road initiative.* Retrieved from http://www.dailymirror.lk/article/A-brilliant-future-for-China-Sri-Lanka-Cooperation-under-the-Belt-and-Road-Initiative-131455.html

The BRI can also help Sri Lanka meet another of its aspirations to develop and join the GVCs. The growth of GVCs has increased the interconnectedness of economies and has led to a growing level of specialisation in specific activities and stages in value chains. According to a report by the Organisation for Economic Cooperation and Development (OECD), World Trade Organisation (WTO), and World Bank (2014), more than 70 per cent of global trade is in intermediate goods and services, while income generated within GVCs has doubled over the last 15 years. However, not all firms and countries are equally involved in GVCs. Some countries participate in many, either as the host country to lead firms or as suppliers of very specific tasks, while others participate very little. These varying degrees of connectedness across countries are determined by many factors, some of which are inherent to the country (such as geographic location and natural endowment), while others can be shaped by policy (such as human capital, infrastructure, and the business environment). Thus, the BRI can play an important role in Sri Lanka's participation in GVCs and facilitate the easy exchange of goods and services through necessary infrastructure development.

The GVC trade in Sri Lanka continues to be dependent on a handful of medium sized investments. The manufacture of parts and components is significantly low compared to other countries and Sri Lanka's share does not appear to be increasing adequately to keep pace with the rest of the world. The government has shown its enthusiasm to actively participate in GVC development. Sri Lanka's basic manufacturing could be greatly improved once the Hambantota Logistic/Port and adjoining Industrial Zone is operational. Due to the extension of the Maritime Silk Road to include regions as far as East Africa and Oceania, Sri Lanka will have access to diverse markets, which were previously difficult to access, providing the opportunity for increased product and service diversification.

There are also clear gains for tourism from participation in the BRI. China has made it clear that tourism forms a key part of its plans for countries to be involved in the BRI by aiming to "jointly create competitive international tourist routes and products; and make it more convenient to apply for tourist visa in countries along the Belt and Road". Tourism in Sri Lanka is already a major industry and significant contributor to the economy. Since 2010, Chinese nationals have made up a significant portion of the overall tourist population visiting Sri Lanka. The number of Chinese tourists visiting Sri Lanka between 2010 and 2016 has grown by over 70 per cent, and as of 2016, Chinese tourists make up approximately 15 per cent of all tourists arriving in Sri Lanka.[27] As the BRI gains traction in the region, its impact can be crucial in helping to attract even more tourists from China and neighbouring countries to Sri Lanka, facilitated by increased trade and business between Sri Lanka and BRI countries.

There are other potential spillovers from BRI in areas such as maritime resources, technology and knowledge transfer and employment opportunities. Better maritime infrastructure will mean that Sri Lanka can explore and exploit sea found natural resources that fall within Sri Lanka's Exclusive Economic Zone (a radius of 200 miles around the island). If significant deposits of commodities or natural resources are found within this zone, better maritime infrastructure

[27] Deyshappriya, N.R.R. (2017). *Chinese tourist numbers in Sri Lanka: A case for improving growth.* Retrieved from http://blogs.lse.ac.uk/southasia/2018/02/27/chinese-tourist-arrivals-to-sri-lanka-a-case-for-improving-growth/

(specifically the Hambantota and Colombo Ports), better trading relations and routes with countries and increased cooperation with other countries due to better knowledge transfer (brought about by the BRI) can make these natural resources more exploitable and marketable.

One of the key objectives of the BRI is to promote the transfer of knowledge and expertise between countries participating in the initiative. Towards this end, a university alliance has been set up by China to facilitate policy, research, cross-cultural understanding and training between institutions in countries participating in the BRI.[28] In addition, through the development of value chains and trade/investment flows, significant knowledge transfer can take place, which can then be disseminated locally, laying the foundations for sustained economic progress.

Both through the direct efforts involved in the construction of new infrastructure and through the creation of new service industry jobs and increased trade, it is envisaged that the BRI can also boost employment within Sri Lanka. For example, the new financial city is forecasted to provide 80,000 new jobs when completed.

7.6.2 Potential Concerns around the BRI for Sri Lanka

Navigating power rivalries and geopolitics will be more challenging. Currently, Sri Lanka is walking a tight rope, seeking economic and other benefits from China under the BRI while maintaining close relations with its rivals, the US, Japan and India.[29] As the biggest country in South Asia, India has been watching China's activity in Sri Lanka and elsewhere in the region with concern. The BRI has raised concerns of China's intentions in the Indian Ocean given the ambitions of the plan. Not surprisingly, India is not a party to the BRI. India, together with Japan, is concerned about the strategic implications of China's economic expansion and did not attend the summit held on BRI in 2017. In particular, China's projects with neighbouring Pakistan are a source of friction.

Sri Lanka is walking a tight rope, seeking economic and other benefits from China under the BRI, while maintaining close relations with its rivals, the US, Japan and India.

[28] Lie, M. (2016). *University alliance seeks enhanced education co-op along silk road.* Retrieved from http://www.chinadaily.com.cn/china/2016-04/11/content_24446327.htm

[29] Ramanayake, P. (2017). Sri Lanka in a balancing act over China's one belt, one road project. Retrieved from http://srilankabrief.org/2017/05/sri-lanka-in-a-balancing-act-over-china's-one-belt-one-road-project

China's investments in ports and infrastructure across India's neighbouring economies – Gwadar in Pakistan, Chittagong in Bangladesh, and Kyaukpyu in Myanmar – are being viewed with some caution. From this perspective, China's investment in Sri Lanka especially in the ports of Colombo and Hambantota are also seen as being of strategic importance. For example, the docking of Chinese submarines at the Colombo Port in 2014 and the handover of majority control of Hambantota Port to China in 2017 have raised concerns.

In addition to India, Western nations and Japan have also been observing China's increasing presence in Sri Lanka and its involvement with the BRI. Indeed, it prompted Sri Lanka's newly elected government of 2015 to attempt a rebalancing of its relations with India and the West. The strategic location of Sri Lanka at the centre of the Indian Ocean will continue to exert pressure on Sri Lanka in the power rivalry involving major economic powers such as the US, India, China, and Japan.

The implications of the BRI for a country's autonomy and sovereignty are matters of concern as well. With a significant portion of investment and funding in BRI coming from Chinese public entities, there is concern that a growing debt burden can lead to weaker negotiating strength and loss of sovereignty. With the ownership of key central infrastructure (e.g. the ports) being tied to such entities, Sri Lanka sacrifices a level of autonomy around how to manage this infrastructure. Indeed, China's takeover of the troubled Hambantota Port has raised questions about loss of sovereignty arising from large debt-to-equity swap arrangements.

Related to the above has been growing concerns about Sri Lanka's large government debt to China. As part of the BRI and due to the increased funding and loans made available by China, Sri Lanka has inherited a significant amount of debt to China and rest of the world. Sri Lanka's public debt of nearly 80 per cent of GDP is deemed to be the third-highest ratio among emerging economies. China is currently Sri Lanka's largest bilateral creditor.[30] The Sri Lankan government has had difficulty making repayments from earned revenues on some of these debt obligations and has had to restructure the debt agreements with the Chinese government. A prominent example of this is the funding around the Hambantota Port. As part of a debt-to-equity swap, Sri Lanka granted China an exclusive 99-year lease on the Hambantota Port in exchange for USD 1.1 billion.

Projects such as the Hambantota Port and the MRIA have also raised concerns about low investment returns on some Chinese funded projects. Infrastructure projects can be driven more by political considerations than commercial needs. The lack of commercial imperatives behind some BRI projects means that it is highly uncertain whether future project returns will be sufficient to fully cover the repayments to creditors. A case in point is the MRIA in Sri Lanka, which has failed to attract business.[31] As of June 2017, only two airlines have flown from the airport to destinations within Sri Lanka and the United Arab Emirates.

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[30] Legrand, N. (2018). South Asia: *New creditors and new forms of debt peonage.* Retrieved from http://www.cadtm.org/South-Asia-New-creditors-and-new

[31] Samarajiva, R. (2017). Sri Lanka and China's belt and road initiative. In Palihakkara, H.M.G.S. (Eds.). *The island of the lion and the land of the dragon.* Colombo, Sri Lanka: Pathfinder Foundation.

Due to the low number of flights, it has been proposed to offer long-term aircraft parking services as well as creating flying/aviation schools and maintenance services to be offered from the airport. In 2016, the Sri Lankan government called for expressions of interest (EOI) to run commercial activities as the airport is not generating enough revenue to pay back the loans. It has been called 'the world's emptiest international airport' due to its low number of flights.

Other concerns relate to the transparency of Chinese financing for infrastructure. In fact, there is international criticism of BRI's potential to generate high levels of corruption. Given the limited oversight (by design) and the projected speed of development, as well as the countries and industries involved, businesses working on these infrastructure projects can face demands for bribes. According to the 2017 TRACE Bribery Risk Matrix, which measures business bribery risks in 200 countries, BRI countries show comparable patterns of bribery risk: China and Sri Lanka rank at 158th and 159th out of 200 countries. Coupled with overall country risks are the risks specific to the industry; 30 per cent of cross-border bribery cases are in the construction and transportation sectors, and some estimates suggest that between 10-30 per cent of investment in publicly-funded construction projects may be lost due to corruption. Despite its stated desire for a 'clean belt and road,' China has often times been perceived to be somewhat indifferent to the payment of bribes beyond its borders by Chinese companies.

Owing to the above, there has been some negative reception to the BRI in terms of public perception and opposition. This can become aggravated as debt amounts pile up and if perceptions of loss of autonomy take hold. There have been a number of occurrences of public unrest, most recently rioting in the port city of Hambantota to express dissatisfaction with the loss of land; the government's handling of the debt repayment and the leasing of the Port to China. The Hambantota project failed to account sufficiently for local feelings about the development, concerns about political corruption, and national and regional political and security worries.[32]

Other concerns relate to safeguards on environment issues. Currently, the focus of the BRI has been to rapidly scale out key infrastructure that is instrumental to trade, including ports, industrial zones and roads. To date, there have been limited studies to evaluate the long term environmental impact of these infrastructure projects. While the environmental impact assessment (EIA) of the Colombo Port City showed that there is negligible impact from the construction, some have raised concerns around negative impacts due to the mining required for landfill and impacts on marine life due to the reclamation of land for the project.[33]

Moreover, there is concern that some of the other investment through BRI has been towards rapidly scaling out energy production that is heavily dependent on fossil fuels. Examples in Sri Lanka include funding of the Puttalam Coal

[32] Deloitte. (2018). *Embracing the BRI ecosystem in 2018.* Retrieved from https://www2.deloitte.com/insights/us/en/economy/asia-pacific/china-belt-and-road-initiative.html

[33] Sivaram, K. (2017). *'Locked-In' to China: The Colombo port city project.* Retrieved from https://fsi.stanford.edu/sites/default/files/colombo_port_city.pdf

Power Project. Concerns have been raised that these long term projects could breed a culture of fossil fuel dependence and dissuade investment in greener and more sustainable alternatives.[34]

Some of these above factors have led to periodic hiccups in rolling out the BRI. After initial fanfare, some projects have experienced serious delays. In Indonesia, the construction of a USD 6 billion rail line is behind the schedule and costs are escalating. Similar problems have plagued projects in Kazakhstan and Bangladesh. As changes in government and policy occur frequently, there is concern that successive governments may not agree to honour commitments made by the previous ones. Sri Lanka too has experience of this with the incoming 2015 administration taking immediate steps to suspend a number of major Chinese-funded projects inaugurated under the previous government. Although problems were ironed out within months in the case of Sri Lanka on most issues, the risks of similar action in the future remain. In the case of Sri Lanka however, not only did the government restart the suspended projects including the CIFC/Colombo Port City, but it also requested new investments from China.

7.7 Maximising Opportunities from the BRI

The BRI is seeking to rebuild China's ancient silk routes for the 21st Century by building new connections across three continents. This is a cross-border ambition on an unprecedented scale, at a time when globalisation and free trade are under threat in some regions. Under the BRI, China will build railways and highways, aviation links, oil and gas pipelines, transmission lines and telecommunication networks that will bring together many countries in Europe, Africa, and Asia and benefit millions of people.

Making a success of the BRI will require more than just building physical infrastructure. Soft infrastructur is critical.

[34] Pike, L. (2017). Will China's new silk road be green?. Retrieved from https://www.chinadialogue.net/blog/9775-Explainer-Will-China-s-new-Silk-Road-be-green-/en

BRI's success and its ability to foster connections between Sri Lanka and China will require more than just building physical infrastructure. Soft infrastructure is critical, as well as structural reforms and improvements in trade policy and investment climate in the country to better integrate into international value chains. The provision of funding alone is not enough to overcome the fundamental challenge of identifying environmentally sustainable and financially viable projects. Projects could fail as a result of poor investment decisions due to political priorities overriding economic considerations. The wrong kind and scale of infrastructure investment can lead to difficult debt situations. Or projects that offer insufficient returns to the communities could result in a political backlash. As Sri Lanka engages with the BRI, it needs to address these risks as well as balance the country's relationship with China and other major powers in the region who have an interest in the Indian Ocean.

8. Linkages in Climate Change, Migration and Remittances in Sri Lanka

8.1 Introduction

Early evidence of migration in the face of climate change dates back to 60,000 to 70,000 years, where the Ice Age resulted in climatic changes that prompted Homo sapiens to leave Africa. As such, migration is one of the oldest and natural strategies adopted by humans when faced with climate change related issues. In the current context of growing climate risks and rising migration, there is increasing consensus that migration has immense potential to offer multiple opportunities to improve climate change adaptation and resilience among those affected.

Migration is a popular phenomenon in Sri Lanka. According to the latest Household and Income Expenditure Survey (HIES) 2016 data, one in every eight households has an internal migrant residing elsewhere in the country, while one in every 14 households has a migrant overseas.[1] The most significant benefit of migration to households left behind is the remittances sent. For instance, in 2016 one in every eight households received internal remittances, while one in every 11 households received foreign remittances in Sri Lanka.[2] At the same time, in 2016, one in every 11 households was affected by natural disasters.[3] During 2013-2017 natural disasters is estimated to have resulted in 837 deaths, 792 injured persons, 352 missing persons, 10,370 fully destroyed houses, and 90,040 partially damaged houses.[4] Additionally, the severe drought in 2017 affected over two million people in 12 districts, while in 2016 an estimated 189,078 households were affected by flooding, 20,945 by landslides, and another 12,778 households were affected by storms.[5]

As such, due to the widespread nature of climate change related disasters, as well as migration and receipt of remittances among Sri Lankan households and their possible overlap, migration and remittances have a significant potential to improve the adaptive capacity and resilience towards climate disasters. Nevertheless, this potential embedded in this nexus in not fully exploited in Sri Lanka's adaptation efforts for disaster as well as in disaster management plans. Against this backdrop, in the face of recent increase in adverse weather patterns and related disasters that affected people's livelihood and

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1 Based on author's estimates from HIES 2016 data.
2 *Ibid.*
3 *Ibid.*
4 Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.
5 Based on author's estimates from HIES 2016 data.

often destroyed property and assets, this chapter looks at how migration and related remittances can help those affected to improve their capacity towards adaptation and resilience to climate change and weather related disasters.

The chapter starts off with a discussion of the interconnectedness of climate and livelihoods in Sri Lanka. This is followed by laying out the theoretical context for migration, and examining the factors that cause migration and how such factors can contribute towards adaptation related to climate disasters. Next, it discusses how remittances support relief, recovery and resilience in the event of climate disasters, followed by a brief review of international experiences and empirical evidence from Sri Lanka. The chapter goes on to assess the manner in which migration and remittances can be integrated into the existing disaster management efforts in Sri Lanka, with specific policy recommendations for implementation.

8.2 Livelihoods and Lifestyles

At the macro level, the Sri Lankan economy is highly reliant on climate-sensitive sectors such as agricultural, forestry and energy production.[6] Over 26 per cent of the country's labour force was engaged in agriculture in 2017. Predictable weather patterns are conducive for agriculture activities in rural areas; paddy cultivation has a clearly demarcated Yala and Maha season which is very much tied to expected weather patterns. Similarly, other seasonal crops such as pulses also depend on predictable dry and wet seasons. As such, in the event of climate change related disasters, one of the most critical implications is on livelihood opportunities. In recent years, the once predictable weather pattern in Sri Lanka has undergone various changes relating to the numerous episodes of climate related disasters affecting agriculture productivity. During 2016 and 2017, agricultural output in Sri Lanka contracted by 3.8 per cent and 0.8 per cent, respectively, due to adverse weather conditions.[7] The impact on agriculture activities go beyond agriculture, with ripple effects on industrial and services sectors due to forward and backward linkages.

At the same, the negative impact of adverse weather is also not limited to agriculture related livelihoods alone. Adverse weather impacts on buildings and infrastructure, affect other activities like transportation and logistics, etc. Similarly, for those people whose livelihood is based on fishing, weather patterns lead to multifaceted impacts; heavy rains can lead to deaths, prolonged dry weather in deep sea can adversely impact marine fishing, while droughts can dry up inland water bodies and affect inland fish production. Such disasters can hamper production and lower productivity due to physical damage to production, cause losses to the labour force due to death and injury, reduce investment in human and physical capital due to decreased savings, destroy public and private capital and disrupt utilities.[8]

In addition to these, sectors such as small and medium enterprises (SMEs), the self-employed business and related productive assets are also highly vulnerable to natural disasters.[9] As

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[6] United Nations Development Program. (n.d.). *Climate change adaptation - Sri Lanka.* Retrieved from http://www.adaptation-undp.org/;United Nations. (n.d.). Sendai framework for disaster risk reduction : 2015-2030. New York : United Nations.

[7] Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

[8] Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

[9] Ministry of Disaster Management. (2018). *Sri Lanka national disaster management plan 2018-2030.* Colombo, Sri Lanka: Disaster Management Centre, Ministry of Disaster Management.

such, climate change leads to environmental degradation related disasters which often destroy people's agricultural and non-agricultural livelihoods, and increasingly expose them to the risk of natural disasters.[10]

Simultaneous to affecting livelihoods, climate disasters also severely affect people's lifestyles. For instance, the flooding of the Kelani river affected suburban households, where many houses were fully flooded with much of their household possessions and assets destroyed. In the subsequent rainy seasons, residents in these areas discerned an emerging pattern of heavy rain, followed by flooding. In response, some resorted to an evacuation plan with the first hint of storms. For many, evacuation plans involve initially shifting moveable assets such as vehicles to higher grounds, and household assets such as furniture and electrical and electronic appliances to a higher floor in the same house or in a neighbouring house. Subsequently, the young, elderly and females are temporarily relocated to a safer location, while a male remains to safeguard the property during the disaster.

Such activities disrupt the regular lifestyle of the household, such as education and attending to work. While some households affected by adverse weather related issues choose to temporarily move, other households may opt for lifestyle changes in terms of permanent migration. Such households or impacted populations aim to migrate to areas where climate change and weather related risks are minimised. The next section explores how existing migration theories explain migration due to climate change and weather related reasons.

Evacuation plans involve initially shifting moveable assets to higher grounds and household assets to a higher floor or a neighbouring house. The young, elderly and females are temporarily relocated to a safer location, while a male remains to safeguard property during a disaster.

[10] Greenpeace. (2017). *Climate change, migration, and displacement : The underestimated disaster. Hamburg,* Germany: Greenpeace.

8.3 Migration Theories

Existing theories on migration encompass many factors, and their dynamics for mobility of persons. Migration theories based on neoclassical macroeconomics assert that geographic differences in supply of and demand for labour, and the corresponding wage differentials, drive migration.[11] Subsequent empirical work based on this theoretical foundation also emphasise that the capacity to migrate is also influenced by the cost of migration, resulting in the poorest individuals not being able migrate. Similarly, those originating from poorer geographic locations find it harder to migrate.[12] Along these lines, the inability for some individuals, and individuals from areas affected by climate disasters, to out-migrate can be explained by the cost of migration and inability to finance the same, due to adverse effects of climate disasters leading to impoverishment of such individuals and areas.

The neoclassical microeconomic theories, also identified as human capital theory of migration, assume migrants perform a cost-benefit analysis and make rational decisions based on the information available to them.[13] Some costs considered in this analysis include the cost of finding a job, and the relocation cost. In addition to these financial costs, individuals implicitly assign a value to non-financial costs such as separation from family and loved ones. The benefits considered by migrants often include the capacity to earn a higher income, and better quality of life in the destination area.

In the context of climate change related migration, the benefits would also include the absence of a variation in income due to weather, and benefits due to not having to evacuate one's own home every year. An important aspect of this cost-benefit analysis noted by neoclassical economists is the emphasis on expected differential in wages, rather than the actual differences. As such, much of climate related migration under the neoclassical framework would be guided by an expected stable income stream associated with the destination. Nevertheless, migrants rarely have perfect information on all these costs and benefits, and their rational behaviour is conditioned by insufficient capabilities to acquire such information, as well as to evaluate them.

Expanding beyond individual level factors, the push and pull theory of migration asserts that migration is shaped by four factors – i.e. factors in the sending area; factors in the destination areas; 'intervening' facilitators, and obstacles; and personal factors.[14] In the context of climate change related migration, the vulnerability to climate disasters is one of the main push factors, while other common push factors include poverty, lack of opportunities, and migration networks. Pull factors in destination areas include availability of employment opportunities, social services, family members, and social networks. The

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[11] Hicks, J. (1932.). *The theory of wages.* London, United Kingdom: Macmillan.; Lewis, A. (1954). Economic development with unlimited supplies of labour. *The Manchester.*; Harris, J., & Todaro., M. (1970). Migration, unemployment and development: A two-sector. *American Economic Review.*

[12] Massey, D. S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., & Taylor, J. (1998). *Worlds in motion. Understanding international migration at the end of the millennium.* Oxford, United Kingdom: Clarendon Press.; de Haas, H. (2008). Migration and development. A theoretical perspective. International Migration Institute Working Paper No.9. Oxford, United Kingdom : International Migration Institute, University of Oxford.

[13] Sjaastad, L. A. (1962). The costs and returns of human migration. *The Journal of Political Economy.* pp. 80-93.; Todaro, M. P. (1969). A model of labour migration and urban unemployment in less developed countries. *American Economic Review*, pp. 138-148.; Todaro, M. P., & Maruszko, L. (1987). Illegal migration and US immmigration reform: A conceptual framework. *Population and Development Review,* pp. 101-114.

[14] Lee, E. (1966). A theory of migration. *Demography,* pp. 47–57.

facilitators and obstacles for migration include wealth, education, etc., while personal factors that influence migration include age, gender, ethnicity, etc. Push-pull theories offer explanations as to why large urban areas with a wider range of economic opportunities and better services are attractive destinations for migrants originating from climate disaster affected areas.

In contrast to the individual centric view adopted in the above discussed theories, the New Economics of Labour Migration (NELM) highlights that not all migration decisions can be explained by rational individuals who compare the benefits and costs, or who are pushed from the origin or pulled toward destination areas.[15] As such, going beyond the individual, the NELM suggests that migration is a household or family level collective decision taken strategically to diversify their income sources and reduce its exposure to hardships and risks. Accordingly, migration theories on NELM adopt a household centric view, and incorporate remittances into this household level migration analysis.[16]

As per the NELM, migration and related remittances are also a part of implicit familial contracts aimed at risk-diversification, consumption smoothing, insurance, and exchange, among others, where either one individual migrates based on a household level decision, and remits to the family left behind. In the context of climate change and weather related risk and crop failure, some studies argue that in an economy where insurance and capital markets are highly incomplete, the act of migration may be seen as a diversification response in the presence of risk.[17] Research studies find that the greater the degree of ongoing drought, the more the remittances sent to these areas from urban migrants.[18] Their work also show that migrants are more likely to assist families affected by drought if they have more cattle; the implicit understanding is that urban members will provide insurance during drought, and this permits the household to pursue riskier rural strategies, such as cattle farming.

As such, migrants, on the one hand, can be individuals leaving family members behind to a location where the income or weather risk structures are uncorrelated with that of the origin areas to ensure risk diversification. In such a setting, income loss due to adverse weather etc., can be compensated with remittances sent by the migrant to the family that is left behind. On the other hand, migrants can compose of an entire family moving in search of better living and livelihood opportunities, and not severely affected by adverse weather patterns in the new destination. This latter line of reasoning is theorised as those family members who do not move on their own initiative, but move as tied migrants, often facing reduced earnings and employment opportunities in the destination labour market.[19] As such, a family will only migrate if the gains of one family member internalises the losses of the other family members.[20]

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[15] Stark, O., & Levhari, D. (1982). On migration and risk in LDCs. *Economic Development.*; Lucas, R. E., & Stark, O. (1985). Motivations to remit: Evidence from Botswana. *Journal of Political Economy.*; Stark, O., & Lucas, R. E. (1988). Migration, remittances, and the family. *Economic Development and Cultural Change.*

[16] Weeraratne, B. (2018). Migration and development - Role of remittances. In A. Triandafyllidou, Handbook on migration and globalisation. Abingdon, United Kingdom: Routledge Publishing.

[17] Stark, O., & Levhari, D. (1982). On migration and risk in LDCs. *Economic Development.*; Lucas, R. E., & Stark, O. (1985). Motivations to remit: Evidence from Botswana. *Journal of Political Economy.*

[18] Lucas, R. E., & Stark, O. (1985). Motivations to remit: Evidence from Botswana. *Journal of Political Economy.*

[19] Mincer, J. (1978). Family migration decisions. *Journal of Political Economy.*

[20] Bauer, T. K., & Zimmermann, K. F. (1999). Assessment of possible migration pressure and its labour market impact following EU Enlargement to Central and Eastern Europe. *IZA Research Report No. 3.* Bonn, Germany: Institute of Labour Economics (IZA).

8.3.1 Factors Affecting Migration

Even though migration may be influenced by climate change and weather related disasters, it is often difficult to disentangle these factors from the rest, due to the interconnected nature of all factors that affect the mobility of persons. The interplay between these causes of migration has the tendency to be heightened when faced with climate rated risks. For instance, climate disasters may reduce the safety of homes or communities, deteriorate individual health status, and decrease household-asset value through land and property degradation.[21] Similarly, a decline in agricultural productivity and an increase in food-commodity prices may negatively affect income and employment opportunities of people working in the agricultural sector. In turn, these developments can influence household consumption – possibly boosting urbanisation via rural-urban migration – and ultimately affect migration decisions of urban households, resulting in international migration.[22]

In order to better understand the web of factors that affect migration, these are categorised into macro, meso and micro factors (Figure 8.1). Macro-level influences are those beyond the control of individuals, households, or communities such as demographic (the size of the population and the rate of growth); economic (labour markets and commodity prices); political (laws and conflict); social (gender relations); and environmental variables. For instance, in 2017, the drought affected all but two of Sri Lanka's 25 districts in all nine provinces, where these environment variables are beyond the control of individuals. The macro-level variables exert continuous impacts on livelihoods, incomes, and wellbeing, and these influence migration possibilities and opportunities for those affected.

The meso-level factors that influence migration include diaspora links, cost of moving, political and legal frameworks, employment agencies or migrant-smuggling networks. For instance, Negombo in the West coast and Batticaloa in the East coast of Sri Lanka have become notorious for networks that assist in smuggling people to Italy and Australia, respectively. Similarly, the availability of diaspora links via current migrants enables information about opportunities in destination countries to flow easily and speedily. The regulatory framework for migration of female domestic workers to Middle East countries – at zero cost to migrants and the receipt of upfront recruitment incentives – are other meso-level factors that influence migration.

Identified micro-level factors that influence migration include characteristics of individuals and households, such as health, skills, physical capital, financial capital, social capital, human capital, natural capital, and perceptions of risks level, etc. As found in research studies, individual characteristics such as age, gender and years of schooling, and household level characteristics such as share of unemployed and number of income receivers at home, influence migration in Sri Lanka.[23]

When confronted with such micro, macro and meso-level factors, depending on household needs, risk perceptions, past experiences, future aspirations, needs and uncertainty, and norms/

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[21] Licker, M. M., Bohra-Mishra, P., & Fagiolo, G. (2016). The influence of climate variability on internal migration flows in South Africa. *Global Environmental Change,* 39(2016)155–169.

[22] *Ibid*

[23] Weeraratne, B. (2014). A microanalysis of contextual determinants of labour migration in Sri Lanka. *Migration and Development*. New Jersey: Office of Population Research, Princeton University.

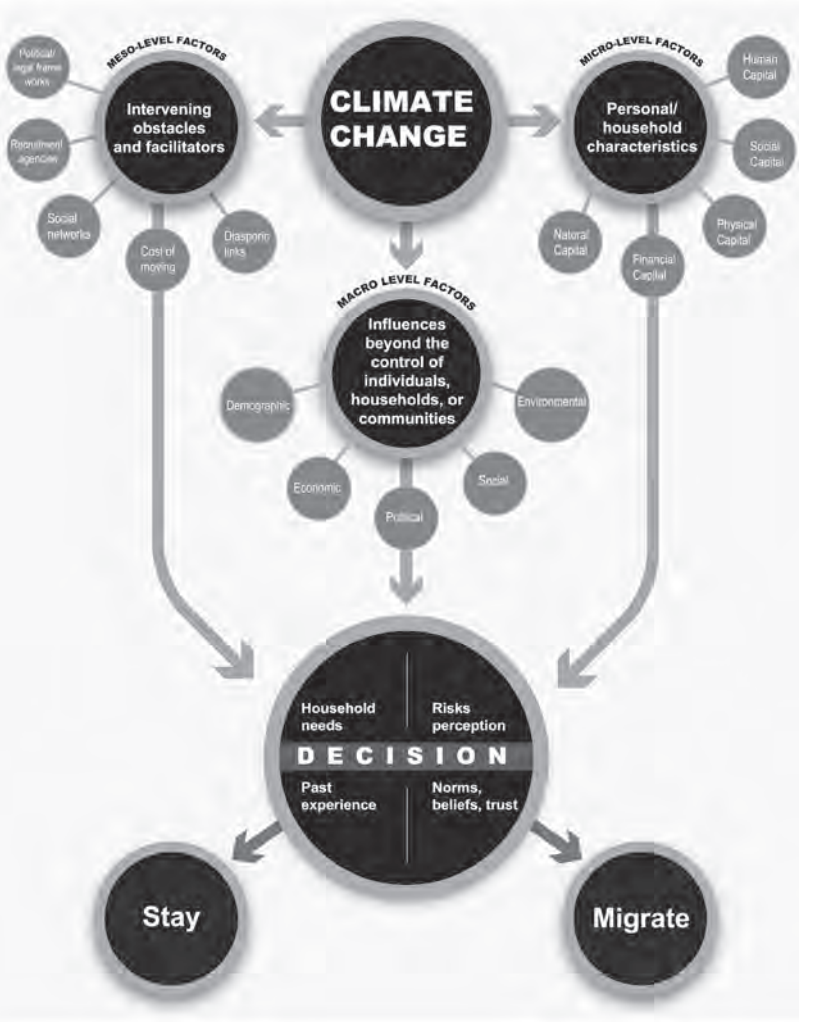
beliefs/trusts, influence people's decision to stay or migrate (Figure 8.1).

8.3.2 Migration for Adaptation

Addressing climate change is often categorised as either mitigation or adaptation strategies. Mitigation involves addressing the root cause of climate change issues such as reducing greenhouse gases (GHGs), while adaptation involves lowering the risks posed by consequences of climate change. Out of these two broad groupings of strategies, migration offers immense potential as an adaptation strategy.

The capacity and potential of humans to adapt to climate change is unevenly distributed across different regions and populations. Migration and remittances have the capacity to improve

Figure 8.1
Climate Change, Livelihood, and Household Migration Behaviour



Source: Rigaud, K. Kanta., Sherbinin, A. d., Jones, B., Bergmann, J., Clement, V., Kayly, O., Midgley, Amelia. (2018). Groundswell: Preparing for internal climate migration. Washington D.C.: World Bank.

these capacities and potentials by redistributing opportunities across geographic locations. In the context of climate change, migration is often understood to be a livelihood, coping, risk management, and adaptation strategy by households.[24]

Migration that is influenced by climate change takes effect differently for different disasters. For instance, migration that takes place due to chronic drought conditions initially follow pre-established labour migration patterns, and may not differ in intensity from areas with established high rates of temporary or circular migration.[25] Similarly, migration due to an increase in positive temperature extremes at the origin areas act as a push factor that enhances out-migration, while excessive and inadequate rainfall in origin areas also act as push factors for out-migration.[26] In the case of floods, wind storms and hurricanes, immediate localised temporary out-migration takes place from affected areas towards relief sites, and after a critical period, people typically return to the disaster site to rebuild their livelihoods. However, often migration is considered as the last adaptive response households will take when confronted with environmental factors that threaten their livelihoods, and mostly resorted to when other mechanisms to cope have proven unsuccessful. In this context, remittances via implicit familial contracts are capable of addressing this market need.[27]

Climate events affect livelihoods through their effect on agricultural productivity and possibly through effects on non-agricultural income. On the one hand, a decrease in income has the capacity to promote migration in search of greater income, and overcome the adverse situation. Nevertheless, for some individuals who do not have a minimum required critical level of finances to migrate, climate events and the related decline in income can reduce the incentives for migration by lowering income from agriculture and exacerbating credit constraints. As a result, the poorest and most vulnerable may be unable to migrate because they lack the necessary resources, which leave them trapped.[28] Some studies show that vulnerability is inversely correlated with mobility, where people who are most exposed and vulnerable to the impacts of climate change are the least capable of migrating.[29] The findings suggest that those who are trapped by their lack of mobility suffer a significant injustice, and communities with declining populations have difficulties in sustaining themselves and maintaining community unity and adaptive capacity. As a remedy, such communities rely on diaspora links and networks to deal with many environmental risks. At the same time, it is important to note

[24] Rigaud, K. Kanta., Sherbinin, A. d., Jones, B., Bergmann, J., Clement, V., Kayly, O., Midgley, Amelia. (2018). *Groundswell: Preparing for internal climate migration.* Washington D.C.: World Bank.

[25] Raleigh, C., Jordan, L., & Salehyan, I. (n.d.). *Assessing the impact of climate change on migration and conflict.* Washington D. C.: World Bank.

[26] Licker, M. M., Bohra-Mishra, P., & Fagiolo, G. (2016). The influence of climate variability on internal migration flows in South Africa. *Global Environmental Change,* 39(2016)155–169.

[27] For example, an interview with an internal migrant from Maskeliya in Sri Lanka, currently residing in Colombo, revealed that her mother's line house in a tea plantation was destroyed due to the heavy rain and wind in May 2018, and immediately after learning of this damage, she visited her home with supplies and money to rebuild the house.

[28] Waldinger, M., & Fankhauser, S. (2015). C*limate change and migration in developing countries: Evidence and implications for PRISE countries.* ESRC Centre for Climate Change Economics and Policy and Grantham Research Institute on Climate Change and the Environment.

[29] Black, R., Arnell, N.W., Adger, W. N., Thomas, D., & Geddese, A. (2013). Migration, immobility and displacement outcomes of extreme events in nature. *Environmental Science and Policy.*

that not all affected by climate change related disasters would consider moving. Some would choose to stay back despite the issues faced. Box 8.1 depicts the types of migration due to climate change.

reconstruction and rehabilitation assistance. The International Federation of the Red Cross (IFRC) identifies relief as the provision of essential, appropriate and timely humanitarian assistance to those affected by a disaster, based on an initial

Box 8.1
Types of Human Migration Induced by Climate Change, Environmental Degradation and Natural Disasters

The distinction between different types of mobility due to consequence of natural disasters, climate change and environmental degradation is fluid. All forms of mobility have a significant impact on people and societies due to the departure from their traditional communities, loss of land, work, property and networks.

Displacement:
Displacement denotes the forced abandonment of a person's home.

Migration:

In contrast to displacement, migration induced by climate change or environmental degradation implies that migrants have a degree of freedom in deciding on the timing, duration, and destination of their migration. The term "migration" is also used as a general term to describe a more or less voluntary departure.

Planned relocation:

This term denotes a resettlement imposed by unsustainable circumstances or by order of a national or local authority.

Trapped populations:

This term describes population groups whose livelihoods have been destroyed, or who are exposed to enormous risks but do not have the resources to migrate, or for whom escape routes and places of refuge have been denied, meaning they therefore lack the means to flee or migrate.

Source: Greenpeace. (2017). *Climate change, migration, and displacement : The underestimated disaster.* Hamburg, Germany: Greenpeace.

8.4 Remittances for Relief and Resilience

Assistance for climate disaster can be segmented as relief for immediate recovery, and subsequent rapid assessment of needs and is designed to contribute effectively and speedily to their early recovery. Such immediate relief for recovery includes shelter, protection and security, food and water, and financial assistance. It has a significant

emphasis on reducing and stabilising current impacts to prevent the impact of secondary hazards. Once the initial crisis is over and the emergency needs have been met, those affected still need assistance for the second phase of recovery to rebuild and rehabilitate, such as to rebuild assets and infrastructure, health care and rehabilitation. This secondary stage assistance often aims to improve resilience – defined as the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a shock or stress in a timely and efficient manner.[30]

Among alternative sources of relief for immediate and subsequent stages after a disaster – such as government institutions, non-governmental organisations (NGOs) and international organisations – remittances have many ideal characteristics befitting to serve the purpose.[31] For instance, remittances are said to directly reach households, including in remote and vulnerable areas, are well-targeted in reaching those needing assistance, and understands the needs of those affected. Moreover, disbursement of remittances eliminates administrative procedures and undue red tape, which often contribute to delays, and enable those affected to access funds immediately.

8.4.1 International Experience

There is a growing body of evidence indicating the potential of remittances to contribute towards households' climate risk management strategies. The literature shows that in some environmental disasters, households have entirely depended on remittances for decades. For instance, during the great drought in the mid-1980s, large proportions of rural agricultural households in Mali depended on remittances for survival.[32] These studies also point out that conventionally, climatic shocks are more likely to disproportionately affect the poorest of the poor (vulnerable households), and it is expected that remittances would contribute to build their adaptive capacities to accommodate the stress, recover early or retreat successfully. It has also been found in research studies that remittances help poorer people to access financial resources which are needed to create assets that would enable them to deal with both known and unexpected environmental challenges.[33] Other studies find that in Ghana, remittances are used to finance both incremental costs of households' infrastructure and consumption needs, as well as additional investment needs to be occasioned by ongoing or expected changes in climate.[34]

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30 Mitchell, T., & Harris, K. (2012). Resilience: A risk management approach. *ODI Background Note.*

31 Bendandi, B., & Pauw., P. (2016). Remittances for adaptation: An 'alternative source' of international climate finance?. I A. Milan, B. Schraven, R. K. Warne, & N. Cascone, M*igration, risk management and climate change: Evidence and policy responses. Global.*

32 Musah-Surugu, I. J., Ahenkan, A., Bawole, J. N., & Darkwah, S. A. (2018). Migrants' remittances: A complementary source of financing adaptation to climate change at the local level in Ghana. *International Journal of Climate Change Strategies and Management.*

33 Barnett, J., & Webber, M. (2009). *Accommodating migration to promote adaptation to climate change.* Policy brief prepared for the Secretariat of the Swedish Commission on Climate Change and Development and the World Bank World Development Report 2010 team. Stockholm, Sweden: Commission on Climate Change and Development.

34 Issah Justice Musah-Surugu, A. A., Bawole, J. N., & Darkwah, S. A. (2018). Migrants' remittances: A complementary source of financing adaptation to climate change at the local level in Ghana. *International Journal of Climate Change Strategies and Management.*

There is ample evidence of remittances contributing to speedy recovery and better resilience in the face of diverse types of climate disasters. In the case of rainfall shocks in the Philippines, remittances served as a consumption smoothing mechanism; in the case of the 1998 floods in Bangladesh, remittances were associated with keeping per capita household consumption higher in households that received remittances, even after controlling for the possibility that these households may be self-selected; in Haiti, after cyclone Jeane in 2004, in-kind transfers from friends and relatives from mainly the US, is found to have played an important role in relieving immediate distress from the devastation; similarly, subsequent to hurricane Ivan in 2005, Granada experienced a 15 per cent increase in remittances, which helped the households to recover from the disaster.[35]

Similar to the aftermath of climate and weather related disasters, in the case of other natural disasters too, remittances have made a significant contribution in the recovery process. For instance, in Pakistan after a devastating earthquake in 2005, remittances played an important role in disaster recovery and reconstruction, while in El Salvador subsequent to an earthquake in 2001, remittances increased to help smooth household consumption and compensate for the loss of assets. International remittance-receiving households in Burkina Faso and Ghana, especially those that receive remittances from high-income Organisation for Economic Cooperation and Development (OECD) countries, have housing built of concrete rather than mud and have greater access to communications, which can help in coping during natural disasters. In the case of the 2004 Asian tsunami, households in the Aceh region that received remittance were found to have recovered faster due to the speedy relief provided by migrant remittances.[36]

8.4.2 Empirical Findings from Sri Lanka's Experiences

Sri Lanka's plantation sector is vulnerable to climate change and related impacts of out-migration. The sector remains vulnerable to climate change mainly due to its limited capacity to switch between crop varieties, and the relatively long pre-harvesting period. Moreover, some studies suggest that at the aggregate level, predicted changes in rainfall by 2050 are expected to reduce labour demand by approximately 1,175,000 person-days per year across Sri Lanka's tea plantation sector.[37] Such a decline in labour demand and the associated excess supply of labour is most likely to be equilibrated by out-migration from plantation areas.

Additionally, Sri Lanka has also witnessed the linkages between natural disasters and remittances. The December 2004 tsunami in Sri Lanka exemplifies the potential of migration and remittances in relief and recovery efforts, as well as in building resilience. The tsunami affected two-thirds of the coastline in 13 districts in Sri Lanka, causing extensive loss of life, displacement of over a million people, damage to property and disrupting livelihoods and services', with a death toll of over 35,000 people.[38]

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[35] Mohapatra, S., Joseph, G., & Ratha, D. (2009). *Remittances and natural disasters: Ex-post response and contribution to ex-ante preparedness.* Policy Research Working Paper 4972, World Bank. Washington D.C.: World Bank.

[36] *Ibid.*

[37] Gunathilaka, R. P., Smart, J. C., Fleming, C. M., & Hasan, S. (2018). The impact of climate change on labour demand in the plantation sector: The case of tea production in Sri Lanka. *Agricultural and Resource Economics.*

[38] Ministry of Finance and Planning. (2005). *Annual report.* Colombo, Sri Lanka: Ministry of Finance and Planning.

As such, in 2005, the immediate needs of those affected were shelter, food, and water, which were provided by Sri Lankans unaffected by the disaster. The provision of these immediate relief measures was organised through many channels, including the government, NGOs and international organisations, although the government assistance was widely criticised for delays. Additionally, a significant contribution was made via remittances. The inflow of remittances into Sri Lanka in the aftermath of the tsunami can be classified as worker remittances – i.e. remittances by Sri Lankan's temporarily working overseas, and diaspora remittances sent by permanent or long-term migrants. The flow of remittances and donations increased sharply in the months immediately after the tsunami, especially during February-March 2005, prompting leading banks to set up special arrangements to receive remittances.[39] Similar to the formal channels of remitting, even the informal channels of remitting proved to be speedy and efficient during the aftermath of the tsunami. For instance, funds collected in countries such as Canada were transferred instantaneously to affected Sri Lankans and regions mainly in the Northern and Eastern Provinces via informal channels.[40]

More recent research attempts to examine the relationship between migration and remittances, and incidence of climate disasters in Sri Lanka under the adaptation hypothesis and the resilience hypothesis.[41] If the incidence of climate disaster takes place first and leads to migration, it can be considered as an adaptation strategy, and thus supports the adaptation hypothesis. By contrast, if migration takes place first and leads to a lower probability of climate disaster affecting the household, this can be considered as improved resilience due to migration, and thus supports the resilience hypothesis.

The adaptation hypothesis and the resilience hypothesis in the relationship between migration and remittances, and incidence of climate disasters, is examined using the latest HIES 2016 data. Whilst the HIES data provide information about the migrants from households, receipt of remittances to households and incidence of climate disasters during the last year, among other variables, the data does not facilitate identifying the sequence of events – i.e. whether the migration or the climate disaster took place first. As such, determination of the direction of causality is not straight forward.

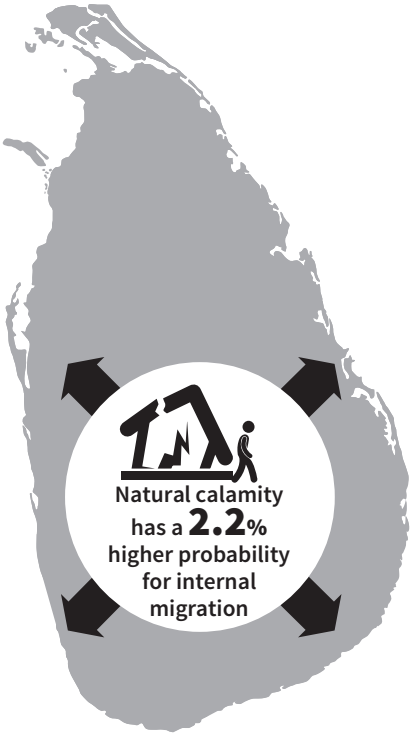
The estimates find that in terms of internal migration, households that have experienced a natural calamity have a 2.2 percentage point higher probability to have an internal migrant. Given that migration is the outcome in this model, this tests the adaptation hypothesis, which is supported by the findings. In studying the reverse relationship, the findings indicate that having an internal migrant from the household leads to increasing the probability of climate disaster incidence by 1.6 percentage points. Under the resilience hypothesis this should result in a negative relationship. Perhaps, the findings suggest that the migrant has not been away for long enough to enable the household to diversify its risk or invest in improving resilience. On the other hand, given that migration does

[39] Deshingkar, P., & Aheeyar, M. M. (n.d.). *Remittances in crisis - Sri Lanka after the tsunami.* Humanitarina Policy Group. Geneva, Switzerland: International Organisation for Migration.

[40] *Ibid.*

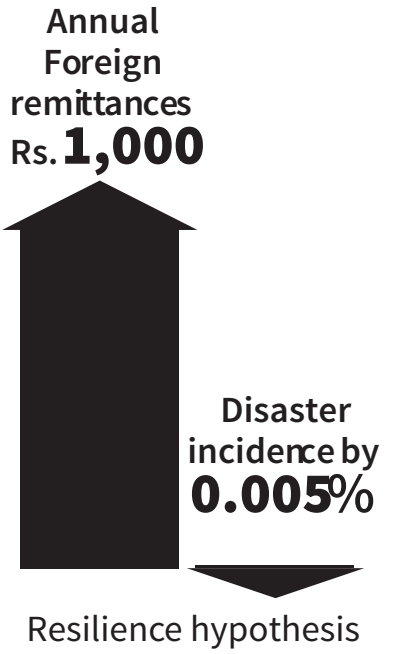
[41] Weeraratne, Bilesha. (mimeo). *Migration, remittances, and climate change.* Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

not necessarily lead to remittances, it could also reflect the fact that despite migration, the household does not receive remittances from

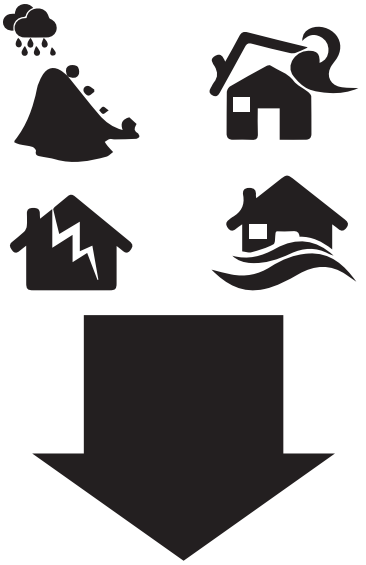


the migrant. As such, these preliminary findings on the association between climate disaster and migration in Sri Lanka do not support the resilience hypothesis, but only supports the adaptation hypothesis.

When the same analyses are conducted in terms of remittances, the findings indicate that an increase in annual foreign remittances by Rs. 1,000 lessens the probability of climate disaster incidence by 0.005 percentage points. This preliminary finding confirms the resilience hypothesis. Given that the resilience hypothesis was not confirmed with migration but it does with remittances, gives an indication that not all migrants may remit to the households that they originated from. The study also finds that an incidence of climate disaster is associated with Rs. 7,200 lower annual remittances. This finding is contrary to the adaptation hypothesis. In fact, it shows that in the context of households receiving remittance income, the households that had experienced climate disasters receive lower remittances.



Not all migrants may remit to the households that they originated from.



The climate disaster is associated with Rs. 7,200 lower annual remittances.



Perhaps these results are driven by the duration of migration, which cannot be discerned by the available HIES data, where a recent migrant who may have out-migrated due to an incidence of climate disaster in the previous year may not have been established/settled enough in the destination to sufficiently help households with remittances towards the latest climate disaster. Similarly, financial difficulties associated with climate disaster in previous years may have resulted in debt when the migrant set out, and in such situations, until repayment of debt, remittances to households may be lower.

In attempting to understand the relationship between climate and weather related variables and internal migration in Sri Lanka – using data from the Department of Meteorology and the Census of Population and Housing conducted in 2001 and 2012 – the study finds that for every 1 mm increase in rainfall in the short run (defined as average of five years of rainfall), the number of internal migrants from a district declines by 19 individuals. The corresponding impact of long- run rainfall (defined as the average rainfall in the last ten years) is a slightly larger decline of 21 individuals. This provides some evidence that those affected by rainfall and related flooding are less likely to become internal migrants in Sri Lanka. Perhaps the underlying reason is that vulnerability to adverse effects due to rainfall limits their capacity to migrate, making them involuntary stayers or trapped populations, with inadequate resources or their livelihoods have been destroyed, and they do not have sufficient resources to migrate.

People affected by rainfall and related flooding are less likely to become internal migrants in Sri Lanka.

8.5 Migration and Remittances in Disaster Management

Despite the potential for migration and remittances to contribute to adaptation and resilience with regards to climate change and adverse weather related disasters, Sri Lanka's Comprehensive Disaster Management Programme (SLCDMP) for 2014-2018 or the proposed National Disaster Management Plan (SLNDMP) 2018-2030 do not adequately exploit these linkages.[42] Nevertheless, building on the UN Sendai Framework, priorities such as investing in disaster risk reduction for resilience; and enhancing disaster preparedness for effective response and to 'build back better' in recovery, rehabilitation and reconstruction are captured in both the SLCDMP and SLNDMP.

The SLNDMP highlights that investment in structural and non-structural measures are required to reduce the risk of disasters and build resilience. The non-structural solutions identified include education and awareness raising, and the application of climate compatible methodologies for agriculture and other livelihoods, among others. Here, a migrant's exposure as well as access to remittances can become useful.

Additionally, the SLNDMP identifies that negative financial impacts of disasters can be mitigated if the private sector or government can proactively provide risk financing, risk transferring, and compensation arrangements. It further notes that in the absence of proper risk assessment at local and national levels, the application of risk financing and risk transferring mechanisms are constrained. The existing insurance schemes are limited to areas such as life and property, as well as small businesses. Moreover, it is also noted that in providing disaster related insurance, agencies tend to keep the premiums high as they have limited information to assess the potential risks. In this context, migration and remittances, which constitutes an informal inter-familial insurance mechanism eliminates many issues such as appropriateness, affordability, accessibility and targeting involved in market-based insurance schemes. However, if the potential of remittances are to be fully exploited as an informal insurance mechanism, accessibility of remittances immediately after a climate disaster needs to be improved.

In terms of resilience, the SLCDMP underscores that investments in disaster risk reduction (DRR) must be seen as an investment towards ensuring the resilience of development outcomes and not as an additional expenditure. As such, it notes the importance of explicitly working towards development co-benefits of disaster reduction, as opposed to focussing entirely on loss reduction. This approach is intended to contribute towards 'transformative development' as highlighted in the discourse on 'resilience', as opposed to maintaining minimum capacities to cope with shocks. Interestingly, such transformative developments are also the focus of the National Labour Migration Policy (NLMP) of 2008 and its ongoing review process.[43] Specifically, the NLMP highlights the need to ensure that labour migration is integrated and mainstreamed in national development, decent work, labour market

[42] See Ministry of Disaster Management. (2014). *Sri Lanka comprehensive disaster management programme (SLCDMP) : 2014 - 2018.* Colombo, Sri Lanka : Disaster Management Centre, Ministry of Disaster Management.; Ministry of Disaster Management. (2018). S*ri Lanka national disaster management plan 2018-2030.* Colombo, Sri Lanka: Disaster Management Centre, Ministry of Disaster Management.

[43] Ministry of Foreign Employment Promotion and Welfare. (2008). *National labour migration policy for Sri Lanka.* Colombo, Sri Lanka: Ministry of Foreign Employment Promotion and Welfare (MFEPW).

and poverty reduction policies to underscore the role of migration in Sri Lanka's development. Once implemented, such mainstreaming would inevitably link migration with climate disaster management policies where return migrants' and transnational migrants' contribution in terms of investments, transfer of technology and skills, human capital formation, enhancement of social capital, etc., can easily be channelled for investments towards DRR with appropriate coordination among agencies in Sri Lanka.

The SLNDMP appropriately identifies that rehabilitation, reconstruction and recovery in a post disaster situation are mainly dependent on the level of preparedness by society. As such, in its implementation arrangement, the SLNDMP identifies the importance of community groups at the village level, and the concept of a 'resilient village'. With the added capacity of resilience among remittance receiving families, it would be appropriate to give such families an important role in a community group. The ability of a family or a community to become resilient or 'bounce back' from climate disaster can be significantly improved with remittances.

8.6 Policy Recommendations

Based on the foregone discussion, the capacity and potential for migration and remittances to contribute to adaptation and resilience towards climate change and adverse weather related disasters are noteworthy. It is also important to note that the validity of the nexus between migration as a climate change adaptation strategy remains disputed, mainly due to the difficulty in separating out other drivers of migration from climate change related reasons and their interwoven nature. As such, it is important to understand the interwoven nature of migration drivers and discern the channels through which climate change and adverse weather adaptation strategies, and resilience improvement can be formulated. The following are recommendations for incorporating migration and remittances into Sri Lanka's disaster reduction policy, presented as strategies that can take effect as ex-ante and ex-post climate disasters.

Strategic entry points for action to include migration as a climate change adaptation strategy should aim to create 'pulls' to other locations, instead of waiting for climate change related 'pushes' to materialise. Such strategies can facilitate out migration from high risk areas. Climate change related 'push' factors to populations at risk should be explained and such communities should be encouraged to develop migration plans to enable mobility. Strategies should also aim to eliminate factors that contribute to forced 'adaptation in place' when the limits of local adaptation are reached.

In terms of channelling financial remittances for climate disaster adaptation and resilience, the government should seek to develop partnerships with financial institutions handling remittances to encourage such institutions to offer opportunities to remittance receiving households to 'build back better'. Other measures include the adoption of simplified mechanisms for proof of identity requirements for those affected by climate disaster to access remittances (e.g. digital matching of photographs). In terms of social remittances, strategies should aim to develop national level programmes that target migrants and the diaspora to harness social remittances for resilience and adaptation.

In a post disaster environment, strategies must also give high priority to speedy restoration of

communication, banking and financial services to improve access to remittances. Another measure that can be considered is to declare remittance cost waivers after a disaster, in order to facilitate faster and freer flow of remittances to assist relief and recovery. Governments can also devise strategies to leverage official assistance to tap into the diaspora after climate disasters (e.g. provide resources and assistance to embassies and migrant associations to channel contributions after disasters), so that such contributions augment efforts of the government, local and international organisations.

9. Building Resilience: Public Investments and Sri Lanka's Rural Economy

9.1 Introduction

Better jobs provide means for better living standards, especially for the poor who have little or limited access to physical and social assets. But, the rural employment market is characterised by poor quality jobs that are unprotected and poorly paid. Agriculture and natural resources are the main sources of employment for the rural sector. Such employment is vulnerable to vagaries of weather, which have become exacerbated and more unpredictable due to climate change. Improving the rural employment market and providing safeguards to protect rural workers from income fluctuations due to vulnerabilities is key to improving prospects for earning better income for rural and estate households.

The Vision 2025 policy document of Sri Lanka recognises unequal development as a policy issue needing urgent action. Current policy initiatives in rural development include, improving access to finance, targeted development of identified under-developed areas, and improving access to new technology by establishing regional technology centres. Given that Sri Lanka's ability to invest in development finance is constrained by tight budgets and attempts at stabilising macroeconomic conditions, it is critical to understand the contribution of different government policies on rural development to prioritise government expenditure.

In 2016, of the 20.7 million population in Sri Lanka, 17 million (or 82 per cent) resided in the rural (16.1 million) and estate (0.9 million) sectors, implying that despite urbanisation and rural to urban migration, the rural economy remains an integral part of the economy. The rural and estate sectors are home to 92 per cent of the poor in the country.[1] In addition, a large proportion of the population, mainly in rural areas, lives just above the poverty line making them highly vulnerable to adverse shocks.

This chapter describes the nature and characteristics of the rural labour market in Sri Lanka and provides recommendations for improving its functioning. The rural labour markets are usually imperfect due to weak governance, higher transaction costs of market activities, and structural impediments in the sector. Further, as mentioned above, rural labour markets are more vulnerable to fluctuations of weather. Public investments in its efforts to develop rural areas typically attempt to rectify these anomalies in rural areas. The literature identifies several areas of public investments that contribute to rural

[1] Department of Census and Statistics. (2016). *Poverty indicators- Household income and expenditure survey 2016.* Colombo, Sri Lanka: Department of Census and Statistics.

development.[2] These include: i) expenditure on research and development; ii) expenditure on infrastructure development such as roads, electricity, transport and communications, and finance; iii) expenditure on education and skill development; and, iv) expenditure on irrigation. The influence of each of these areas on rural labour markets is separately assessed.

9. 2 Characteristics of Sri Lanka's Rural Labour Markets

9.2.1 Definition of Rural

An understanding of the differences in rural and urban areas is crucial to better grasp how the operations of rural and urban labour markets differ. Rural areas are often characterised by small areas of human settlements scattered amongst vast areas of forests, rivers, lakes, mountains, deserts and land. Compared to urban areas, rural areas have richer access to natural resources, which make them favourable for agricultural activities. However, as rural areas are situated further away from markets, obtaining inputs for agricultural activities and marketing the produce from these activities are made difficult.

Rural areas themselves are quite diverse. Some rural areas are well connected to urban centres via good quality roads. The transaction costs associated with conducting market activities for people in these areas are less. Other rural areas are situated in remote areas from where it is more difficult to reach market places due to difficult terrains, natural obstacles – such as rivers or mountains, lack of roads, lack of transport or the poor quality of roads. Lastly, the quality of natural resources available in rural areas also varies from place to place. Some rural areas are agriculturally more productive as the soils, weather patterns, and the terrain in these areas are conducive for crop agriculture, while others are less suited due to lack of water, difficult terrain or poor quality of soil.

There are no clear means of defining 'rural' in the literature. Some countries demarcate rural and urban areas purely based on the population of an area, while others take into account the availability of facilities and infrastructure, such as schools and hospitals. From the point of view of the labour market, the main differences in rural and urban markets are its access to productive resources. Urban areas have superior access to financial, physical, human and social infrastructure compared to the rural sector.[3]

In the official statistics of Sri Lanka, urban, rural and estate sectors are defined by the Department of Census and Statistics (DCS). The official statistics do not exclusively define the 'rural' sector. It is defined as the residual sector after the demarcation of urban and estate sectors. The Census 2011 defines the 'urban' sector as all areas administered by Municipal and Urban Councils; and, the 'estate' sector as all plantations which are 20 acres or more in extent and with ten or more resident workers.[4] All areas outside urban and estate sectors are referred to as the 'rural' sector. Municipal and Urban Councils are defined administratively. Such categorisations are not done regularly. As such, the urban areas may be under reported whereas rural areas may

[2] Fan, S., Zhang, L., & Zhang, X. (2002). *Growth, inequality, and poverty in rural China - The role of public investments.* Washington D.C.: International Food Policy Institute.

[3] Tocco, B., Davidova, S., & Bailey, A. (2012). *Key issues in agricultural labour markets : A review of major studies and project reports on agriculture and rural labour markets.* Brussels, Belgium: Centre for European Policy Studies (CEPS).

[4] Department of Census and Statistics. (2013). *Sri Lanka census of population and housing, 2011.* Retrieved from http://www.statistics.gov.lk/PopHouSat/CPH2011.

be over reported, as some areas that have been recently urbanised may still be categorised as rural areas in official statistics. For lack of better information, this chapter will use the official definition for demarcating rural and urban areas.

Rural labour markets are heterogeneous. These are differentiated by industry, crop or geographical areas based on where these are situated. As agriculture has a dominant presence in the rural sector, economic activities in rural areas are mainly demarcated into agriculture and non-agriculture activities. The agriculture sector usually comprises of economic activities in agriculture, livestock, fishing and hunting. The non-agriculture sector is a heterogeneous residual sector comprising all other economic activities.

Employment in the agricultural sector is not seen as desirable in many ways. As described by the International Labour Organisation, agriculture activities are highly influenced by natural disasters such as floods, landslides and droughts, making agricultural earnings volatile, as well as being vulnerable to price fluctuations.[5] Given the volatilities in the agricultural sector and seasonality of available work in the sector, with development and better access to information and roads, people are seen to move away from agricultural labour. Some move to the non-agricultural sector completely, while others stay in the agricultural sector but also engage in the non-agriculture sector during low labour demand periods.

9.2.2 Rural Employment in Agriculture and Non-agriculture Sectors

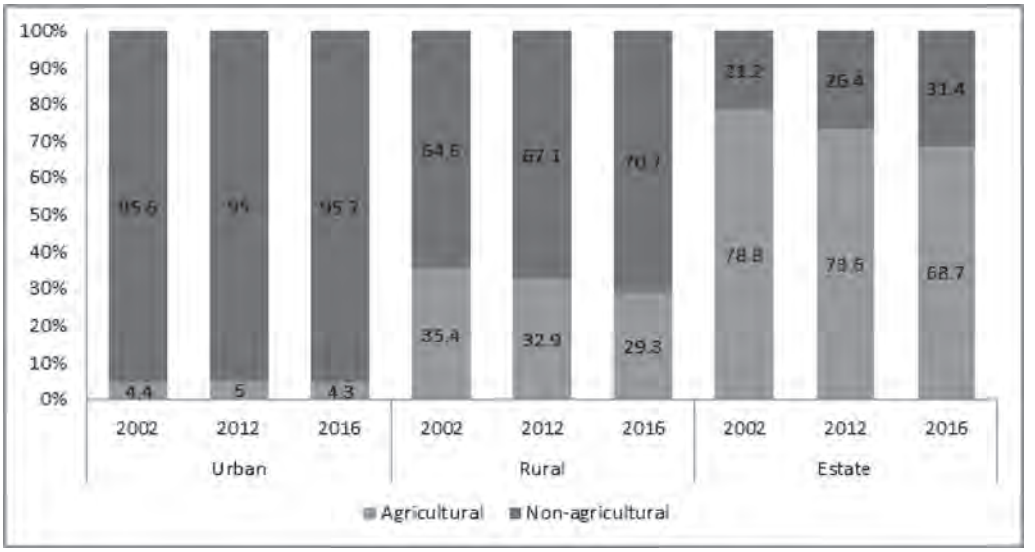
Rural employment is dominated by agricultural employment in Sri Lanka (Figure 9.1). In 2016, 30 per cent of the employed in the rural sector were in agriculture, while the corresponding statistics for the urban sector was only about 5 per cent. With around 69 per cent of the employed recorded in agriculture, the estate sector had the highest share of workers in agriculture. But, this is not surprising, as by definition, the estate sector comprises plantations with more than 20 acres.

Despite the dominance of the agricultural sector, the non-agricultural sector is the main source of employment in rural areas, outside the estate sector (Figure 9.1). Further, the importance of agriculture as a source of employment is declining; this decline is sharpest in the estate sector, but it can also be seen in the rural sector, while in the urban sector the share of workers in agriculture has remained largely stagnant.

Despite the dominance of the agricultural sector, the non-agricultural sector is the main source of employment in rural areas, outside the estate sector.

[5] International Labour Organisation. (2008). *Promotion of rural employment for poverty reductions.* Geneva, Switzerland : International Labour Organisation.

Figure 9.1
Employed, by Sector of Work



Source: Own calculations using Department of Census and Statistics, Labour Force Survey Data, various years.

9.2.3 Structure of Employment in the Non-agriculture Sector

The literature views the rural non-agricultural sector in two opposing ways. Some argue that the rural non-agricultural sector is a low productive, low wage sector that need not be promoted. But, others are of the view that the rural non-agricultural sector can contribute to the economy as a source of employment for the rural economy, acting as means of slowing rural-urban migration, as a means of equalising income distribution, and promoting economic growth. Although lumped together, the non-agricultural rural sector is quite diverse, with economic activities spread over a variety of industries.[6]

In Sri Lanka, the structure of non-agricultural employment looks similar in the urban and rural areas with a few exceptions (Table 9.1). In the urban sector, commercial industry is the main non-agricultural source of employment, followed by manufacturing and other types of services. In the rural sector, manufacturing is the main non-agricultural source of employment, followed by commerce and other services. Table 9.1 clearly shows that the structure of employment is changing in rural areas, albeit at a slow pace. For example, from 2006 to 2016, the share of employed in agriculture, manufacturing, and commerce has dropped, while the share of employed in construction, transport and communications, financial and business-oriented services, and community and family-oriented services has increased.

[6] Lanjouw, Jean., & Lanjouw, Peter. (2001). The rural non-farm sector: Issues and evidence from developing countries. *Agricultural Economics,* pp. 1-23..

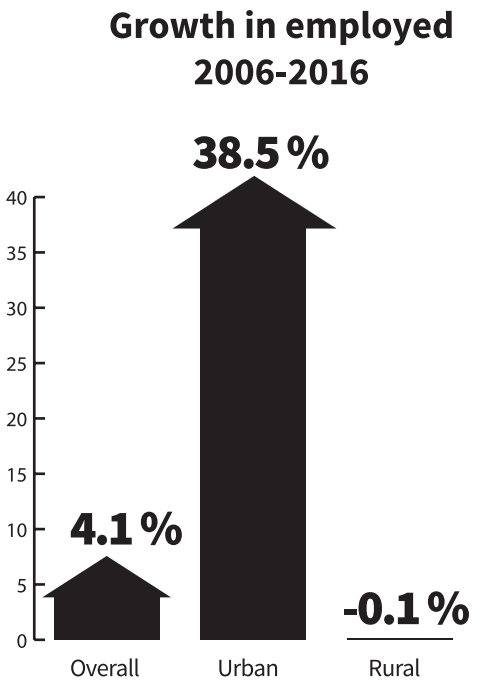
Table 9.1
Employed, by Industry and Sector

	Urban			Rural			Estate		
	2006	2012	2016	2006	2012	2016	2006	2012	2016
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture	2.9	4.4	3.4	32.1	31.7	29.0	75.8	73.2	68.7
Mining	0.1	0.7	0.3	1.1	1.3	0.9	0.7	0.6	0.1
Manufacturing	22.0	21.6	20.8	20.1	19.1	19.3	5.6	6.8	8.9
Public utilities	0.2	0.5	0.0	0.2	0.3	0.0	0.0	0.0	0.0
Construction	4.9	6.3	5.5	6.9	7.2	7.2	2.8	3.7	4.6
Commerce	27.9	25.4	19.4	14.1	14.0	13.2	6.7	7.7	6.3
Transport & communications	10.4	9.8	11.6	6.0	6.3	6.9	1.7	3.0	3.1
Financial & business - oriented service	7.0	6.8	13.5	2.8	3.2	5.8	0.4	0.4	2.3
Community & family - oriented services	14.6	8.6	18.4	11.6	7.4	13.7	2.2	1.5	3.2
Other services	10.0	15.9	7.1	5.1	9.6	3.9	4.1	3.0	2.9

Source: IPS calculations based on Department of Census and Statistics Labour Force Survey data for various years.
Note: Northern and Eastern provinces are not included. Data is for 15 to 64 year olds. The data for 2006 and 2012 use International Standard Classification of Industry Codes (ISIC) Revision 3, while data for 2016 use ISIC Revision 4.

9.2.4 Employment Trends

Employment trends in the recent past show signs of urbanisation. The increase in the number of employed over the 2006 to 2016 period in Sri Lanka, is sharpest in the urban areas. During this period, while the overall increase of those employed was 4.1 per cent, the employed in urban areas increased by 38.5 per cent. In contrast, the percentage of those employed in rural areas decreased by 0.1 per cent, while those employed in estate areas declined by 4.9 per cent (Figure 9.2).[7] The higher growth in urban employment is at least partly explained by migration. According to the Census 2012, about 823,168 persons (or 20 per cent of the total migrant population) in the country migrated for employment.[8] Of the total number of migrant residents in different districts, Colombo had the highest share (42.8 per cent)



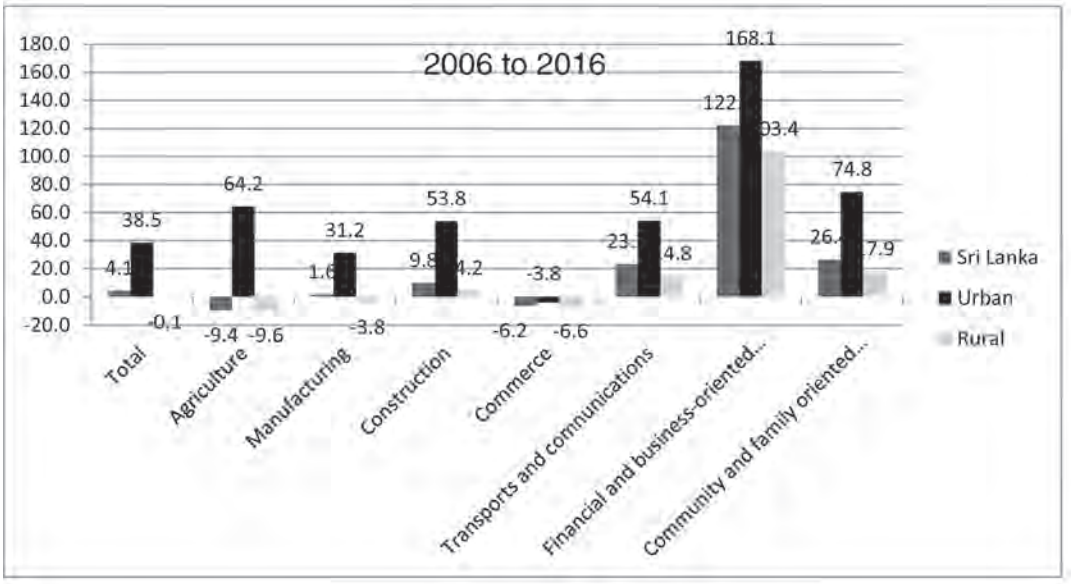
[7] The employed in the estate sector is not shown in Figure 9.2.
[8] Calculated based on Department of Census and Statistics (2012). Census of population and housing – 2012 Sri Lanka.

of those who have migrated for employment, followed by Gampaha (30.6 per cent).

By industry, employment in all major sectors has increased in the urban areas, with construction, transport and agriculture showing the highest increase. In the rural sector, agriculture employment has remained almost stagnant, while employment in construction, transport and communications, commerce and manufacturing has increased. Employment in other services has declined. These statistics indicate a shift in employment away from agriculture in rural areas to many other sectors, except community and family-oriented services and other services. The highest rural employment growth is shown in construction, transport and communications and commerce.

Statistics indicate a shifting of employment away from agriculture in rural areas to other sectors, except community and family oriented services and other services.

Figure 9.2
Growth in Employment 2006 to 2016, by Industry and Sector (Selected)



Source: IPS calculations using Department of Census and Statistics, Labour Force Survey 2006 and 2016, Data.

Note: Northern and Eastern provinces are not included. Data is for 15 to 64 year olds. The data for 2006 use International Standard Classification of Industry Codes (ISIC) Revision 3, while data for 2016 use (ISIC) Revision 4.

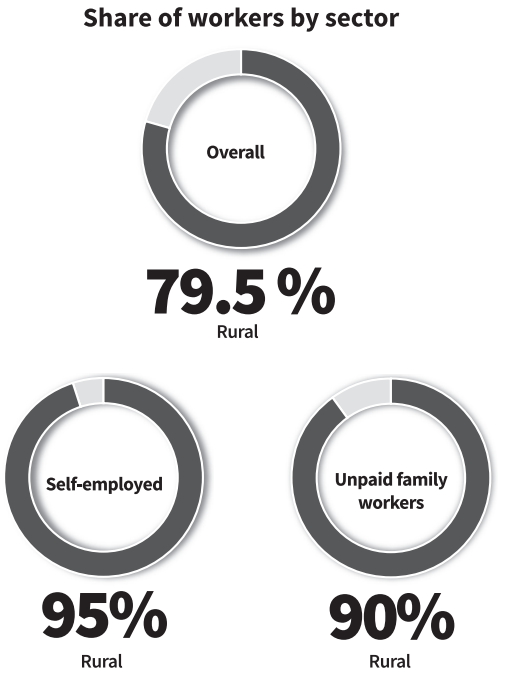
9.3 Quality of Jobs in Rural Areas

A well-functioning labour market is efficient, fair and concerned about the welfare of the workers. According to the ILO (2008), a labour market is said to be efficient if all workers who wish to participate can find jobs that are suitable, given their education, skills and experience levels.[9] The labour market is fair, if the available jobs pay the workers a wage that is commensurate with the contribution of the worker. A well-functioning labour market also provides social protection from the loss of income due to some adverse shocks, by allowing them to find a new job quickly or by providing assistance while they find a new job.

Rural labour markets are not well-functioning in many ways. First, institutions are weak in the rural areas. As such, regulations and laws that allow equitable access to labour markets in the urban areas are not effective in safeguarding vulnerability prevailing in the said areas. Further, agriculture activities are seasonal which result in seasonal demand for labour, migration, wage variations across the year and underemployment. Since employers find it hard to provide work throughout the year, many employer-employee relations in the rural sector are informal. Workers typically migrate to urban areas or other rural areas during low employment demand seasons. Given these reasons, employment in the agriculture sector is risky and earnings from agricultural activities are volatile. Over reliance on the agricultural sector as a source of employment can adversely affect poverty.

9.3.1 Status of Employment and Social Protection

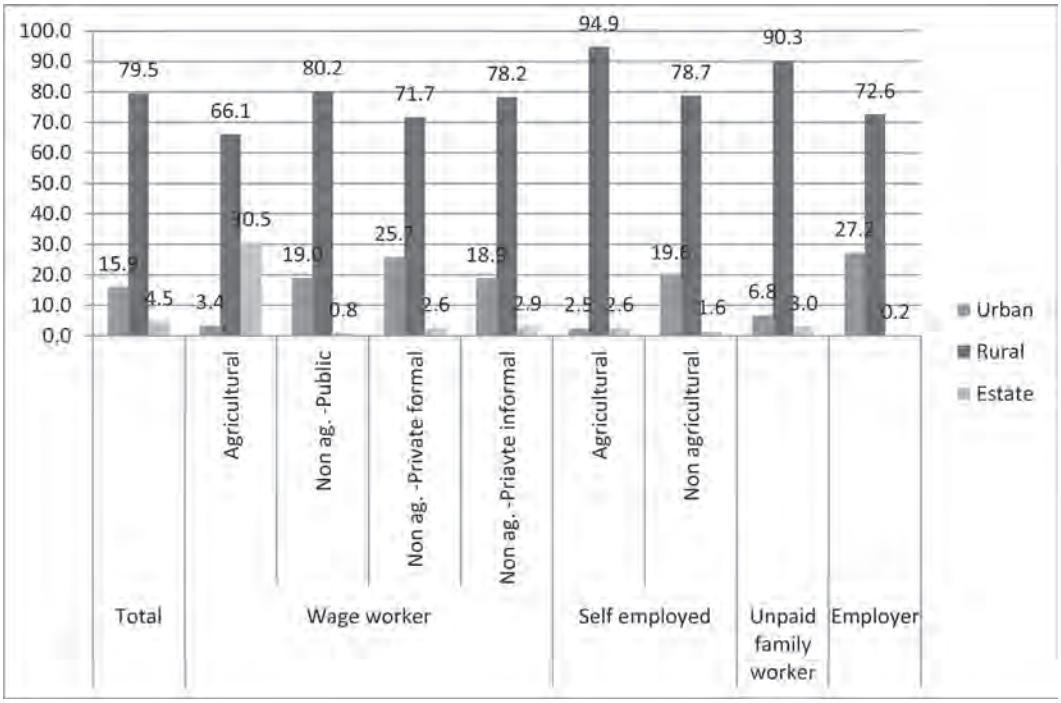
A majority (79.5 per cent) of workers in Sri Lanka is to be found in the rural sector in 2016 (Figure 9.3). Employment in the rural sector is characterised by low quality employment. For example, although only 79.5 per cent of the overall share of workers are in the rural sector, the share of agricultural self-employed workers and the share of unpaid family workers in the rural sector were 95 per cent and 90 per cent, respectively (Figure 9.3). The share of agricultural wage workers in the rural sector is also large, if those in the estate sector are also included in the estimates. Self-employed and unpaid-family workers are identified as vulnerable workers by the International Labour Office, as these types of workers are typically not covered by social protection. The above statistics clearly indicate



[9] International Labour Organisation. (2008). *Promotion of rural employment for poverty reductions.* Geneva, Switzerland: International Labour Organisation.

that the types of jobs found in the rural sector are vulnerable jobs with low social protection. In contrast, the share of formal sector workers (i.e. public sector workers, private formal sector wage workers and employers) is larger in the urban sector, relative to the overall share of workers in the urban sector. The public sector and formal sector jobs are typically well paid and provide social security benefits, such as paid holidays, paid sick leave, maternity benefits and pensions. Sri Lanka has three main pension schemes

Figure 9.3
Distribution of Workers Across Sectors, by Status of Employment, 2016



Source: Own calculations using Department of Census and Statistics, Labour Force Survey 2016 data.
Note: All districts are included.

aimed at informal workers engaged in agricultural, fishing and self-employment activities which are administered by the Agricultural and Agrarian

per cent of the eligible had been covered. Further, the pension benefits under these schemes were all under the poverty line.[10]

[10] Samarakoon, Shanika., & Arunatilake, Nisha. (2015). *Extending adequate pensions for all - Where are the gaps?.* Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

The earnings of farmers are seasonal. In most farming practices, farmers have to incur large costs during planting and growing stages. The revenue for these investments is only realised during the harvesting time. Farmers have to undergo severe financial losses if the planted crops are destroyed due to vagaries of weather or other calamities, such as insect or wild animal attacks. Crop insurance can reduce the vulnerability of farmers to these eventualities. The AAIB administers the 'Kethata Aruna Pohora Diriya' crop insurance scheme, which provides relief to farmers whose crops are affected by natural disasters. In 2016, Rs. 262 million was paid for 33,367 farmers for crop damages.[11] Further studies are needed to assess the adequacy of these insurance schemes to provide protection to farmers against fluctuations in earnings due to disasters and other calamities.

9.3.2 Under-employment and Prevalence of Secondary Employment in the Rural Sector

Visible underemployment as defined in the Labour Force Survey (LFS) measures the inability of the market to use labour resources fully. A person is considered to be visibly under-employed if that person has worked less than 35 hours a week, although willing to work longer due to lack of work opportunities. The LFS 2016 data also show that the under-employment rate is highest (4.1 per cent) in the agriculture sector compared to under-employment in the industry (1.9 per cent) and services (1.6 per cent) sectors. Further, the under-employment rate was higher in 2016 for females (3.5 per cent) compared to males (1.7 per cent).

In addition to being unemployed, due to the volatility and seasonality of rural agricultural employment, many in rural areas hold secondary jobs in addition to their main economic activity. The statistics in section 9.2 were presented based on the engagement in primary economic activities. In 2016, 11 per cent of the employed in Sri Lanka held at least two jobs.[12] The share of workers holding at least two jobs was larger in the rural (12.3 per cent) and the estate (15.8 per cent) sectors, compared to the urban (3.3 per cent) sector. The need to engage in a second job illustrates the limitation of the primary job to provide adequate hours of work as well as earnings.

The quality of secondary jobs is not very satisfactory. The secondary jobs are mainly found in the informal agriculture sector with low levels of job security, earnings and social protection. In 2016, about 65 per cent of the secondary jobs were in the agriculture sector, followed by jobs in the services (23 per cent) and industry (12 per cent) sectors. A majority (94.4 per cent) of the secondary jobs were in the informal sector. By occupation, 53.8 per cent of those holding second jobs worked as skilled agricultural, forestry and fishery workers, and a further 16.8 per cent worked in elementary occupations.

9.3.3 Structure of Rural Wages and Urban Rural Earning Disparities

Agricultural activities as a source of income

[11] Ministry of Finance. (2016). *Annual report 2016.* Colombo, Sri Lanka: Ministry of Finance.
[12] Department of Census and Statistics. (2016). *Sri Lanka labour force survey annual report -2016.* Colombo, Sri Lanka: Department of Census and Statistics.

have decreased over the 2012/2013 to 2016 period, while the importance of other activities has improved. For example, the average monthly household income from agricultural activities in the rural sector was 14.3 per cent in 2013/2014, but this share has decreased to 9.7 per cent by 2016. At the same time, the contribution of wages and salaries as well as non-agricultural activities towards household income has increased in the rural sector (Table 9.2). This indicates that the rural households are relying less on agricultural activities and engage more in market-oriented work. This is not surprising as agricultural and non-agricultural real wages have increased in Sri Lanka over the last four years. For example, the average real wages for males and females increased by 26.2 per cent and 17.0 per cent respectively, in the paddy sector from 2012 to 2016; and, real wages for skilled and unskilled carpenters and masons increased by 19 per cent over the same period.

Average monthly household income from agriculture (%)

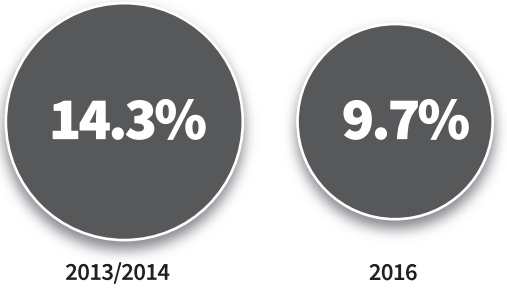


Table 9.2
Household Income and Sources of Income, by Sector 2013/2014 and 2016

	Mean Monthly Household Per Capita Income (Rs.)	Median Monthly Household Per Capita Income (Rs.)	Percentage of Average Monthly Household Income by Main Source of Income (Selected)			
			Wages/ Salaries	Agricultural Activities	Non-Agricultural Activities	Other Cash Income
	2016[1]					
Urban	22,297	14,090	40.1	1.3	20.6	13.7
Rural	15,508	11,140	37.0	9.7	16.7	12.7
Estate	8,566	7,107	58.8	6.0	6.4	10.4
Sri Lanka	16,377	11,307	38.2	7.6	17.4	12.9
	2013/2014[2]					
Urban	17,262	10,420	35.5	4.2	23.8	12.4
Rural	10,843	7,657	34.1	14.3	15.5	11.1
Estate	7,100	5,503	57.7	3.9	6.3	9.1
Sri Lanka	11,819	7,881	35.2	11.4	17.4	11.4

Note: All districts.
Sources: 1. Department of Census and Statistics. (2016). *Household income and expenditure survey 2016 – HIES final report 2016.* Colombo, Sri Lanka: Department of Census and Statistics; 2. Department of Census and Statistics. (2014) *Household income and expenditure survey 2013/2014 –Final report.* Colombo, Sri Lanka: Department of Census and Statistics.

9.4 Public Investments Related to Rural Employment Markets

In 2016, the total public investments in the agriculture sector – including its sub-sectors such as crop agriculture, plantations, fisheries, livestock, irrigation and water resource management – amounted to Rs. 70.3 billion. The largest proportion of this investment (Rs. 47.7 billion) was on providing subsidised fertiliser to farmers, including small holders. Other significant areas of investments were in the livestock sector for the purpose of livestock development and training (Rs. 9.2 billion). In addition, Rs. 25.6 billion was spent on the irrigation sector for the construction of new reservoirs, improving water retention capacity of existing reservoirs, as well as distribution of water to cultivated areas. Outside the agricultural sector, in addition to expenditure on infrastructure, Rs. 6.3 billion was spent on different industrial developmentprogrammes mainly focusing on developing and updating industrial zones, and targeted support for developing different industries.

Other than such direct investments in the rural sector, general expenditure on infrastructure and research and development (R&D) also benefit the rural sector. For example, a study using provincial level data for 1970 to 1997 to examine the effect of public investment on rural development in China it has been found that a variety of public investment initiatives were successful in improving agriculture production, as well as reducing rural poverty and inequality.[13] Amongst the different types of expenditure considered, government expenditure on education had the largest impact on reducing rural poverty, mainly through improved non-farm activities. Other investments that had a significant impact on increasing productivity included expenditure on R&D and rural infrastructure. Investments in irrigation also had a positive impact on rural development, but the magnitude of this impact was smaller. Unexpectedly, this study finds that government investments on improving rural finance did not have a positive impact on improving the rural economy. According to the study, the magnitude of benefits from public investments varied across the provinces.

The results of similar studies in other countries for other time periods cannot be directly used to assess the current impact of different public investments in Sri Lanka. This is because a variety of political, economic, social, physical and natural factors can influence the impact of public investment on rural development. The scope of this chapter does not allow a comprehensive examination of the effect of public investments on rural economic development. The rest of this section will provide a cursory assessment of the links between public investments and the rural economy.

9.4.1 Research and Development and Rural Employment Markets

The information on expenditure on R&D in Sri Lanka is very scarce. Available information suggests that only about 0.11 per cent of Gross Domestic Product (GDP) is spent on R&D, both by public and private sectors.[14] This percentage is very low compared to investments made by the developed countries such as Japan (3.44 per cent

[13] Fan, S., Zhang, L., & Zhang, X. (2002). *Growth and poverty in rural China: The role of public investments.* Washington D.C.: International Food Policy Research Institute.

[14] National Science Foundation. (2008). *Sri Lanka, science, technology & innovation statistical handbook 2008.* Colombo, Sri Lanka: National Science Foundation, Colombo. (This is the latest Statistical Handbook available).

of GDP) as well as countries such as Malaysia (0.64 per cent of GDP) and India (0.8 per cent of GDP).[15] The total government expenditure on science, technology and research in 2016 was Rs. 3,294 million.[16] Much of this expenditure was spent on scientific publications, obtaining patents, transfer of technology, development of standards, laboratory accreditation and commercialisation of technology.

The R&D activities in Sri Lanka are constrained by many factors. Although there are several research institutions conducting research on various aspects in the country, these are poorly resourced and their research outputs are limited. Even developed research does not always reach the potential beneficiaries, or even when it does so, the potential beneficiaries are unable to make use of research findings due to lack of funds and other resources. For example, a study conducted by the Tea Research Institute (TRI) developed a methodology for site specific fertiliser application where application of fertiliser is done after testing the quality of the soil and identifying nutrient gaps. Fertiliser application that directly addresses the nutrient deficiencies in the soil was found to improve the value addition of tea. The TRI has also taken measures to disseminate the knowledge generated by R&D through circulars, publications and seminars. However, a study on the tea smallholder sector in Walapane region in the Nuwara- Eliya district conducted in 2012 shows that a majority of the smallholders surveyed do not test their soil to determine how to set the acidity and other qualities of soil to improve the quality and productivity of the land. As such, the productivity of their lands is less than its potential.[17]

Although there are several research institutions conducting research on various aspects, these are poorly resourced and their research outputs are limited. Even developed research does not always reach potential beneficiaries, or even when they do, the beneficiaries are unable to make use of the findings due to lack of funds and other resources.

[15] *Ibid.*
[16] Ministry of Finance. (2016). *Annual report 2016.* Colombo, Sri Lanka: Ministry of Finance, p. 103.
[17] Perera, Prasanne. (2018). Issues and Challenges Encountered by Tea Smallholders in Sri Lanka. In Janaka Wijayasiri, Nisha Arunatilake and Saman Kelegama (Eds.) *Sri Lanka tea industry in transition: 150 Years and Beyond.* Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka, pp. 62-84.

The above example shows that increased public investments in R&D has the potential to improve rural development. The need is not only to increase R&D activities but also to disseminate the findings amongst those who can make use of the results. In some instances, small farmers are unable to make use of research findings due to lack of resources and equipment. In such instances, dissemination of research findings will need to be backed by support for obtaining resources that are needed for use of recommended technologies and implementing the recommended practices.

9.4.2 Effects of Roads on Rural Employment

Several studies have found roads contributing to rural economic development in many ways. For example, a study in Indonesia finds that the reduction in poverty incidence with economic growth is much greater in provinces with roads that are in good condition compared to those roads in bad condition.[18] The same study finds that the provincial roads result in directly improving wages and employment opportunities for the poor. A study in three economic zones in China to examine the effect of different types of government expenditure on poverty finds out that the rural infrastructure (especially on road density and access to electricity and telecommunications) significantly reduces the poverty incidence through the increase of wages and generation of non-farm employment.[19]

The road network in Sri Lanka has improved considerably in the last couple of decades (Table 9.3). This improvement is evident in all types of roads, indicating better connectivity between the urban areas as well as between the rural areas

Table 9.3
Total Road Density (Km/ Km2)

	1995	2007	2016
	Road Density (Km/ Km^2)		
Total roads density	1.67	1.73	2.0
National roads density	0.17	0.18	0.19
Provincial roads density	0.24	0.25	0.28
Rural roads density	1.27	1.30	1.33
	Road Condition of National Roads as Per IRI[1] (%)		
Excellent	-	7	35
Good	-	28	29
Fair	-	19	10
Bad	-	36	11
Poor	-	10	15

Source: Ministry of Finance. (2016). Annual report 2016. Colombo, Sri Lanka: Ministry of Finance. Statistical Appendix Table 19.
Note: 1. IRI – International Roughness Index.

[18] Kwon, E. K. (2000). *Infrastructure, growth, and poverty reduction in Indonesia: A cross-sectional analysis.* Manila, Philippines: Asian Development Bank.
[19] Fan, S., Zhang, L., & Zhang, X. (2002). *Growth, inequality, and poverty in rural China - The role of public investments.* Washington D.C.: International Food Policy Institute.

and urban areas. Further, the condition of roads has also improved over time, with the share of excellent roads increasing by five-fold and the shares of poor and bad quality roads decreasing.

Although there are no direct studies examining the effect of roads on rural economic growth in Sri Lanka, based on the findings of international literature, it can be surmised that the improvements to roads must have had a positive effect on the rural economy. However, as discussed earlier, better information on improvements to road density at local levels and their accessibility to markets are needed to ascertain whether improvements in road density has benefitted all communities.

9.4.3 Electricity and Rural Labour Markets

Investment in electricity has also shown to improve the rural economy. Reviewing literature on the impact of electrification on rural poverty and incomes, several studies show that investments in electricity lead to productivity improvements and poverty reduction.[20] Research studies find that in the Philippines, electrification has had a positive influence on the income of the poor due to growth.[21] However, rural electrification projects have little positive impacts when the connection costs are high, and when the people in areas benefitting from these projects do not have clear land rights, low access to affordable credit, beneficiaries are extremely poor and when there is little prospect for improving agriculture.[22]

Sri Lanka has a very high rate of access to electricity. In 2016, 96.9 per cent of the houses used electricity for lighting purposes. Electrification of rural (96.7 per cent) and estate (92.7 per cent) households were less; however, these were not far behind the electrification levels in the urban households (98.9 per cent).[23] Nonetheless, the use of electricity for lighting varied across districts. In all districts other than Mullaitivu, Kilinochchi and Batticaloa, more than 90 per cent of households used electricity for lighting. Mullaitivu had the lowest share (85.0 per cent) of households using electricity for lighting. Given such very high levels of rural electrification, the marginal benefits of additional investments on improving access to electricity is likely to be low in general. Nevertheless, improving access to electricity to localities which has still not been covered will benefit these communities.

9.4.4 Access to Technology and Rural Development

Better access to technology has a great potential to improve productivity and profitability in the agricultural, as well as non-agricultural sectors. Technology refers not only to the use of new and better machinery. Technology can also be knowledge on better cultivation and harvesting practices that will improve yields and maintain quality of produce to fetch higher prices. Technology may also mean more efficient means of finding information that is necessary for making correct decisions in the agricultural process.

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[20] Ali, Ifzal & Ernesto M. Pernia. (2003). *Infrastructure and poverty reduction- What is the connection?.* Manila, Philippines: Asian Development Bank.

[21] Balisacan,A. M., Pernia, E. M., & Asra, A. (2002). *Revisiting growth and poverty reduction in Indonesia:* What do subnational data show?. Manila, Philippines: Asian Development Bank.

[22] Ali, Ifzal & Ernesto M. Pernia. (2003). *Infrastructure and poverty reduction- What is the connection?.* Manila, Philippines: Asian Development Bank.

[23] Department of Census and Statistics. (2016). Poverty indicators- Household income and expenditure survey 2016. Colombo, Sri Lanka: Department of Census and Statistics.

The use of machinery and modern technology for paddy cultivation is high in Sri Lanka. In the 2016/2017 Maha season, 95 per cent of the total land area sown was prepared by tractors, weeding of 77.6 per cent of the land area sown was done using weedicides, and 76.8 per cent of the sown area was harvested using machines.[24] The use of machinery for such agricultural activities makes agriculture more productive and profitable.

Well informed entrepreneurs can be more efficient. They are able to secure the best inputs at the least cost. They are also able to make informed decisions on the suitable types of crops to plant taking into account the land quality, weather patterns and other related factors. A study based in Sri Lanka shows that the transaction costs associated with vegetable farming can be reduced through the greater use of information and communication technology (ICT).[25] These cost reductions take place at different stages of the production process. For example, a farmer can make the decision on which crop to plant by obtaining information on the availability of seeds and prices. Before the availability of ICT, farmers had to make several visits to the market to obtain this information. Further, once the crop is planted, farmers can also decide on when to harvest, based on the prices and demand in the market. In the above study, most farmers relied on mobile phones to obtain information. A more efficient means of obtaining such information is through the Internet. Unlike with mobile phones, the Internet can provide more detailed information needed by the farmers.

According to the Household Income and Expenditure Survey (HIES) 2016, about 91.5 per cent of households had access to a fixed or mobile telephone in the country. The access to a telephone was lower in rural (91.1 per cent) and estate (83.9 per cent) sectors, compared to the urban sector (95.2 per cent). But only a fifth of the households in the country had access to personal computers. Households with personal computers were only 18.2 per cent in the rural sector. Improving the penetration of ICT in rural and estate sectors has great potential in improving productivity in rural areas.

9.4.5 Education and Skills, and Rural Employment Markets

Education and skills are directly linked to better employment. But, people in the rural areas are often less educated and less skilled. Even in Sri Lanka where education in public institutions is free, the quality of education varies widely between the rural and urban areas. Rural schools find it harder to attract and retain good teachers and principals. As a result, schools in rural areas are poorly managed and the quality of education in those schools is poor. This results in higher dropouts and poorer education attainments. Also these lead to a lower standard of life and entrapment in poverty.

Access to good quality and relevant education facilities can contribute to increasing productivity in many ways. This is especially the case in today's fast changing market place. Better educated persons are able to access and process information better and make use of available market opportunities. They are also better able to manage the resources available to them while

[24] Department of Census and Statistics. (2017). *Paddy statistics - 2016/2017 maha season.* Colombo, Sri Lanka: Department of Census and Statistics.

[25] De Silva, Harsha, & Ratnadiwakara, Dimuthu. (2009c). *Using ICT to reduce transaction costs in agriculture through better communication: A case-study from Sri Lanka.* Colombo, Sri Lanka: LIRNEasia.

using it productively, making the best out of it.

As seen in Figure 9.4, the more educated females are more likely to be economically active, irrespective of the district they live in. Similar trends are seen for males, although the differences in labour force participation of males with different levels of education is less, as the labour force participation of males are generally higher. The engagement in economic activities increases with higher levels of education. For example, those who have passed the General Certificate of Education – Advance Level (A-Levels) – have a higher labour force participation than those with only a General Certificate of Education – Ordinary Level (O-Levels). Further, those who have obtained a vocational training qualification, in addition to having a general education qualification, are more likely to be economically active compared to those with only a general education qualification.

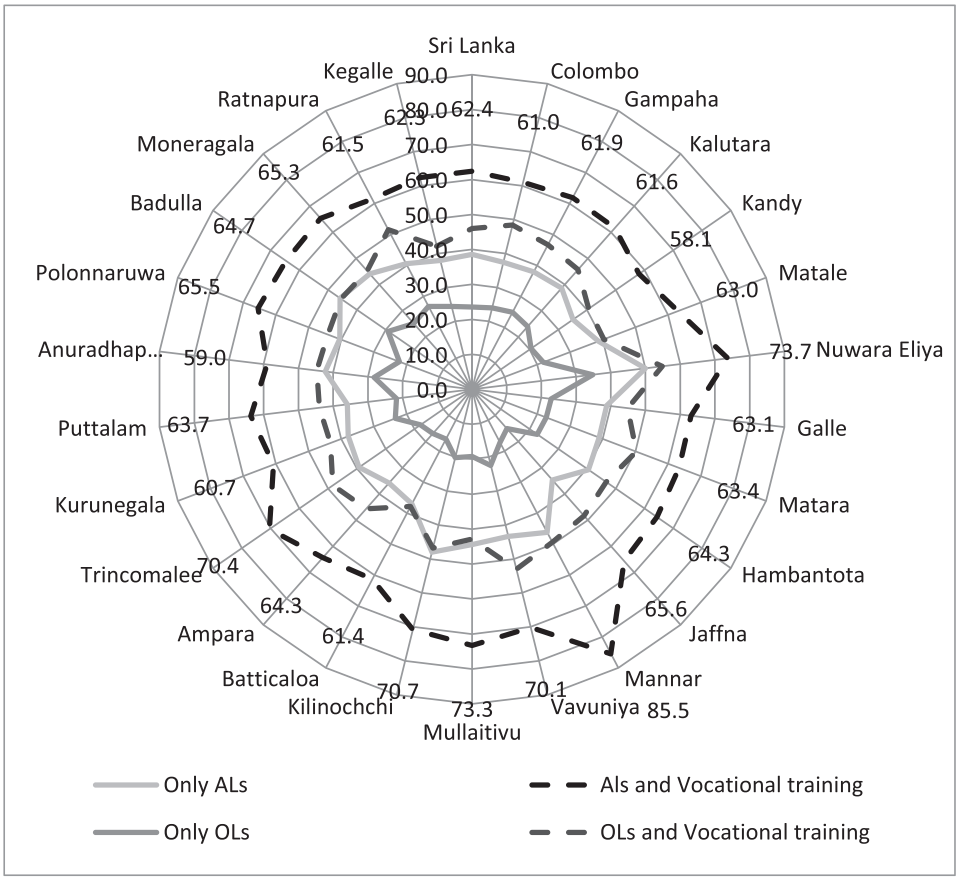
Those who have obtained a vocational training qualification, in addition to having a general education qualification, are more likely to be economically active compared to those with only a general education certificate.

9.4.6 Irrigation and Rural Employment Markets

The evidence on the impact of investments in irrigation for improving productivity and wages is mixed. Some studies find that investments in irrigation are strongly linked to growth of the rural economy, while others find a weaker relationship. Research studies using data from India, the Philippines, Thailand, and Viet Nam, show that poverty is less in irrigated areas compared to non-irrigated areas.[26] The same study shows that the magnitude of the effect of irrigation on poverty reduction depends in the irrigation-associated multiplier effects – i.e. the magnitude of improvement of rural incomes arising from improvements to irrigation infrastructure depends

[26] Bhattarai, M., Sakthivadivel, R., & Hussain, I. (2002). *Irrigation impacts on income inequality and poverty alleviation: Policy issues and options for improved management of irrigation systems*. Colombo, Sri Lanka: International Water Management Institute.

Figure 9.4
Female Labour Force Participation, by District and Level of Education



Source: Arunatilake, Nisha. (2016). Labour market characteristics - Thematic report based on census of population and housing 2012. Colombo, Sri Lanka: United Nations Population Fund.
Notes: Calculated using Census 2012 data.

more on the structure of the rural economy, and how the additional income from improved yields are spent in the rural economy. However, other studies examining the impact of different types of public expenditure on growth, poverty and inequality using provincial level data from 1970 to 1997 for China show that although irrigation had a strong influence on rural economic development in the past, its influence has weakened over time.[27]

Irrigation affects the labour market in several ways. Irrigated land is less susceptible to the vagaries of weather. Effective irrigation can control excess water during heavy rains and release water from storage during droughts. As such, the agricultural work available in areas with irrigated land is more reliable. Access to irrigated water provides farmers with more flexibility in choosing crops, as the availability of water for plants is less of a problem. Given this flexibility, farmers can choose

[27] Fan, S., Zhang, L., & Zhang, X. (2002). *Growth, inequality, and poverty in rural China - The role of public investments.* Washington D.C.: International Food Policy Institute.

Table 9.4
Percentage Distribution of Households Affected by Calamity, by Sector

	Flooding	Drought	Land Slides	Wild Animals	Winds / Storms	Other Calamity
Sri Lanka	3.48	2.44	0.39	3.11	0.24	0.30
Urban	3.71	0.00	0.05	0.44	0.11	0.47
Rural	3.58	3.08	0.38	3.76	0.27	0.27
Estate	0.73	0.00	1.72	1.54	0.00	0.22

Source: Department of Census and Statistics. (2016). Household income and expenditure survey 2016 – HIES final report 2016. Colombo, Sri Lanka: Department of Census and Statistics.

crops that are most profitable. As shown in Table 9.4, a significant percentage of households were affected by natural calamities in 2016 in Sri Lanka. Other than flooding and landslides, a higher percentage of rural households are affected by all other types of calamities.

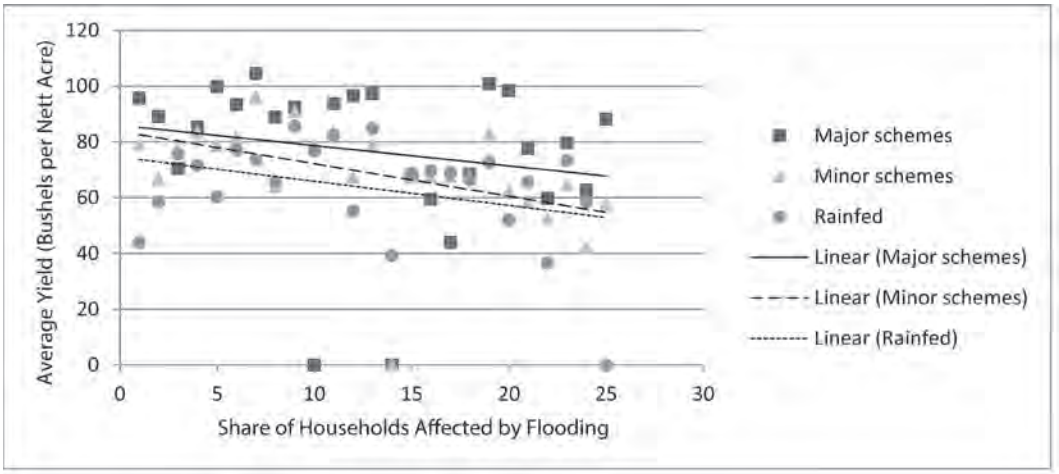
Recent data for Sri Lanka show that paddy yields are better in lands which are harvested using irrigated water (Figures 9.5 and 9.6). These figures also show that major irrigation schemes act as a buffer against floods and droughts. As seen, although paddy yields decrease with the increase in the share of households affected by flooding, the decline is less for yields from fields receiving water from major irrigation schemes. The yield is least for fields irrigated by rains. Districts with a large share of households affected by droughts benefit immensely due to major irrigation schemes.

Major irrigation schemes act as a buffer against floods and droughts.

The access to irrigated water for paddy cultivation is quite high in Sri Lanka. In the 2016/2017 Maha season, close to a half of the extent sown received water from major irrigation schemes (48 per cent), while the rest received water from rains (32 per cent) or minor irrigation schemes (20 per cent).[28]

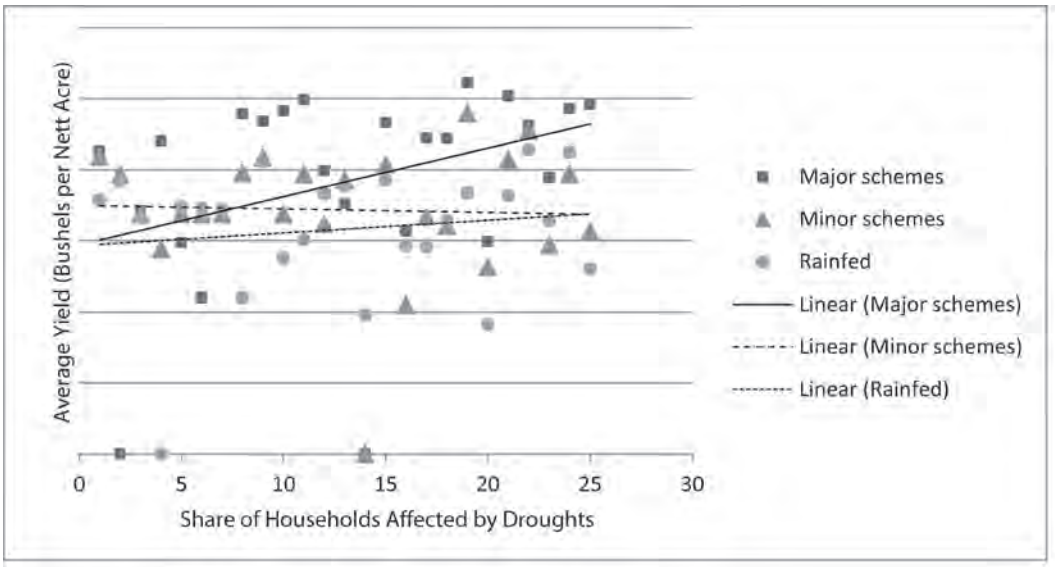
[28] Department of Census and Statistics. (2017). *Paddy statistics - 2016/17 maha season.* Colombo, Sri Lanka: Department of Census and Statistics.

Figure 9.5
Average Yield, by Share of Households Affected by Flooding



Source: Own construction using data from: 1. Department of Census and Statistics. (2016). Income expenditure survey 2016 – HIES final report 2016. Colombo, Sri Lanka: Department of Census and Statistics; 2. Department of Census and Statistics. (2017). Paddy statistics 2016/2017 maha season. Colombo, Sri Lanka: Department of Census and Statistics.

Figure 9.6
Average Yield, by Share of Households Affected by Droughts



Source: Own construction using data from: 1. Department of Census and Statistics. (2016). Income expenditure survey 2016 – HIES final report 2016. Colombo, Sri Lanka: Department of Census and Statistics; 2. Department of Census and Statistics. (2017). Paddy statistics 2016/2017 maha season. Colombo, Sri Lanka: Department of Census and Statistics.

The literature on the impact of investments in irrigation on the rural economy shows that the effect of investments in irrigation on rural economic development depends on the structure of the rural economy and availability of other complimentary infrastructure. The above statistics show that access to irrigated water has a direct impact on increasing yields of paddy farmers. But the effect of this on their incomes will depend on paddy prices and other input costs. Studies show that the benefit-cost ratio of irrigation construction investment in Sri Lanka declined from 3.5 in the mid-1970s to 1.5 in the mid-1990s, largely owing to lower prices received for paddy in Sri Lanka.[29]

9.5 Findings and Policy Recommendations

With more than 82 per cent of Sri Lanka's population, including 92 per cent of the poor living in rural areas, developing the rural economy is important for improving living standards of the population and reducing income disparities, within the population. Better jobs are best means of improving earnings of the poor. This chapter examined the structure of the rural employment market and access to productive resources by rural households.

The data show that in Sri Lanka, although a large share of the employed are engaged in the agriculture sector, the main source of employment in rural areas is the non-agriculture sector. Further, the importance of the agriculture sector as a source of employment has declined over time. The non-agricultural employment is a heterogeneous sector where the employment in construction, transport and communications, and commerce has grown over the 2003 to 2012 period. On average, the reliance of rural households on agricultural activities as a source of income has declined over the years, while their dependence on wage and salaried work, and on non-agricultural activities as sources of income has increased.

The findings from other studies show that education and skills, R&D, rural infrastructure, and irrigation can improve productivity of rural economic activities by reducing transaction costs and enabling greater access to input and final markets. The evidence for Sri Lanka shows that the more educated participate more in economic activities, and the levels of labour market participation increase with education across all districts.

Access to infrastructure is fairly high in Sri Lanka. The access to electricity in the country is very high, the road density and quality of roads have improved substantially over the past years, and a high number of households have access to telephone facilities. Further, close to a half of the farmers use irrigated water for cultivation. These statistics indicate that the access to physical infrastructure is high in rural areas in Sri Lanka, but there is room for improvement, especially in the selected areas. Better and improved statistics on the benefits of investments in roads, irrigation and electricity facilities are needed to assess the impact of investments in infrastructure development as well as to identify areas with infrastructure gaps, so that public investments on infrastructure can be directed to areas where these are needed the most.

[29] Bhattarai, M., Sakthivadivel, R., & Hussain, I. (2002). *Irrigation impacts on income inequality and poverty alleviation: Policy issues and options for improved management of irrigation systems.* Colombo, Sri Lanka: International Water Management Institute.

Research findings show that the employment opportunities available in rural areas are of lower quality and tend to be in the informal sector where workers have less access to social protection. Although a few programmes have been developed to provide social protection to farmers, such as the pension scheme for farmers, fishers and for the self-employed and the crop insurance programmes, these programmes are not effective due to being poorly designed.

The literature shows that investments in education have the best potential for improving employment prospects for the rural population. Education will allow rural workers to migrate to urban areas more easily, as well as to improve the productivity of rural economic activities. The reason is that more educated workers are in a better position, and are able enough to adapt to new technologies, and make use of available information to improve the productivity and profitability of their enterprises. Although Sri Lanka performs well in access to education, available studies show that the quality of education can improve, especially in rural areas. Improving access to better quality, more labour market-oriented education creates the potential to improve incomes of rural people.

The above analysis shows that public investment in R&D is very low in Sri Lanka, and further dissemination of information to farmers is also not happening efficiently. Available studies show that the productivity of agriculture can be improved with better access to information. Improving the penetration of ICT in the country and devising means of disseminating information more effectively can help farmers to make informed decisions on their agricultural practices to improve productivity.

Given their geographical locations, rural farmers and entrepreneurs have little voice in making their needs known to policy makers. Improved statistics for better understanding the specific issues that are faced in different rural areas and strengthening farmer organisations can increase the visibility of the needs of farming communities. As access to infrastructure is fairly high in the country, further investments in infrastructure should be done after taking into account the needs of the farmers and the cost benefits of such investments.

As most social protection programmes available in Sri Lanka are targeted to formal sector workers, most of the rural workers who work in the informal sector are not covered by these programmes. Some social protection programmes have been extended to the informal sector, but the performance of these programmes is not very satisfactory. Improving the design of the social protection programmes intended for those in the informal sector has the potential to improve the living standards of those in rural areas.

10. Managing Risks through Sri Lanka's Microinsurance System

10.1 Introduction

Over the years, Sri Lanka has made commendable progress in reducing poverty. The poverty level has reduced by over 70 per cent over the past decade, as denoted by the decrease in the poverty headcount index from 15.2 per cent in 2006/2007 to 4.1 per cent in 2016. However, a high concentration of the non-poor population just above the poverty line indicates the presence of vulnerability, and remains a great concern. This vulnerable segment is susceptible to various shocks and crises which could push them below the poverty line. It has been estimated that a decrease in the real monthly per capita income by just Rs. 100 could push over 933,000 more individuals into poverty, increasing the country's poverty rate to 4.5 per cent.[1]

This is an alarming situation, especially given the increasing incidence and severity of natural disasters and climate-related extreme events in Sri Lanka in the recent past. The death toll due to disasters during the 2013-2017 period amounted to 837 while 352 persons are reported as missing. Moreover, the property damage included over 10,000 fully destroyed houses and around 90,000 partially damaged houses.[2] These disasters have had several adverse effects on the entire country, disrupting lives and livelihoods, and hampering economic growth. These effects have been even more severe on poor households.

Insurance has been looked upon as an important risk management tool that can be used to mitigate disaster risk, especially at the household level. This is especially relevant in the case of microinsurance which is targeted at low-income households that are relatively more exposed to disaster risk. In this context, this chapter first examines the potential of insurance and microinsurance to reduce vulnerability and help households manage risks. This is followed by an overview of the microinsurance landscape in Sri Lanka, particularly looking at its diverse providers and the current regulatory environment for the insurance industry. This is followed by a discussion on the importance of microinsurance as a risk management tool among low-income households in Sri Lanka and the contributory factors for their low use of insurance from formal sources. The final section includes some concluding remarks and policy implications.

10.2 Risks, Vulnerability and Microinsurance

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1 Department of Census and Statistics. (2017). *Poverty indicators.* Retrieved from http://www.statistics.gov.lk/poverty/Poverty%20Indicators_2016.pdf

2 Central Bank of Sri Lanka (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.

The world is becoming increasingly more vulnerable to various shocks, including economic and financial crises and natural disasters, leading to a growing consensus on the need for disaster risk mitigation and management mechanisms. Improving resilience of vulnerable communities can result in multiple benefits as presented in the 'Triple Dividend of Resilience Framework'. It can help reduce losses, stimulate economic activities, and generate development co-benefits (see Box 10.1)

Insurance is a key risk management tool which minimises uncertainties by transferring the risk to a third party. As a tool for disaster risk management (DRM), insurance has been identified for its capacity to generate the Triple Dividends of Resilience.[3] Firstly, in terms of reducing losses from a disaster, insurance can compensate for direct economic losses and improve financial resilience. This can help the affected households to restore their livelihoods faster. Secondly, insurance can stimulate economic activities by reducing risks, thereby driving investment in productive activities. Thirdly, development co-benefits of insurance include an improved sense of security and well-being of households.[4]

Box 10.1
The Triple Dividend of Resilience

The Triple Dividend of Resilience Framework developed via a collaborative initiative by the World Bank, Global Facility for Disaster Reduction and Recovery (GFDRR) and the Overseas Development Institute (ODI) identifies three types of benefits of DRM:

1) Saving lives and avoiding losses: This is the most obvious benefit of DRM interventions. This includes saving lives and reducing the number of people affected, reducing direct damages to infrastructure and other assets, and reducing economic and non-monetary losses.

2) Unlocking economic potential: Effective DRM tools can contribute to stimulating economic activity owing to reduced disaster risk. Investing in such measures reduce the background risk of potential disasters and encourage forward-looking planning and long-term capital investment, especially by risk-averse households and firms.

3) Generating development co-benefits: This refers to the economic, social, and environmental benefits that could result from disaster management investments; these include better infrastructure, environmental conservation, reduced vulnerability to poverty, more organised social structures, and improved women's participation at community level activities.

Ex-ante disaster management measures can contribute to poverty reduction and long-term development. It is necessary to dispel the misconception that gains on investment can only be realised in the event of a disaster. In fact, building resilience can generate a multitude of other significant benefits.

Source: Tanner, T., Surminski, S., Wolkinson, E., Reid, R., Rentschler, J., & Rajput, S. (2015). *The triple dividend of resilience: Realising development goals through the multiple benefits of disaster risk management*. Global Facility for Disaster Reduction and Recovery (GFDRR) at the World Bank and Overseas Development Institute (ODI), United Kingdom. Retrieved from https://www.gfdrr.org/sites/default/files/publication/The_Triple_Dividend_of_Resilience.pdf

[3] Weingärtner, Lena., Simonet, C., & Caravani, A. (2017). *Disaster risk insurance and the triple dividend of resilience*. Overseas Development Institute (ODI), United Kingdom. Retrieved from https://www.odi.org/sites/odi.org.uk/files/resource-documents/11759.pdf

[4] *Ibid.*

There are multiple risks faced by households which can be categorised as i) weather or environment related risks; ii) family related (or life-cycle related risks); iii) economic shocks; and iv) banditry and crime and negative political and social events.[5] Low-income households are even more vulnerable to these risks, given their limited assets to fall back on at times of crisis. In fact, climate change related shocks like adverse weather conditions – i.e. floods, landslides, and droughts – can lead to overlapping and multiple vulnerabilities among low-income households. These extreme conditions can affect livelihood of low-income households, particularly those who depend on agriculture or the fisheries sectors. These households are often faced with a 'triple whammy' of incomes – i.e. their income levels are not only low, but often irregular and uncertain.[6] Adding to these situations, weather related shocks can affect not only livelihoods (e.g. loss of harvest) thereby affecting income, but also assets (housing and livelihood related assets like boats and livestock) and lives of people (e.g. death, disability and sickness).

Insurance is a primary risk management strategy available for households. However, insurance in its traditional sense may not be capable of addressing the needs of these vulnerable low-income households. Meeting high premium instalments on a regular basis may be quite challenging to such households which most often depend on irregular sources of income. This is where microinsurance comes into play.

Microinsurance is generally identified as 'the protection of low-income people against specific perils in exchange for regular premium payments proportionate to the likelihood and cost of the risk involved'.[7] It differs from traditional/ conventional insurance in several aspects, mainly in terms of affordability. Microinsurance providers employ strategies such as offering smaller benefit packages, as well as spreading premium payments over time to correspond with the household's cash flow in order to attract low-income households.

As an insurance tool aimed at providing coverage to households that are comparatively more exposed to disaster risk, with a comparatively lower risk bearing capacity, microinsurance can help keep low-income households from exhausting their resources in the event of a disaster. By providing timely assistance, microinsurance can help low-income households to break the cycle of poverty and avoid longer-term consequences of extreme events.[8]

10.3 Micro-Insurance Landscape in Sri Lanka

This section provides an overview of the microinsurance landscape in Sri Lanka, particularly looking at different types of microinsurance providers and the regulatory framework pertaining to the provision of microinsurance in Sri Lanka. The providers of microinsurance can be broadly categorised as i) the registered (licensed) insurance providers

[5] Galappattige, A., Jayaweera, R., & Tilakaratna, G. (2011). *Microinsurance in Sri Lanka: Combating multiple and overlapping vulnerabilities, poverty and social welfare policy series no. 9*. Colombo, Sri Lanka : Institute of Policy Studies of Sri Lanka.

[6] Collins, D., Morduch, J., Rutherford, S., & Ruthven, O. (2009). *Portfolios of the poor: How the world's poor live on $2 a day.* Princeton and Oxford, United Kingdom: Princeton University Press.

[7] International Labour Organisation. (2006). *Protecting the poor – A microinsurance compendium*. Retrieved from http://www.munichre-foundation.org/dms/MRS/Documents/ProtectingthepoorAmicroinsurancecompendiumFullBook.pdf

[8] Cheriyan, A., Mukherjee, D., & Haider, I. (2006). *Role of microinsurance in disaster management*. Retrieved from https://www.microfinancegateway.org/sites/default/files/mfg-en-paper-role-of-micro-insurance-in-disaster-management-2006.pdf

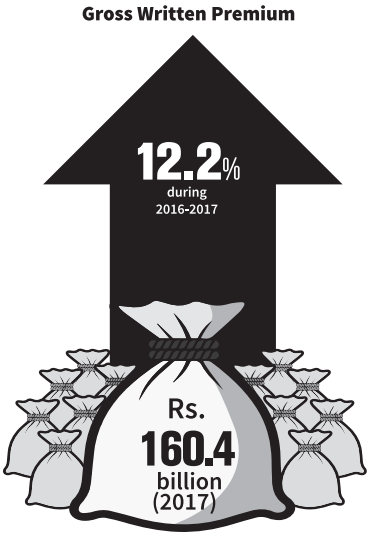
that come under the purview of the Insurance Regulatory Commission of Sri Lanka (IRCSL);[9] ii) government initiatives; and iii) informal providers of microinsurance. Each of these categories are discussed in detail below.

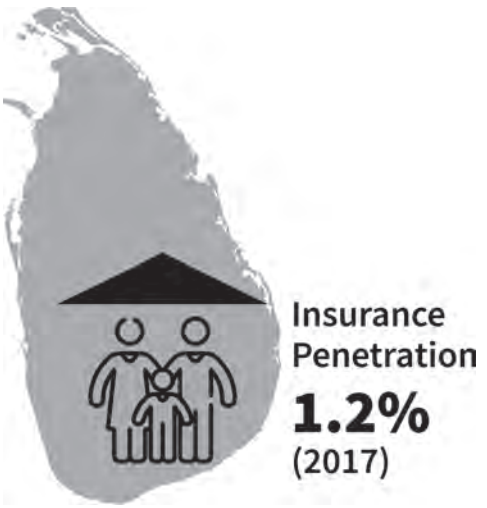
10.3.1 Registered (Licensed) Insurance Companies

At present, there are 27 insurance companies regulated by the IRCSL under the Regulation of the Insurance Industry Act No. 43 of 2000 (RII Act). Of these, 13 companies are exclusively engaged in general insurance, while 12 are engaged in life insurance and the remaining two companies carry out both general and life insurance at present.[10] Additionally, there are 61 insurance brokering companies which are exclusively involved in general insurance or in both general and life insurance.[11]

There has been an expansion in Sri Lanka's insurance sector in recent years. As shown in Figure 10.1, the total Gross Written Premium (GWP) has increased steadily, reaching Rs. 160.4 billion in 2017 and recording a growth rate of 12.2 per cent during 2016-17. The general insurance sub-sector, that includes motor insurance, health insurance, fire and marine, etc., accounts for over 55 per cent of the total GWP, reaching Rs. 88.9 billion in 2017. The long-term insurance sector (primarily life insurance) has also grown considerably during this period, reaching Rs. 71.5 billion in 2017.

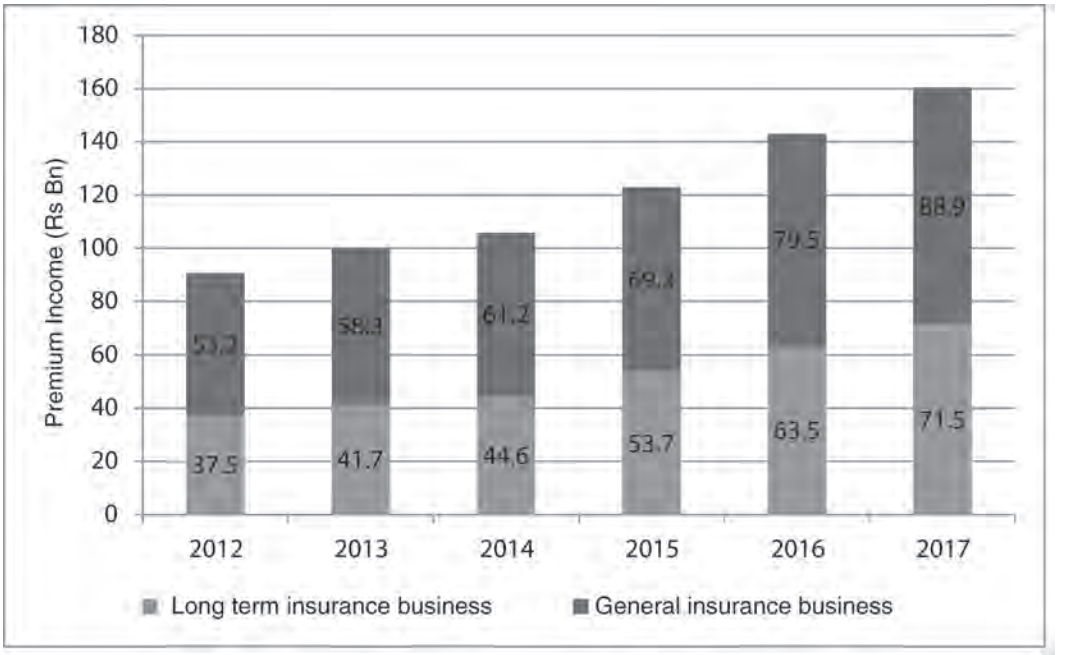
Despite the growth of GWP, the insurance penetration of 1.2 per cent (in 2017) indicates a relatively low level of insurance coverage in Sri Lanka.[12] This is lower than that of many countries in the Asian region. However, it should be noted that these statistics are merely based on the insurance activities of the registered (licensed) companies and do not take into account the contribution of special government schemes





[9] IRCSL, formerly the Insurance Board of Sri Lanka (IBSL) was renamed with effect from October 2017.
[10] As per the Amendment to RII Act in 2011, insurance companies are required to segregate their business as general insurance and long-term insurance, in to two separate entities (RII Act Amendment No. 3 of 2011).
[11] Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.
[12] Insurance penetration is taken as the total premium as a percentage of GDP.

Figure 10.1
Gross Written Premium of the Insurance Sector (2012-2017)



Source: Central Bank of Sri Lanka. (2017). Annual report. Colombo, Sri Lanka: Central Bank of Sri Lanka.
Insurance Board of Sri Lanka. (2016). *Annual report.* Colombo, Sri Lanka: Insurance Board of Sri Lanka.

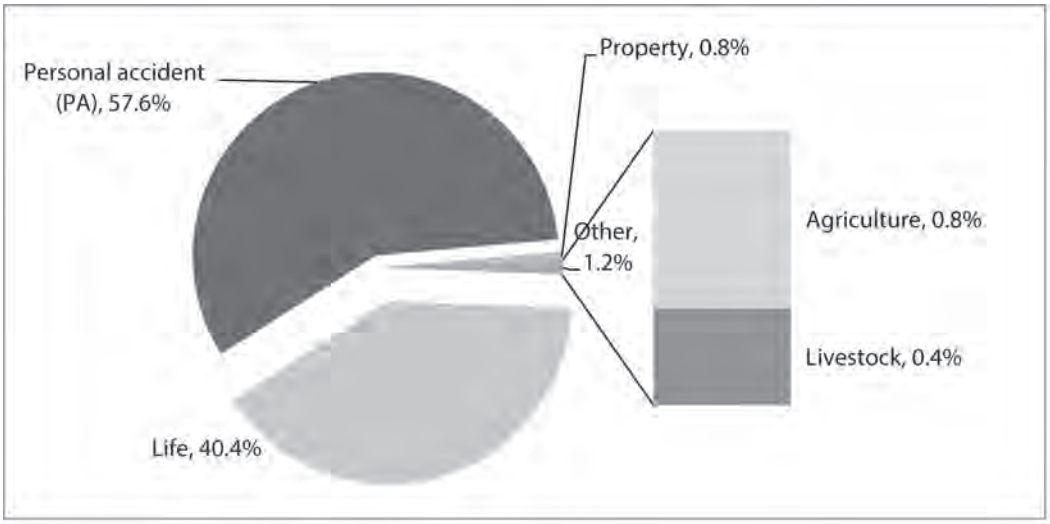
and informal sources such as community based organisations (CBOs) that offer insurance services, particularly to low-income households (see sections 10.3.2 and 10.3.3).

Many registered insurance companies also offer insurance services to low income groups, i.e. microinsurance. This is as a business activity or as a part of their corporate social responsibility (CSR) activities. However, at present, there is no agreed definition of microinsurance in Sri Lanka; it is broadly seen as insurance designed for low-income groups at a low premium.

A recent study by the Microinsurance Network reveals a significant increase in the number of microinsurance policies issued in Sri Lanka from 358,000 in 2013 to around 1.46 million in 2015, recording an increase of over 300 per cent.[13] This is largely due to the growth in personal accident cover (350 per cent during 2013-2015) and life insurance with 275 per cent growth. In 2015, approximately 840,000 personal accident related policies were issued accounting for over 50 per cent of total microinsurance policies. Life insurance policies also amounted to about 590,000 (40.4 per cent of total microinsurance policies). By contrast, microinsurance policies related to property, livestock and agriculture remain relatively low accounting for about 2 per cent of total policies issued in 2015 (Figure 10.2).

[13] Microinsurance Network. (2016). *The landscape of microinsurance in Sri Lanka 2016*. Retrieved from https://microinsurancenetwork.org/sites/default/files/Landscape%20of%20microinsurance%20in%20Sri%20Lanka%202016.pdf.

Figure 10.2
Microinsurance Policies Issued in 2015



Source: Based on Microinsurance Network (2016). *The landscape of microinsurance in Sri Lanka 2016.*

10.3.2 Government Schemes

In addition to the registered insurance companies discussed above, there exist several initiatives by government agencies to provide insurance cover against various life-cycle related vulnerabilities and natural disasters, particularly to low-income groups. The National Insurance Trust Fund (NITF), Department of Samurdhi Development, Agriculture and Agrarian Board of Sri Lanka (AAIB) and the Sri Lanka Social Security Board are some of the key government agencies implementing such insurance schemes.

The National Insurance Trust Fund (NITF), established by the National Insurance Trust Fund Act No. 28 of 2006 is the national reinsurer of the country; all registered insurers are mandated to place 30 per cent of their liabilities with the NITF. Furthermore, NITF also implements/manages a number of insurance schemes.

In 2016, the government implemented the Natural Disaster Insurance Scheme through NITF. This scheme covers all households and small business establishments against natural disasters such as floods, cyclones, storms, hurricanes and landslides (but excluding droughts) up to a maximum of Rs. 2.5 million per household. Moreover, NITF manages the health insurance scheme for public servants (known as *Agrahara*) that covers around 700,000 public servants and their families at present. Furthermore, it also manages an agricultural insurance scheme as well as a life and disability insurance scheme for fishermen.[14]

The Samurdhi social security scheme is another government initiative designed to provide insurance against life-cycle related risks faced by low-income households. It is the insurance

[14] National Insurance Trust Fund. Retrieved from http://www.nitf.lk.

component of the larger Samurdhi programme that currently covers around 1.4 million households. It provides cover for Samurdhi beneficiary families in the event of hospitalization and death, as well as at a marriage and child-birth of a beneficiary or his/her family member. All Samurdhi cash transfer recipients are eligible for an insurance cover under this social security scheme. They are required to contribute a sum of Rs. 100 from the cash transfer each month as a premium to the social security fund, through which the beneficiary families are provided with insurance benefits. The benefits under this scheme are shown in Table 10.1.

In addition to this social security scheme, the Samurdhi programme also has a loan insurance scheme for low-income households who borrow from the Samurdhi banks. In addition to this social security scheme, the Samurdhi programme also has a loan insurance scheme for low-income households who borrow from the Samurdhi banks. Under this loan insurance scheme, a small percentage of the requested loan amount

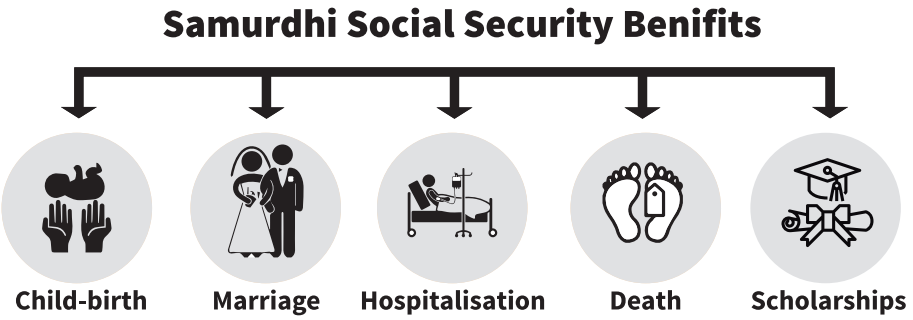


Table 10.1
Benefits of the Samurdhi Social Security Scheme

Event	Description	Benefit
Child birth	First three child births	Rs. 7,500
Marriage	Up to two marriages in the Samurdhi beneficiary family	Rs. 7,500
Hospitalisation	Hospitalisation of the beneficiary or spouse. (in -patient treatment should be at least five days)	Rs. 250 per day (max 30 days)
Death	Member of the beneficiary family	Rs. 15,000
Sipdora Scholarship	To facilitate for the GCE (A/L) education of children in Samurdhi beneficiary households who perform well at the GCE O/L exam	Rs. 1,500 per month for two years

Source: Department of Samurdhi Development. *Social security circular 2016/5.* Colombo, Sri Lanka: Department of Samurdhi Development.

is deducted and transferred to the 'loan insurance fund' that is used to provide compensation to borrowers at times of crises. For example, in the event of death or permanent disability of a borrower, the borrower or his/her family receives compensation under this insurance scheme. Moreover, in situations where a loan is defaulted due to natural reasons (e.g. death of the borrower), the loan insurance fund is used to recover the loan amount.

The AAIB also offers insurance coverage to the farming community to address risks such as death and disability. Established by the Farmers' Pension and Social Security benefit Scheme Act No. 12 of 1987, the Farmers' Pension and Social Security Benefit Scheme provides insurance cover, along with pensions for farmers who have enrolled for this scheme. It is a voluntary and contributory scheme where the contributions have to be made periodically or as a lump-sum. As the insurance cover is part of the pension scheme, no additional payments are required as premiums.

In the event of permanent disability or death, the contributor or the dependants can claim the gratuity on disablement or the death gratuity. The contributor becomes eligible for this lump sum gratuity only after the lapse of one year from the date on which the policy was issued. The insurance benefits under this scheme are given in Table 10.2.

The Social Security Board of Sri Lanka also carries out insurance schemes for informal sector workers along with their voluntary and contributory pension schemes. Similar to the insurance schemes implemented by the AAIB, the policyholders of this scheme are covered for full and partial disablement and death. As shown in Table 10.3, insurance benefits received would depend on the age at which the contributor joined the scheme and the incidence that occurred.

Table 10.2
Insurance Coverage of the Farmers' Pension and Social Security Benefit Scheme

Age at the Time of Disablement or Death	Gratuity on Permanent Total Disablement (Rs.)	Gratuity on Permanent or Partial Disablement (Rs.)	Death Gratuity (Rs.)
Up to 30	50,000	25,000	25,000
31-35	40,000	20,000	20,000
36-40	30,000	15,000	15,000
41-45	20,000	10,000	10,000
46-60	12,000	6,000	6,000

Source: Agricultural & Agrarian Insurance Board (2014). *Extraordinary gazette of the Democratic Socialist Republic of Sri Lanka.* Colombo, Sri Lanka: Government Publication Bureau.

Table 10.3
Insurance Benefits of the Scheme of the Social Security Board

Age at which the Contributor Joined the Scheme	Age at the Time of Disablement / Death	Compensation for Permanent Full Disablement	Compensation for Permanent Partial Disablement	Compensation for Death
18-54	18-33	50,000	25,000	25,000
	34-43	40,000	20,000	20,000
	44-51	30,000	15,000	15,000
	52-56	20,000	10,000	10,000
	57-60	16,000	8,000	8,000
55-59	55-60	12,000	6,000	6,000

Source: Social Security Board. *Gazette No. 1464/5 –25.9.2006.* Colombo, Sri Lanka: Government Publication Bureau.

10.3.3 Informal Providers of Microinsurance

In addition to the regulated insurers and government initiatives discussed above, there are several organisations providing insurance/ protection to the poor against various risks. These include cooperative societies/ community based organisations (CBOs) that provide insurance products along with other financial services like loans and savings to their members (primarily microfinance organisations) and other village-level organisations such as funeral aid societies.

A number of microfinance providers which have traditionally carried out savings and credit services over the years have started offering their members insurance products to help them cope better with various risks and disasters. While many of these organisations offer loan insurance, some cover life-cycle related risks such as death, disability and sickness/hospitalisation. The Women's Development Services Cooperative Society (widely known as 'Women's Co-op') is a prime example of such an organisation that operates island-wide through its own network of societies. Along with savings and credit services, Women's Co-op offers various insurance products to their members who are primarily women from low- income groups (Box 10.2).

In addition, there is a widespread network of Funeral Aid societies in Sri Lanka, operating in nearly every village. These are small CBOs set up by the community to provide financial and non-financial support in the event of a death of a community member. Each member is required to pay an annual fee (as premium) which is used to create a fund to assist members in the event of a death of a family member. These societies provide financial compensation as well as non-financial support such as tents, chairs and food to help families bear the cost of a funeral. Also, it is a common practice that the members of the society assist the affected family to make the necessary funeral arrangements. Given the financial and non-financial assurance received by households at a time of crisis, these societies have become one of the most popular CBOs in rural areas, particularly among low-income segments.

Box 10.2
Women's Development Services Cooperative Society (Women's Co-op)

Established in 1989, Sri Lanka Women's Development Services Cooperative Society (Women's Co-op), is a cooperative society that has evolved from providing loans and savings facilities to undertaking several other programmes aimed at improving the welfare of its members. It is a member-owned organisation with a membership base of around 100,000 women island-wide, and utilises its earnings and profits to facilitate its various endeavours. These include the following programmes which can help the members manage various risks:

Insurance Activities: Women's Co-op has implemented four insurance schemes aimed at providing cover against life-cycle events such as death and disability. The one-off premium ranges from Rs. 5,560 to 60,000 depending on the policy and the age of the insured person. The Women's Co-op facilitates these one-off payments by giving the members access to loan facilities. The financial benefits received under these schemes range from Rs. 50,000 to 400,000.

Healthcare Unit: The Women's Co-op has established five health centres from where the members can receive a wide array of services including outpatient treatment, emergency treatment, laboratory and ECG facilities, as well as access to a pharmacy. The benefits enjoyed by members under this scheme range from a 20 per cent discount on treatment cost to free-of-charge treatment at the Women's Co-op health centres. In order to be eligible, a member needs to contribute Rs. 100 over 60 months. The benefits enjoyed are dependent on the number of years the member has made these contributions. In addition, this scheme provides financial assistance for specific medical conditions such as cancer, kidney transplants, dialysis, and bypass surgery.

Disaster Assistance: Until 2016, the Women's Co-op did not have a centralised disaster management mechanism; the branches each followed their own disaster management programmes. Following the floods in 2016, a disaster management fund was established at the Women's Co-op head office in Colombo consisting of funds collected from its branches. The fund was depleted following the disaster relief activities. There are discussions on establishing a more long-term fund for this purpose.

Women's Co-op helps low-income communities to pool their meagre funds together and become stronger as a whole. It involves all members in its governance and management, thus fostering a sense of ownership that is vital to the success of a member-driven organisation.

Source: Based on the interviews with the staff of Women's Development Services Cooperative Society.

In addition, there is a widespread network of Funeral Aid societies in Sri Lanka, operating in nearly every village. These are small CBOs set up by the community to provide financial and non-financial support in the event of a death of a community member. Each member is required to pay an annual fee (as premium) which is used to create a fund to assist members in the event of a death of a family member. These societies provide financial compensation as well as non-financial support such as tents, chairs and food to help families bear the cost of a funeral. Also, it is a common practice that the members of the society assist the affected family to make the necessary funeral arrangements. Given the financial and non-financial assurance received by households at a time of crisis, these societies have become one of the most popular CBOs in rural areas, particularly among low-income segments.

10.3.4 Regulation of the Microinsurance Sector

Sri Lanka's insurance industry is governed by the Regulation of Insurance Industry Act No. 43 of 2000 (RII Act). The Insurance Board of Sri Lanka (IBSL) (renamed as IRCSL in October 2017) was established by the Act with the aim of regulating, supervising, and developing the insurance industry. As such, all organisations/ persons carrying out insurance activities (both life and general) are required to register under the RII Act. However, public sector insurance providers including the AAIB and the Social Security Board have been exempted from these requirements of the Act.

All licensed insurers are required to have a minimum capital of Rs. 500 million and maintain a minimum capital adequacy ratio (CAR) of 120 per cent. These organisations are also required to obtain reinsurance from either a local or a foreign reinsurer authorised by the IBSL. Moreover, as per the Act Amendment in 2011, all insurance companies engaged in the long-term and general insurance business are required to segregate into two separate companies. In addition, general insurance companies are expected to place 30 per cent of their liabilities with the national reinsurer – NITF.

However, with regard to microinsurance, the RII Act neither addresses/defines microinsurance, nor does it necessarily prevent any registered insurance company from carrying out microinsurance activities. As such, many registered insurance companies are currently engaged in microinsurance as a primary business or a CSR activity.

As discussed earlier, apart from the registered insurers, there are other informal providers of microinsurance, particularly co-operatives and CBOs. These are generally registered under Co-operative Societies Act No 5 of 1972 or the Voluntary Social Service Organisations Act No 31 of 1980 (and amendments in 1998). The Co-operative Societies Act does not prohibit any society from carrying out insurance activities as long as its objective is to empower its members; co-operative societies are given the freedom to engage in any activity that is beneficial to their members. These societies come under the purview of the Department of Co-operative Development. However, it does not interfere with the daily operations of registered societies; its main concern is to ensure their financial stability through annual audits. Similarly, the Voluntary Social Service Organisations Act also does not impose any restrictions on the type of activities the CBOs are engaged in. These activities simply need to be carried out in accordance with the required regulations.[15]

10.4 Microinsurance as a Risk Management Tool among Low-income Households

Microinsurance offers coverage to low-income households that are often more vulnerable to risks (including disaster risks) and which have a relatively lower capacity to cope with risks. As discussed in section 10.2, microinsurance has the potential to generate the three dividends of resilience.

[15] ICMIF (2018): Country diagnostic on mutual and cooperative microinsurance in Sri Lanka, (forthcoming).

First and foremost, microinsurance can improve the financial resilience of low-income households, helping them recover any losses in the event of shocks and disasters. This could help ensure that disasters will not contribute to further perpetuating poverty among these households, and instead allow them to rebuild and move on. This leads to the second dividend of resilience on the potential for an effective microinsurance tool to stimulate economic activities among low-income households. Studies have shown links between insurance and agricultural productivity; when producers in the agricultural sector are confident of being covered in the event of a future disaster, the surface area that a farmer dedicates to agricultural production can be expected to increase.[16] As such, agricultural microinsurance can be expected to enhance risk management, increase productivity and drive economic growth.[17] Thirdly, microinsurance can generate development co-benefits, mainly in the form of socio-psychological support, by instilling a sense of security among low-income households.[18] Especially in the case of microinsurance provided by informal sources such as CBOs, these development co-benefits could include strengthened social organisation at the grass–root level, leading to empowerment and social inclusion.

However, the use of microinsurance in the formal sector as a risk management strategy appears to be a somewhat limited practice among low-income households in Sri Lanka. The insurance penetration of 1.2 per cent in Sri Lanka also denotes a low level of outreach of the formal insurance sector as a whole (including microinsurance). Studies show that the most popular strategies for disaster management/coping with various risks by low-income households are borrowing from Microfinance Institutes (MFIs) and informal sources, and pawning gold jewellery. Membership in community level organisations (CLOs) such as Funeral Aid societies is also seen as another important risk management strategy adopted by low-income households.[19]

A number of factors have contributed towards the low usage of formal sector insurance by low-income households: lack of affordability, awareness and trust on insurance, as well as the presence of various government welfare programmes and CLOs that help meet their needs are among the key factors.[20]

Lack of affordability is a key constraint faced by low-income households to use insurance services from the formal insurance sector. Insurance policies generally require payment of the premium to be made annually as a lump sum or in regular intervals. Nevertheless, many poor lack regular sources of income; often, their income is not only low, but also irregular and uncertain. Such income patterns are a major constraint for paying high premiums for insurance policies regularly,

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16 de Nicola, F. (2015). *Handling the weather: Insurance, savings and credit in West Africa.* Policy Research Working Paper No. 7187. Retrieved from https://openknowledge.worldbank.org/bitstream/handle/10986/21445/WPS7187.pdf?sequence=1&isAllowed=y

17 Castillo, M.J., Boucher, S., & Carter, M. (2016). Index insurance: Using public data to benefit small-scale agriculture. *International Food and Agribusiness Management Review, Special Issue,* 19(A). Retrieved from https://www.ifama.org/resources/Documents/v19ia/520150132.pdf

18 Tafere, K., Barrett, C.B., Lentz, E., & Ayana, B.T. (2015).*The subjective well-being gains from insurance that doesn't pay out.* Retrieved from http://barrett.dyson.cornell.edu/files/papers/150427_TafereBarrettLentz_SubjectiveInsurance.pdf

19 Galappattige, A., Jayaweera, R., & Tilakaratna, G. (2011). *Microinsurance in Sri Lanka: Combating multiple and overlapping vulnerabilities.* Poverty and social welfare policy series No. 9. Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

20 ICMIF (2018): Country diagnostic on mutual and cooperative microinsurance in Sri Lanka, (forthcoming).

Lack of affordability is a key constraint faced by low-income households to use insurance services from the formal insurance sector.

which force them to prioritise their immediate consumption needs over future risks. This is a prime reason for low use of insurance (from the formal sector) as a possible risk management option among low-income households.

Lack of awareness on the nature and benefits of insurance is another factor contributing to its low demand. Compared to other financial services like loans, savings and pawning, insurance is often seen as a complex tool where the benefits are uncertain (i.e. whether and when the benefits are received and the level of benefits). Lack of understanding of the concept, nature of insurance and how it works also add to the reluctance of low-income households to purchase insurance policies.

Compared to other financial services like loans, savings and pawning, insurance is often seen as a complex tool where the benefits are uncertain.

Moreover, lack of trust resulting from negative experiences with insurance providers has been identified as a factor contributing to low insurance penetration/coverage. A recent study revealed

cases where low-income households have faced negative experiences with insurance agents (e.g. sale of false insurance policies), which have led to their reluctance to purchase insurance policies from these companies.[21]

In addition, various government initiatives and informal mechanisms, while playing a significant role in helping the poor to manage their risks, have reduced to a large extent their need and willingness to obtain insurance policies at a price from other sources.

Successive governments in Sri Lanka over several decades have implemented various welfare programmes to assist the poor and vulnerable groups. These include the universal health policy under which healthcare facilities are provided free of charge to all citizens through a wide network of government hospitals and the Samurdhi programme that includes a cash transfer scheme, a microfinance programme and an insurance (social security) programme to help the poor improve their income, reduce their vulnerabilities to better cope with risks. Further, a Natural Disaster Insurance Scheme has been introduced in recent years covering all households and small businesses against natural disasters like floods, landslides and cyclones.

Furthermore, CLOs such as Funeral Aid societies that help low-income segments at times of need in nearly every village/division in Sri Lanka, is another reason for the lack of need to purchase insurance cover from formal insurance companies. These organisations are membership based organisations operating at the village level and managed by the community itself, and are often heavily trusted by low-income households.

10.5 Conclusions and Policy Implications

Microinsurance has been recognised as an important risk management tool for low-income households. It can help them mitigate various risks such as natural disasters and life-cycle events like death, disability and sickness. Sri Lanka's microinsurance sector consists of diverse providers; registered (licensed) insurance providers that come under the purview of the IRCSL, initiatives by government agencies like NITF, Department of Samurdhi Development and AAIB, and informal providers of microinsurance such as Funeral Aid societies and microfinance institutions.

Despite a growth in premium income in recent years, Sri Lanka's insurance penetration has remained low (1.2 per cent) – lower than many countries in the Asian region, indicating a low outreach of the formal (regulated) insurance sector. The use of insurance from the formal sector is particularly low among the low-income segment. This can be attributed to a number of factors; on one hand, lack of affordability, awareness and lack of trust on insurance have decreased the demand for insurance among low-income households, while on the other hand, the presence of government welfare programmes (e.g. universal free health and insurance schemes) and CLOs, while playing a significant role in risk management, have reduced the need for taking up insurance policies from insurance companies.

Sri Lanka's microinsurance sector is faced with a number of other issues and challenges that need to be addressed to ensure its growth and efficiency.

[21] *Ibid.*

One of the main constraints to the growth of the microinsurance sector is the lack of proper regulatory mechanisms to facilitate microinsurance. The RII Act lacks provisions for microinsurance. Further, the current regulatory requirements for insurers – the minimum capital and reinsurance requirements in particular – appear to be too stringent for microinsurance providers. This highlights the need to revisit some of the requirements applicable for microinsurance providers as well, to help expand the microinsurance sector to better serve the needs of the poor.

Despite the availability of a range of microinsurance products to help the poor mitigate risks, a majority of them appears to focus primarily on life-cycle related shocks and tend to overlook livelihood related risks. For instance, informal providers like Funeral Aid societies and microfinance organisations, as well as the majority of government initiatives such as the Samurdhi Social Security programme primarily focus on life-cycle related risks such as death, disability and sickness/hospitalisation, while only a few microinsurance providers offer policies covering livelihood related risks (e.g. agriculture insurance). Nevertheless, given that the livelihoods of low-income households (e.g. farming and fishing) are often more vulnerable to risks including adverse weather conditions and wild animals, livelihood related insurance can play an important role as a risk management strategy among the poor.

Additionally, government insurance schemes, although these play an important role in helping vulnerable households to cope with risks, have much scope to improve. For instance, the

A majority of microinsurance providers appears to focus primarily on life-cycle related shocks and tend to overlook livelihood related risks.

Samurdhi Social Security scheme is a component of the larger Samurdhi programme, which is known to suffer from considerable targeting errors (both inclusion and exclusion errors). Thus, measures are needed to address these targeting errors and ensure that the most vulnerable groups are covered by this scheme.

Lack of knowledge and trust on insurance companies and their policies are also seen as a deterrent to the expansion of the formal

microinsurance sector. By contrast, informal insurance providers such as Funeral Aid societies are among the most popular village level organisations that have gained considerable trust and confidence of low-income segments. This is largely due to the 'mutual' nature of these organisations; i.e. these are membership based organisations managed by the community itself, creating a sense of ownership among the members. Nevertheless, compared to the formal insurance companies, the benefit amounts and coverage of these informal organisations remain low while increasing them are often constrained by their limited funds. In this context, a linkage between formal insurance companies and informal insurers could help both parties to overcome their weaknesses by capitalising on mutual strengths, thereby helping to expand the microinsurance sector to better serve vulnerable communities. While some licensed insurance companies have already liaised with CLOs, much scope and potential remain to be explored.

Further, lack of awareness and knowledge on insurance due to its rather complex nature, and lack of trust on insurance providers and their policies, highlight the need for measures to raise awareness and build trust/confidence on insurance among low income households. Financial literacy programmes could play a key role in this regard.

A linkage between formal and informal insurers can help both parties overcome their weaknesses by capitalising on the strengths of each other, thereby helping to expand the microinsur-ance sector.

11. Addressing Nutritional Risks: Sri Lanka's Persistent Problem of Malnutrition

11.1 Introduction

Although Sri Lanka performs well in most health indicators, child nutrition is still a major problem. Despite countless initiatives to alleviate malnutrition, child nutritional levels have not improved much over the years. It remains a persistent obstacle in improving the country's overall socio-economic indicators. For instance, the Sri Lanka Human Development 2012 report revealed that according to the Multidimensional Poverty Index (based on 10 indicators representing health, education and living conditions), the nutritional indicator holds the highest contribution (30 per cent) for a person to be multidimensionally poor.

Nutritional issues are an integral part of the whole development process. Reducing malnutrition is important for good health as well as on many other aspects of peoples' lives – enhancing learning, productivity, reducing health care expenditure, etc. Improving nutrition is increasingly recognised in setting global development goals as imperatives for reducing poverty, promoting sustainable social and economic development and narrowing inequities. For instance, the Sustainable Development Goals (SDGs) call for action to eradicate malnutrition by 2030. Specifically, the SDG Goal 2 on 'zero hunger', aims to end all forms of hunger and malnutrition by 2030 to ensure that all people – especially children – have access to sufficient and nutritious food all year round. This includes, achieving the internationally agreed targets on stunting and wasting in children under five years of age, and addressing the nutritional needs of adolescent girls, pregnant and lactating women and older persons by 2025.

Though Sri Lanka achieved most of the Millennium Development Goals (MDGs), one of the less successful MDG outcomes was halving the proportion of under five year old underweight children by 2015. More specifically, the MDG target was to bring down the prevalence of malnutrition among children under five years of age from 29.7 per cent in 1993 to 14.9 per cent by 2015. However, the recent Demographic and Health Survey (DHS) 2016 data reveal that 20.5 per cent of under five year old children are still underweight. In this context, it is a real challenge for Sri Lanka to achieve the SDG target on eradicating malnutrition by 2030.

There is recognition that improved health care on its own cannot improve all health outcomes. The reason is that there are deep rooted socio-economic factors affecting health. For example, a child's nutritional status in life as well as a child's birth weight are determined by a number of factors – food insecurity, genetics, maternal

characteristics, the environment in which a child lives, and social circumstances. Nutritional disparities themselves are also driven by so-called social and economic determinants, such as income level, mother's level of education, and living conditions in homes and neighbourhoods.

Climate change affects all dimensions of food security and nutrition – food availability, access to food and food stability. It affects food availability through food production. For instance, extreme weather conditions such as droughts, floods and storms, impact on yields in terms of both crop quality and quantity. Also, climate change can affect access to food through higher prices. The most vulnerable are households dependent on the agricultural sector, faced with deteriorating agricultural income and higher food prices. Finally, climatic variability as a result of more frequent and intense weather events can disrupt food security strategies at both individual and country levels, leading to variations in food availability, access and utilisation.

Poor quality diets and vitamin and mineral deficiencies contribute to child growth failures, causing irreversible health consequences. Achieving food security requires different dimensions to be adequately addressed – food availability, access, stability and utilisation. Similarly, good nutrition depends on effective multi-sectoral approaches in dealing with food insecurity, including improving access to a diverse diet, appropriate care and feeding practices, and adequate health and sanitation. Thus, reducing food insecurity has to be a priority at national and global levels. At the regional, national and sub-national levels, various sectoral policies and programmes need to be designed and coordinated to ensure focussed action towards the eradication of food insecurity and malnutrition.

Given this background, the study of overall determinants of child malnutrition is insufficient to address the malnutrition problem at a practical level. Information on socio-economic determinants of child malnutrition, as well as root causes of higher prevalence of child malnutrition amongst lower socio-economic groups, and causes of food insecurity are important to improve the effectiveness of policies aimed at reducing childhood malnutrition, especially in severely affected populations. In this context, this chapter discusses the socio-economic determinants of child malnutrition and contributes to the debate on priority areas that need to be addressed to reduce malnutrition, especially in severely affected populations.

11.2 Global Nutrition Challenges

Globally in 2016, around 14 per cent of children under five years of age were underweight. Underweight prevalence is highest in South Asia (29.8 per cent), followed by sub-Saharan Africa (18.5 per cent).[1] Table 11.1 illustrates underweight trends of children under five years of age in some South Asian countries. Malnutrition is closely, and directly or indirectly, linked to major causes of death and disability. About one-third of under-five child mortality is attributable to undernutrition.[2] Malnourished children face frequent attacks of severe diarrhoea and are more susceptible to several infectious diseases, such as malaria, meningitis, and pneumonia. Further, poor nutrition in the first 1,000 days of children's lives will have irreversible health consequences.[3]

[1] World Bank. (2018). *Prevalence of underweight, weight for age (% of children under 5)*. Retrieved from https://data.worldbank.org/indicator/SH.STA.MALN.ZS

[2] United Nations Children's Fund. (2013). *Improving child nutrition.* Retrieved from https://www.unicef.org/gambia/Improving_Child_Nutrition_-_the_achievable_imperative_for_global_progress.pdf

[3] *Ibid.*

Box 11.1
Definitions of Anthropometric Indicators

Underweight
Children aged 0 to 59 months whose weight for age is more than two standard deviations below (moderate or severe stunting) and more than three standard deviations below (severe stunting) from the median of the World Health Organisation (WHO) Child Growth Standards.

Stunting
Children aged 0 to 59 months whose height for age is more than two standard deviations below (moderate or severe stunting) and more than three standard deviations below (severe stunting) from the median of the WHO Child Growth Standards.

Wasting
Children aged 0 to 59 months whose weight for height is more than two standard deviations below (moderate or severe stunting) and more than three standard deviations below (severe stunting) from the median of the WHO Child Growth Standards.

Low birth weight
Birth weight is less than 2,500 grams.

Body mass index (BMI)
BMI is calculated by dividing weight in kilograms by height in metres squared (kg/m2). A BMI less than 18.5 indicates that the woman is too thin for her height and has a chronic energy deficiency.
Sample -- women age15-49 years who are not pregnant.

Source: United Nations Children's Fund. (2013). *Improving child nutrition.* Retrieved from https://www.unicef.org/gambia/Improving_Child_Nutrition_-_the_achievable_imperative_for_global_progress.pdf

Table 11.1
Underweight Trends: Percentage of Underweight Children less than Five Years, by Age

Country	Survey Year	Underweight Children
Bangladesh	2014	32.6
India	2015-16	35.7
Indonesia	2013	19.9
Malaysia	2015	12.4
Nepal	2016	27.0
Philippines	2015	21.5
Thailand	2015-16	6.7

Source: World Health Organisation. (2018). *Global database on child growth and malnutrition.* Retrieved from http://www.who.int/nutgrowthdb/estimates2016/en/

11.3 Status of Nutrition in Sri Lanka

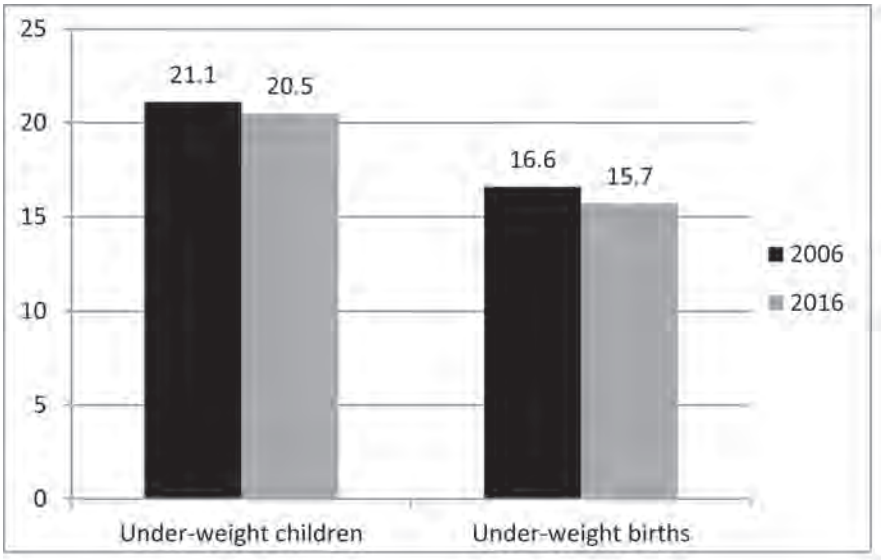
Similar to other South Asian countries, Sri Lanka too experiences a higher prevalence of child malnutrition irrespective of how malnutrition is measured (Table 11.2). Despite several measures taken by successive governments to improve the nutritional status, including a National Nutrition Policy (NNP) initiated in 2010, there is no consistent improvement to be seen in the nutritional status of under five year old children during 2006-2016. Also, the prevalence of low birth weight has not reduced. Although, the level of severe malnutrition among under five year old children remains below 5 per cent in all three nutritional measures, the prevalence has slightly increased over 2006-2016. On the other hand, maternal malnutrition has considerably reduced during 2006-2016. However, it is worth noting the higher prevalence of malnutrition among young women before the childbearing age (age 15-19 years of 22.9 per cent and age 20-29 years of 16.3 per cent) which affects the birth weight of a baby.[4]

Further, the DHS 2016 survey reveals the existence of socio-economic variations as well as regional disparities in nutrition levels. The prevalence of malnutrition is more severe in terms of certain population groups, such as the estate sector. For example, 30 per cent of children under five years of age were underweight, while 25 per cent of babies had a low birth weight (Table 11.3). Similarly, there are district level variations where Nuwara-Eliya, Mullaitivu and Anuradhapura districts have recorded a higher prevalence of child malnutrition, while Ratnapura, Nuwara-Eliya and Matara districts have recorded a higher prevalence of maternal malnutrition as well as low birth weight babies. In such deprived regions, there are deep rooted socio-economic factors which affect health and wellbeing of communities.

Despite several measures taken by successive governments to improve Sri Lanka's nutritional status, there is no consistent improvement to be seen in the nutritional status of under five year old children during 2006-2016. The prevalence of low birth weight also has not reduced.

[4] Department of Census and Statistics. (2017). *Demographic and health survey 2016*. Retrieved from http://www.statistics.gov.lk/social/SLDHS%202016%20Report%20Final%20Full%2010%20Oct%202017.pdf

Figure 11.1
Percentage of Underweight Children and Underweight Births



Source: Department of Census and Statistics. (2017). Demographic and health survey 2016. Retrieved from http://www.statistics gov.lk/social/SLDHS%202016%20Report%20Final%20Full%2010%20Oct%202017.pdf

Table 11.2
Child and Maternal Nutritional Trends

	2000	2006/2007	2016
Percentage of Children under Age 5 who are Underweight, Stunted, or Wasted			
Underweight			
Moderate or severe	23.0	21.1	20.5
Severe	4.7	3.7	4.0
Stunted			
Moderate or severe	18.5	17.3	17.3
Severe	4.0	3.9	4.1
Wasted			
Moderate or severe	15.5	14.7	15.1
Severe	2.5	2.8	3.0
Women with low BMI (less than 18.5)	21.8	16.2	9.1
Low birthweight (less than 2,500g)	16.7	16.6	15.7

Source: Department of Census and Statistics. (2009). *Demographic and health survey 2006/2007.* Retrieved from http://www statistics.gov.lk/social/DHS%20200607%20FinalReport.pdf

Department of Census and Statistics. (2017). *Demographic and health survey 2016.* Retrieved from http://www.statistics.gov.lk/social/SLDHS%202016%20Report%20Final%20Full%2010%20Oct%202017.pdf
Jayawardena, P. (2012). Socio-economic determinants and inequalities in childhood malnutrition in Sri Lanka. *Well-Being and Social Policy Journal, 8(1), 1-22.*

Table 11.3
Nutritional Disparities by Background Characteristics, 2016

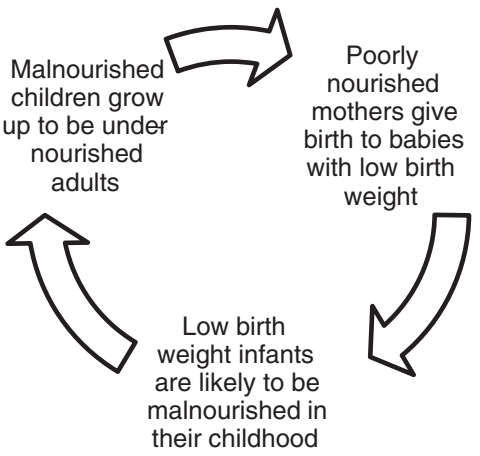
	Underweight Children <5 Years Old	Low Birthweight (<2,500 g)	Women with owLBMI (<18.5)
Residence			
Urban	16.4	12.7	5.6
Rural	20.8	15.7	9.1
Estate	29.7	25.4	22.0
District			
Colombo	14.6	12.4	4.6
Gampaha	19.6	15.2	6.6
Kalutara	20.1	15.3	9.0
Kandy	20.6	14.3	7.9
Matale	17.8	13.5	8.3
Nuwara -Eliya	29.6	20.7	13.4
Galle	17.8	12.6	12.3
Matara	22.3	20.5	12.3
Hambantota	22.4	10.0	10.7
Jaffna	13.7	6.2	7.4
Man nar	18.2	14.7	7.6
Vavuniya	20.3	19.4	7.9
Mullaitivu	25.5	9.4	8.9
Killinochchi	16.6	9.5	14.0
Batticaloa	21.4	18.9	10.7
Ampara	18.1	16.0	8.4
Trincomalee	22.7	15.0	7.4
Kurunegala	21.9	15.1	9.5
Puttalam	20.1	18.7	7.6
Anuradhapura	24.7	14.3	7.4
Polonnaruwa	18.7	17.3	12.0
Badulla	22.6	17.0	9.7
Moneragala	24.2	18.8	9.7
Ratnapura	22.9	22.4	15.2
Kegalle	19.9	18.8	8.5
Wealth Index			
Poorest 20%	27.6	21.3	16.1
Second 20%	24.5	17.4	11.4
Third 20%	20.9	15.6	8.1
Fourth 20%	16.1	14.5	6.1
Richest 20%	12.5	9.1	4.1
Safe Drinking Water			
Yes	19.8	14.9	8.7
No	28.6	23.5	14.2
Sanitary Facility			
Yes	19.7	15.2	8.6
No	27.1	19.8	14.4

Source: Author's calculations based on DHS 2016 micro data.
Department of Census and Statistics. (2017). *Demographic and health survey* 2016. Retrieved from http://www.statistics.gov.lk/social/SLDHS%202016%20Report%20Final%20Full%2010%20Oct%202017.pdf

11.4 Intergenerational Cycle of Malnutrition

The nutritional status of individuals is interrelated to different stages of their life-cycle and between generations. For instance, maternal malnutrition leads to low birth weight and its consequences of childhood growth retardation lead back to under-nourished adults (Figure 11.2). The intergenerational cycle of malnutrition is deeply embedded in the estate sector. At the district level, information shows the association of low birthweight babies with maternal malnutrition (Table 11.3). Unless the cycle is broken at some stage, not only does it perpetuate the vicious cycle of malnutrition, but it also contributes to an enormous waste of human potential. Therefore, action needs to be taken at each stage of the life-cycle to ensure that malnutrition does not perpetuate into an intergenerational problem.

Figure 11.2
Intergenerational Cycle of Malnutrition



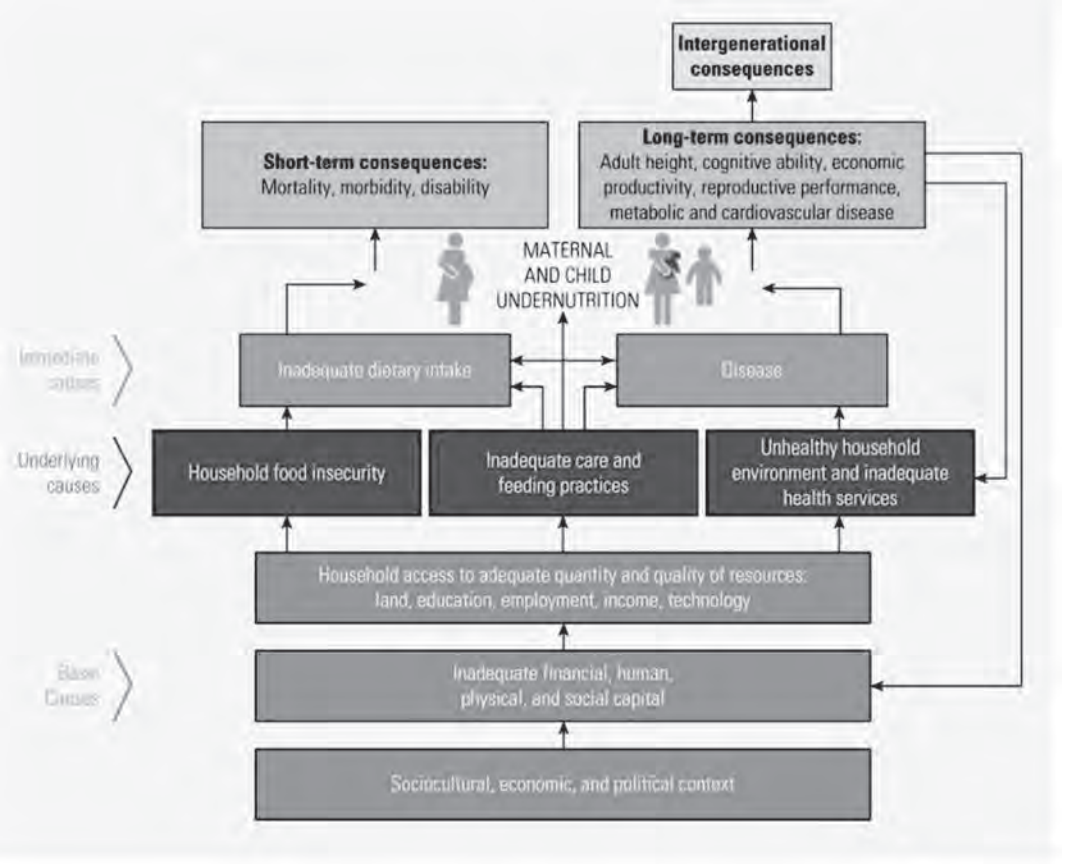
Source: United Nations System Standing Committee on (1992). *Second report on the world nutrition situation*. Retrieved from https://www.unscn.org/web/archives_resources/files/rwns2_1.pdf

Therefore, information on the causes of malnutrition among different socio-economic groups is useful in identifying segments of the population who are at risk. Special programmes can then be designed targeting specific socio-economic groups to improve their nutrition levels. Such interventions are important from an individual and family perspective, as well as from a national perspective, as Sri Lanka strives to achieve better overall development outcomes.

11.5 Causes of Undernutrition

According to the United Nations Children's Fund (UNICEF) conceptual framework, nutritional status is influenced by three broad factors: food, health and care (Figure 11.3). These factors are affected by social, economic and political factors. When children have access to an affordable and balanced nutritional diet, appropriate maternal and child-care practices, adequate health services, and a healthy environment and services – including safe water, sanitation and good hygiene practices – it will result in an optimal nutritional status. When targeting most vulnerable people, understanding the immediate and underlying causes of undernutrition in a given context is critical to deliver appropriate, effective and sustainable solutions, and adequately meet their needs.

Figure 11.3
Conceptual Framework of the Determinants of Child Undernutrition



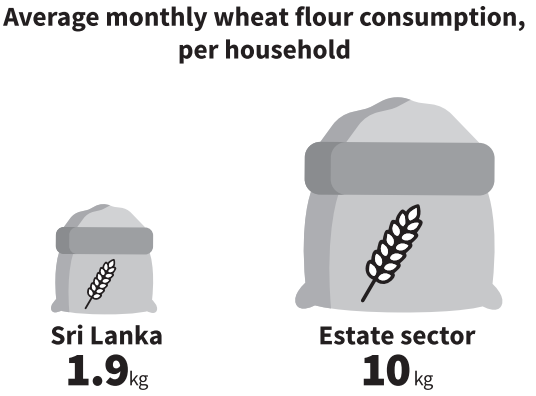
Source: United Nations Children's Fund. (2013). *Improving child nutrition.* Retrieved from https://www.unicef.org/gambia/Improving_ Child_Nutrition_-_the_achievable_imperative_for_global_progress.pdf

11.5.1 Inadequate Dietary Intake

As explained above, two immediate causes of child nutritional status are inadequate dietary intake and health status. Children can become malnourished either because they do not eat sufficient food in the appropriate form or quality. Recent studies reveal that poor dietary habits are a significant reason for malnourishment in the estate sector.[5] Those in the estate sector continue their cultural dietary practices and consume more wheat flour. For example, estate sector households' average wheat flour consumption is steep, at around 10kgs per month, whereas average household wheat flour consumption is around 1.9kg (Figure 11.4a). On the other hand, those in the estate sector consume less animal protein; their expenditure for animal protein is

[5] Jayawardena, P. (2014). Can people in Sri Lanka's estate sector break away from poor nutrition?. *Health Economics Series, 1.* Retrieved from http://www.ips.lk/wp-content/uploads/2017/02/Can-People-in-SL-Estate-Sector-Break-Away.pdf

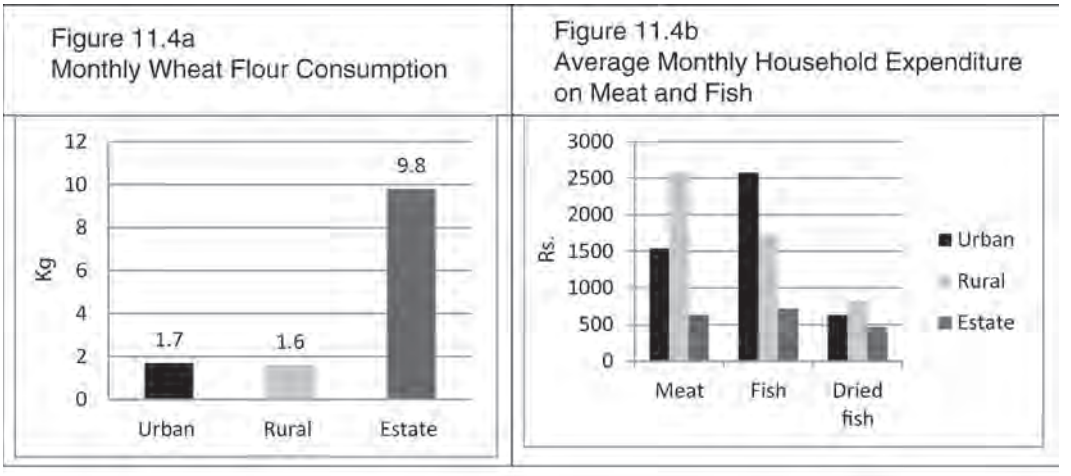
Poor dietary habits are a significant reason for malnourishment in the estate sector. Those in the estate sector continue their cultural dietary practices and consume more wheat flour.



much less when compared to the expenditure patterns of other regions (Figure 11.4b).

These poor dietary habits negatively affect their nutritional status. To improve the nutritional status these immediate causes should be addressed at the grass root level.

Figure 11.4
Consumption of Wheat Flour and Household Expenditure on Meat and Fish



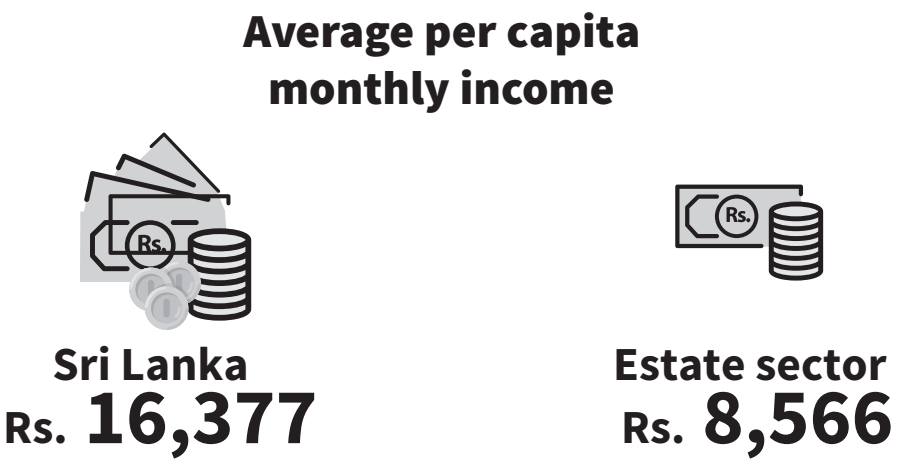
Source: Constructed based on HIES 2016 micro data.

On the other hand, immediate determinants of child malnutrition in turn are influenced by three intermediate determinants at the household level: food insecurity, inadequate maternal and child care practices, and poor health environment and services.

11.5.2 Household Food Insecurity

Food security is having access to sufficient food which leads to an active and healthy life. The socio-economically poor are more likely to be malnourished.[6] The estate sector households in particular are socio-economically poorer. Although in recent years poverty levels in the estate sector have reduced nearly fourfold, from 32 per cent in 2006/2007 to 8.8 per cent in 2016, this sector is still lagging behind compared to the other parts of Sri Lanka. As reported in the Household Income and Expenditure Survey (HIES) 2016, 64.6 per cent of estate sector households are among the poorest 40 per cent of households in the country. Also, the HIES 2016 reveals that the mean monthly per capita income for estate sector is remarkably low at around Rs. 8,566, when compared to the national average of Rs. 16,377. It shows that, while the estate sector is just coming out of poverty, low income levels may still hinder their food security.

Poor financial management may also escalate food insecurity. Although the estate sector lags behind economically, the expenditure on alcohol and tobacco in this sector is roughly double in comparison to the average expenditure on the same in Sri Lanka (Figure 11.5). This is partly explained by reasons such as their labour intensive work, habits, and a cooler climate. Also, there are many liquor shops available in close proximity, which acts as a motivator for people to consume alcohol. Estate sector households' average monthly expenditure for liquor and tobacco, as a percentage of their monthly food expenditure is over 11 per cent, negatively impacting the households' food security.



[6] Jayawardena, P. (2012). Socio-economic determinants and inequalities in childhood malnutrition in Sri Lanka. *Well-Being and Social Policy Journal,* 8(1), 1-22.

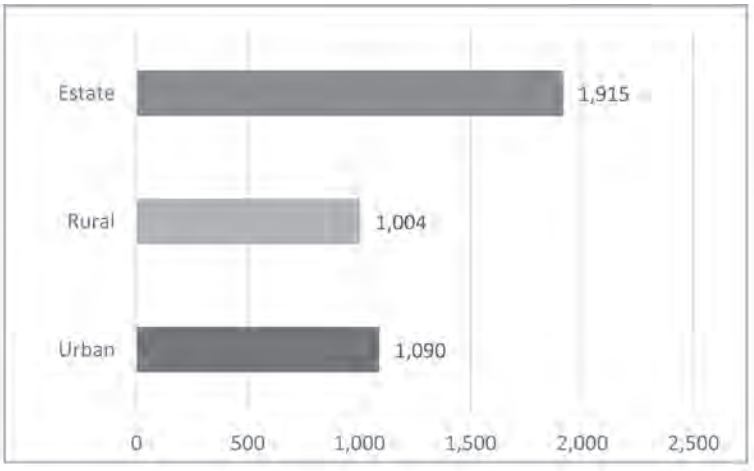
Although the estate sector lags behind economically, the expenditure on alcohol and tobacco in this sector is roughly double in comparison to the average expenditure on the same in Sri Lanka.

11.5.3 Inadequate Care and Feeding Practices

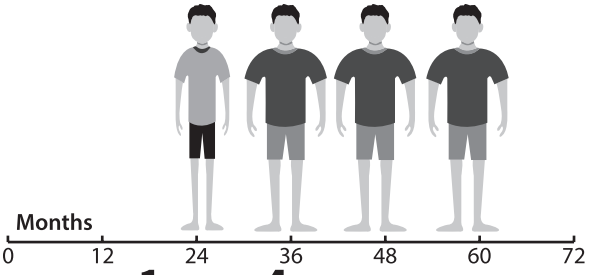
As discussed above, the actual amount of food consumed by a child is closely related to food security, but it is also critically dependent on the care related to feeding behaviour such as breastfeeding, complementary feeding, and food preparation. Thus, maternal and childcare practices can be considered as major underlying causes of child malnutrition. It affects a child's nutritional status via food security, as well as by way of health environment and services.

Data reveal that growth retardation accelerates with the introduction of complementary feeding. Breastfeeding and feeding of kids are crucial for child nutrition, health and development. Child malnutrition seems to increase after the first year of life and remains high thereafter (Figure 11.6). One child in four is underweight among 24-59 month old children. Childhood growth retardation may be an indication of either inappropriate food

Figure 11.5
Household Average Monthly Expenditure on Liquor and Tobacco (Rs.)



Source: Constructed based on HIES 2016 micro data.



1 child in **4** is underweight among **24-59** month old children

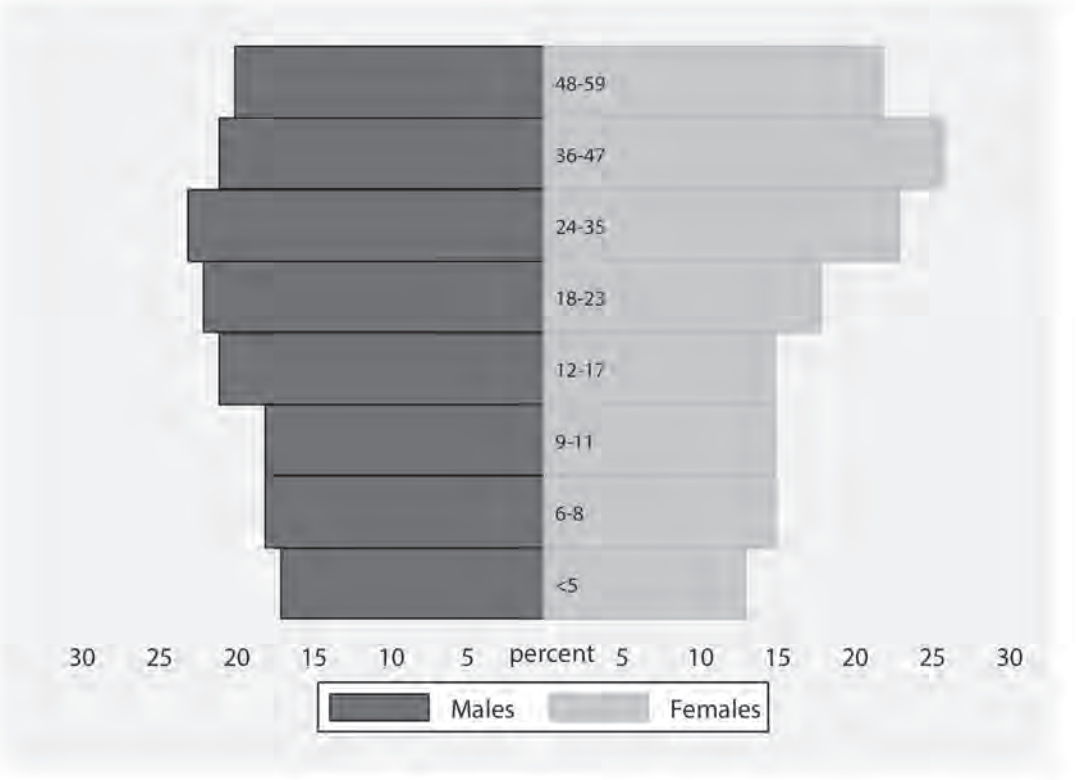
intake in terms of quantity or quality during the weaning period as well as poor health status. The low risk of malnutrition during the first six months could be due to the protective effect of breastfeeding. According to the DHS 2016 estimates, 99 per cent of children in the country are breastfed, while about 82 per cent are exclusively breastfed during the first five months. As children move into complementary feeding, the growth of children might be hampered by food insecurity or poor dietary choices.

Advertising – which can manipulate consumer preferences – could also affect the food consumption preferences. These advertisements may contain some information but the main aim is to persuade consumers that a particular product is more desirable. Also, they may imitate a trend. For instance, a child may develop a taste for a new variety of food such as instant noodles, soft drinks, etc. This means that food choices could be affected by an erroneous belief on the nutritional content of a chosen food item. Aside from traditional advertising venues, fast food companies routinely engage in direct, targeted contact with children.

Child malnutrition is also linked with a mother's education and knowledge. Evidence suggests that women are critical in ensuring good nutrition for the family and household food security.

Childhood growth retardation may be an indication of either inappropriate food intake in terms of quantity or quality during the weaning period as well as poor health status.

Figure 11.6
Percentage of Underweight Children Under Five Years, by Age



Source: Author's calculations based on DHS 2016 micro data.

Women have the greatest potential to make decisions that positively affect children's health, how the household income is spent, the quantity and quality of food, and in health-seeking behaviour.[7] For Sri Lanka too, it is evident that education and knowledge of women have a strong impact on their own nutritional status, as well as that of their children.[8] In the estate sector, the level of women's education is much lower than the average; whereas around 34 per cent of the estate sector reproductive aged women have completed only primary level or below, on average only 8.5 per cent of reproductive aged women fall under this education level. Poor education makes it difficult for women to take full advantage of awareness raising campaigns on family health and hygiene practices offered by the health services.

[7] Haddad, L. (1999). Women's status: Levels, determinants, consequences for malnutrition, interventions, and policy. *Asian Development Review,* 17(1,2), 96-131.
[8] Jayawardena, P. (2012). Socio-economic determinants and inequalities in childhood malnutrition in Sri Lanka. *Well-Being and Social Policy Journal,* 8(1), 1-22.

11.5.4 Unhealthy Household Environment

Poor sanitation facilities are another contributory factor for the higher prevalence of malnourishment. As recognised in the UNICEF conceptual framework, safe drinking water and sanitary facilities exert a strong effect on child nutritional status as well as on maternal nutrition. The government has taken several measures to improve the capacity, and distribution of water supply and sanitation facilities. However, the DHS 2016 reveals that 57 per cent of the estate sector households do not have access to a safe drinking water facility,[9] while 21 per cent do not have access to a sanitary toilet facility,[10] which negatively affects health, wellbeing, and nutrition of this socio-economic group. In this context, policies relating to the improvement of household socio-economic status and safe environment among the less privileged also have a major role to play in their wellbeing.

11.6 WHO Recommended Nutrition Practices

Globally, interest in improving nutrition has increased dramatically. Investment in health and nutrition is fundamental for improving human welfare and economic growth as well as for reducing poverty. Recognising that food and nutrition security is considered as a global priority and investing in nutrition is a key way to advance global welfare, the Group of 8 (G8) of the world's wealthiest countries has also placed nutrition high on its development agenda.

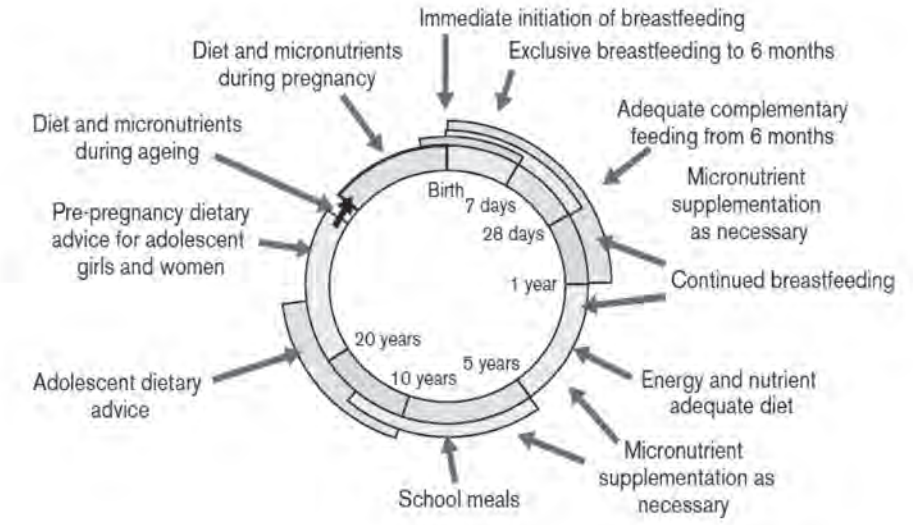
The WHO has developed recommendations to health and nutrition based on the best available evidence. According to the WHO guiding principles, the first two years of life is a window of opportunity for growth promotion. Growth failure during foetal development and poor nutrition in the first two years of life, have critical consequences throughout the life-course. Also, the deficits acquired by this age are difficult to reverse later. Thus, the WHO recommends prenatal and early-life interventions to prevent the growth failure that primarily occurs during the first two years of life, including the promotion of appropriate infant feeding practices.

Accordingly, WHO recommended strategies to improve nutritional status and growth in children include, interventions to improve nutrition of pregnant and lactating women; early initiation of breastfeeding with exclusive breastfeeding for six months; promotion, protection, and support of continued breastfeeding along with appropriate complementary feeding from six months up to two years and beyond; and micronutrient supplementation, targeted fortification and food supplementation, when needed. Further, the WHO recommends evidence-based nutrition actions, relevant to nutrition of mothers and children through the life-course (Figure 11.7).

[9] Unsafe drinking water sources are unprotected wells, rain water, river/tank/streams/spring, and bowser.

[10] Sanitary toilet includes any non- shared toilet of the following types: flush/pour flush toilets to piped sewer systems, septic tanks, and pit latrines; ventilated improved pit latrines; pit latrines with slabs; and composting toilets.

Figure 11.7
Improving Nutrition around the Life-course



Source: World Health Organisation. (2013). Essential nutrition action. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/84409/9789241505550_eng.pdf;jsessionid=3053A84431145182C7414B23F5EA6D15?sequence=1.

Box 11.2
Wheat and Maize Flour Fortification

Wheat and maize flour fortification is a preventive food-based global intervention to improve micronutrient status of populations. This can be integrated with other interventions in efforts to reduce vitamin and mineral deficiencies.

Wheat and maize flour fortification should be considered when industrially-produced flour is regularly consumed by large population groups in a country. Wheat and maize flour fortification programmes are expected to be most effective in achieving a public health impact directed at the national level.

Decisions about which nutrients and the appropriate amounts to add to fortify flour should be based on a series of factors, including the nutritional needs and deficiencies of the population; the usual consumption profile of 'fortifiable' flour (i.e. produced domestically or imported, which could in principle be fortified); sensory and physical effects of the fortified nutrients on flour and flour products; fortification of other food channels; population consumption of vitamin and mineral supplements; and costs.

Flour fortification programmes should also include appropriate quality assurance and quality control programmes at flour production, as well as regulatory and public health monitoring of the nutrient content of fortified foods. Further, assessment of the nutritional and health impacts of the fortification strategies is recommended.

Though wheat and maize flours can be fortified with several micronutrients, iron, folic acid, vitamin B12, vitamin A and zinc, are the five micronutrients recognised to be of public health significance in developing countries.

Source: World Health Organisation. (2013). *Essential nutrition action*. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/84409/9789241505550_eng.pdf;jsessionid=3053A84431145182C7414B23F5EA6D15?sequence=1

11.7 Policies and Interventions to Address the Problem of Malnutrition

Despite the efforts of the government and other agencies to eliminate malnutrition, optimum results cannot be achieved unless all interventions are carried out according to a well designed work plan in a coordinated manner. Therefore, a NNP is a prerequisite which has to be based on the ground situation and the scope and responsibility of all relevant agencies. The first nutrition policy for Sri Lanka was developed in 1986 and its effectiveness has diminished over the years for several reasons: limited inter-sectoral coordination, change in government priorities, and the policies not being updated in line with socio-economic changes.

11.7.1 National Nutrition Policy (NNP)

Identifying this necessity, the Ministry of Healthcare and Nutrition developed a NNP in 2010 and based on this document, a strategic plan and action plans have been developed. The NNP has been designed in order to implement future strategies and action plans in accordance with it, while building up on the related policies that are already in existence. This policy has been prepared to obtain inter-sectoral cooperation to improve the nutritional status; it includes areas of work such as planning, agriculture, fisheries, livestock, health, education, social services, poverty alleviation and all other relevant sectors.

The NNP has focussed its attention on optimum nutrition throughout the life-cycle by reducing the intergenerational impact of malnutrition. The NNP has recognised the importance of targeting nutritional interventions to underserved areas, the plantation community, urban poor, and conflict affected areas. Further, it has identified the necessity to promote behavioural change among the population, enabling them to make right food choices and care practices.

11.7.2 Interventions to Enhance Nutrition

Mainly, there are two types of interventions to enhance the health and nutritional status of the people; direct interventions (integrated package of maternal and child health and nutrition, nutrition of school children, etc.) and indirect interventions (food subsidies and income supplementation programme, safe water and sanitation, etc.).

In line with WHO recommended actions, Reproductive, Maternal, Newborn, Child Adolescent and Youth Health programme (RMNCAYH) is a collection of evidence-based interventions implemented by the Ministry of Health (MOH) to improve maternal and child nutrition. Under this RMNCAYH programme, Vitamin A supplementation, Zinc supplementation during diarrhoea, de-worming, and provision of supplementary food 'Thriposha' to undernourished children are implemented throughout the country. Further, special nutrition clinics have been established in the field to implement targeted interventions to malnourished mothers and children. District level trainers in selected districts and master trainers competent in Tamil/Sinhala were also trained on the new WHO growth standards and growth monitoring and promotion.

Schools serve as an ideal setting to positively affect children's health because they reach young people at a critical stage of development. There are many direct as well as indirect interventions implemented in schools to enhance health and nutritional status of school children.

At present, there are two school feeding programmes. The Ministry of Education (MOE) administers the schools meal national programme while the World Food Programme (WFP) assists in the 'Food for Education' initiative in collaboration with the Ministry of Nation Building and Estate Infrastructure Development. At present, the school meal programme has been implemented in almost 80 per cent of schools, whereby one million school children studying in grade 1-5 benefit from the programme.

11.7.3 Challenges in Implementation

Despite several major measures taken by the government over time, Sri Lanka's nutritional status has showed only a marginal improvement over the last decade and still continues to be a challenge. Nutritional interventions alone will not be able to help further improve nutrition status due to the complexity of the problem. Existing issues and constraints in the alleviation of malnutrition are therefore the focus of this section.

As discussed in previous sections, the nutritional status of the population is closely interrelated to a number of factors such as household food security, women's education and knowledge, health services, safe drinking water and sanitation, socio-cultural beliefs, etc. Therefore, action to reduce malnutrition requires the concerted efforts of several sectors and the incorporation of nutrition considerations into sectoral policies. Many factors lie outside the purview of the healthcare and nutrition sector and health interventions alone will not be able to help further improve the nutritional status in the country. Such a concerted effort needs commitment at the highest level, guided by a well laid-down policy framework.

There are issues at the implementation stage due to behavioural and cultural reasons. For example, it is difficult to change social and cultural practices of population groups such as those in the estate sector who enjoy a high consumption of wheat flour and a low consumption of animal protein in their diet. Although some interventions were introduced to change their dietary habits, these were not successful. For example, rice flour was introduced instead of wheat flour but this also failed at implementation. Further, targeting for supplementary feeding was also not reasonably effective as food was shared among all the household members.

11.8 Policy Recommendations

Sustainable nutritional interventions should be aimed at enhancing food security, access to health care and services and access to safe water and sanitation at the household and community levels, at school, as well as in work places. Some policy recommendations to address the multifaceted problem – strengthening coverage and quality of health care services, strengthening service delivery, and eliminating socio-economic differences are discussed in this section.

To be more affective, policies must recognise and remove individual causes of malnutrition within the community. For better targeting, it is important to identify food shortages, and diversities in diets that exist among the community. For example, the estate sector population consume wheat flour largely. Wheat flour fortification could be a more targeted measure to address nutritional deficiencies of the estate sector population.

Also, effective nutrition education on healthy eating habits and physical activity can go a long way in reducing the risk of poor nutrition.

Policies must recognise and remove individual causes of malnutrition. For better targeting, it is important to identify food shortages, and diversities in diets that exist. The estate sector population consumes wheat flour; wheat flour fortification can be a targeted measure to address nutritional deficiencies of the estate sector population.

Educational programmes on nutrition should be strengthened to focus on the importance of nutritious food – what foods to select, how to prepare and feed children in relation to frequency, density, utilisation, and the hygienic and nutrition value of food. Behavioural change communication must be the objective of such education. Such awareness programmes on health and nutrition should also cover complementary feeding and health promotion among children and adolescents. Interventions to increase household food security through better financial management, and campaigns against behaviour and practices such as alcoholism, should be carried out amongst youth groups as well.

The NNP has recognised the role of community organisations in programme planning, implementation, and monitoring of nutrition intervention programmes. For better targeting, the community must address the root causes of malnutrition, with the help of trained individuals, and develop long-term solutions to the nutrition problem. The formation of women's groups with backing of referral facilities, is important to empower women to make the right nutritional choices. Especially, community driven programmes have a major role to play in improving the food security of the deprived estate sector. In addition, the NNP proposes to implement an evidence based community nutrition package through community workers.

Health care services should be strengthened in areas where a higher prevalence of malnourishment exists. Especially trained health care providers should be integrated to tackle the vicious cycle of malnutrition. Special monthly medical clinics at work places are recommended, while providing facilities for outreach services through qualified health workers. Recruiting health workers, from within the community will be more effective.

Schools are ideal settings for nutrition programmes and services, because dietary, hygienic and exercise habits that affect nutritional status are formed during schooling years. Linking health programme delivery to the school system through a multi-sectoral approach (education, health and nutrition) has proven to be cost effective internationally. Therefore, school-based nutrition interventions should be strengthened.

The current NNP recognises the need for inter-sectoral cooperation more explicitly and details policies that need to be formulated and legislated in order to ensure the effective achievement of the desired outcomes. Likewise, the need to examine the potential nutritional impacts of all policies at schools, work places, maintaining food standards, food advertising should be considered as important components of the currently advocated 'health in all policies'.

Living conditions in estate areas should be enhanced by providing better housing and increasing access to safe drinking water, sanitary facilities, drainage and waste management. Public health inspection is recommended to maintain the living conditions of the estate sector community. Inspectors are responsible for an annual sanitary survey in estate sector homes, as well as of crèches and day care centres in the estates of their designated areas.

Nutritional deficiencies of working people decreases physical capacity and work performance. Also, maternal malnutrition is closely associated with bearing a baby with a low birth weight. However, at present no specific nutrition intervention programmes are available at work places. Especially in the industrial sector where a large number of youth are employed, there is no specific intervention to improve health and nutrition, which directly affects productivity. Recognition of this necessity is one important strategy of the NNP which involves formulation, dissemination and implementation of guidelines for a healthy work place as an effective component on nutrition.

POLICY BRIEFS

12. Gender Dimensions of Disaster Risk Management

12.1 Introduction

Climate change – attributed directly or indirectly to human activity that alters the composition of the global atmosphere, in addition to natural climate variability observed over comparable time periods – has become an every-day experience for populations around the globe. Small island developing states like Sri Lanka are particularly susceptible to the consequences of climate change because of two reasons; their geographical location (in regions vulnerable to sea level rises) and their limited capacity to adapt (as a result of constraints in respect of access to financial resources and technologies). There is a clear link between climate change and disasters where climate change brings long-term shifts in mean weather conditions and the possibility of increasing frequency and severity of extreme weather events. Most of these climate related disasters cannot be prevented, but their effects can be mitigated. As in any other phenomena such as poverty, labour force participation, or development, climate change and related disasters also have a gender dimension where women are often adversely affected.

In this context, this policy brief examines the gender dimension of disaster management, mainly in the Sri Lankan context, and the importance of taking into account the gender dimension in disaster management policy formulation. It aims to examine the link between gender and disaster management and the

As in any other phenomena such as poverty, labour force participation, or development, climate change and related disasters also have a gender dimension where women are often affected adversely.

importance of mainstreaming gender in disaster management policy formulation. It also examines how gender has been addressed in the national policy framework on disaster management in Sri Lanka. This policy brief thereafter goes on to highlight some of the major gender related issues in Sri Lanka in disaster management, and offers some policy recommendations in the concluding section.

12.2 Gender Mainstreaming in Disaster Risk Management

The concept of gender makes it possible to distinguish the biologically founded, sexual differences between women and men from the culturally determined differences between the roles given to or undertaken by women and men respectively, in given societies.[1] It determines what is expected, allowed and valued in a woman or a man in a given context, opportunities, responsibilities and resources, as well as powers associated with being male and female.[2] It should be noted that gender does not exclusively mean 'women'. However, given that women are often in a disadvantaged position in many developing as well as developed countries, the promotion of gender equality implies an explicit attention to women's empowerment.[3]

Experiences from different parts of the world confirm that women are disproportionately vulnerable to the effects of natural disasters and climate change, where their rights and socio-

Just as natural disasters affect women disproportionately, response and recovery efforts which are the key elements of disaster management can also increase or reinforce existing inequalities.

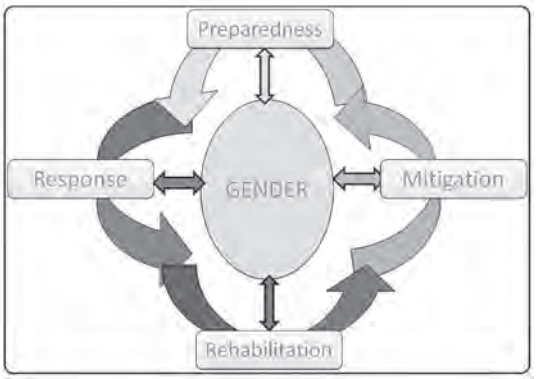
1 Ostergaard, L. (1992). *Gender and development: A practical guide.* Abingdon, United Kingdom: Routledge
2 Bureau for Crisis Prevention and Recovery. (2010). *Gender and disasters.* New York: United Nations Development Programme (UNDP).
3 *Ibid.*

economic status are not equal to those of men, and where they have less voice and influence than men in shaping policies and prioritising how climate finance is used.[4] Just as natural disasters affect women disproportionately, response and recovery efforts which are the key elements of disaster management can also increase or reinforce existing inequalities.[5]

Disaster risk management (DRM) is the application of disaster risk reduction (DRR) policies and strategies to prevent new disaster risks, reduce existing disaster risks and manage residual risks, contributing to the strengthening of resilience and reduction of losses.[6] There are four basic components of DRM, namely: mitigation (measures to be taken before and after an event), preparedness (measures to be taken before and after an event); response (measures to be taken during and immediately after an event); and recovery (post disaster measures that are long term after the disaster).[7] These four components are essential for a successful DRM cycle, and are directly linked with gender, as gender makes a difference in vulnerability to risk, disaster resilience and efficiency, and equitability of recovery (Figure 12.1). In this regard, the needs and vulnerabilities of women and men, as well as their capacities and priorities should be considered separately in DRM in order to be gender sensitive and effective.

Research evidences from different parts of the world have proven that the effect and impact of natural disasters vary in the case of men and women, and women are more likely to die and suffer ill health as a result (Box 12.1).

Figure 12.1
Relationship between Gender and DRM





Boys and girls are 14 times more likely than men to die during a disaster.

Source: Isık, Ö., Naside, Özer., Sayın, Nurdan., Mishal, Afet., & Özçep, Ferhat. (2015). Are women in Turkey both risks and resources in disaster management?. *International Journal of Environmental Resources and Public Health 2015, 12(6),* pp. 5758-5774.

[4] World Bank. (2011). Gender and climate change: Three things you should know. Washington D.C.: World Bank.

[5] Arnold, M., & Cynthia, B. (2011). Protecting and empowering vulnerable groups in disaster recovery. World Reconstruction Conference: Proceedings. Washington D.C.: The World Bank, 210–240.

[6] United Nations Office for Outer Space Affairs. (2017). *Knowledge portal- disaster risk management.* Retrieved from http://www.un-spider.org/risks-and-disasters/disaster-risk-management

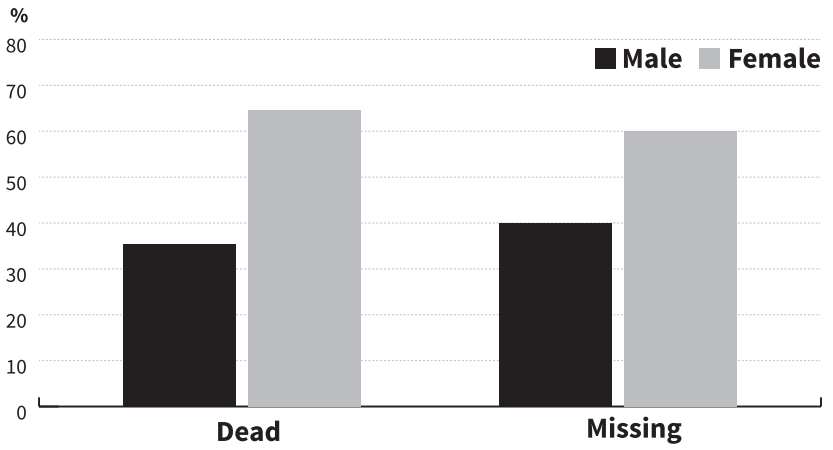
[7] Caucasus Environmental NGO Network. (n.d.). *Components of disaster risk management.* Retrieved from http://drm.cenn.org/Trainings/Risk%20Management%20and%20Environmental%20Assessment%20for%20Spatial%20Planning/Lectures_ENG/Components%20of%20Disaster%20Risk%20management.pdf

Box: 12.1
Disaster and Gender Statistics

- Boys and girls are 14 times more likely than men to die during a disaster.
- In 1991, during the cyclone disasters in Bangladesh, of the 140,000 people who died, 90 per cent were women.
- In industrialised countries, more women than men died during the heat wave that affected Europe in 2003. In France, most deaths were among elderly women.
- During the emergency caused by hurricane Katrina in the US, most of the victims trapped in New Orleans were Afro-American women with their children, the poorest demographic group in that part of the country.
- Following a disaster, it is more likely that women will be victims of domestic and sexual vio lence; they even avoid using shelters for fear of being sexually assaulted.
- Nutritional conditions determine the capacity to deal with disasters. Women are more likely to suffer from malnutrition because they have specific nutritional needs when they are preg nant or breast feeding, and some cultures have food hierarchies. For example, in South and Southeast Asia, 45–60 per cent of women of reproductive age are below their normal weight, and 80 per cent of pregnant women have iron deficiencies. In sub-Saharan Africa, women lift much heavier loads than men, but consume fewer calories because the culture rules that men receive more food.
- In some cases, gender differences also increase men's mortality in disaster situations. Manymen are exposed to risky situations and even die because they believe that by being the 'stronger sex' they need not take precautions and because society expects them to take heroic rescue action. For example, there were more immediate deaths among men when hurricane Mitch struck Central America, not only because they were engaged in open-air activities, but because they took fewer precautions when facing risks. Source: Internation al Union for Conservation of Nature. (n.d.). Disaster and gender statistics. Retrieved from https://www.unisdr.org/files/48152_disasterandgenderstatistics.pdf
- In Kenya, fetching water may use up to 85 per cent of a woman's daily energy intake; in times of drought, a greater work load is placed on women's shoulders. Some spend up to eight hours a day in search of water.
- Extreme weather events often create conditions conducive to outbreaks of infectious diseases; heavy rains produce insect breeding grounds, and contaminate clean water sources while drought on the other hand can cause fungal spores and spark fires. Women, especially expectant mothers, are highly vulnerable to water-borne diseases, thermal and other extreme events.
- In refugee camps that arise as a result of natural disasters and conflicts over scarce resourc es, women and the girl child refugees are exposed to higher risks compared to male refugees. Social strains in such situations aggravate stress levels in the family, which may result in incidences of domestic violence.

Source: International Union for Conservation of Nature. (n.d.). *Disaster and gender statistics*. Retrieved from https://www.unisdr.org/files/48152_disasterandgenderstatistics.pdf

Figure 12.2
Distribution of Dead and Missing Persons due to Tsunami, by Sex



Source: Based on data on Tsunami 2004 by Department of Census and Statistics, Colombo Sri Lanka.

When the devastating tsunami hit Sri Lanka in 2004, the majority of the dead and missing was females (Figure 12.2). It is generally assumed that the main reason behind this was that it was easier for men to survive during the tsunami because they had better knowledge of how to swim and climb trees – skills taught mainly to boys. This social prejudice means that girls and women in Sri Lanka have lower possibilities of surviving future disasters.[8]

When it comes to deaths, gender differences are directly linked to women's economic and social rights. In societies where women and men enjoyed equal rights, disasters caused the same number of deaths in both sexes, and discrepancies are the result of existing inequalities.[9] For example, the latter include where boys were given preferential treatment during rescue efforts, and following disasters, both women and girls suffered more from shortages of food and economic resources. Apart from the higher death toll and more injuries – both physical and psychological – it has also been noted that women suffer from more socio-economic losses from disasters as well.[10]

In sum, as a result of the combined effect of biological, social and economic conditions and processes, women possess different gender identities to men which lead to their roles and

[8] Oxfam International. (2005). *The tsunami's impact on women.* Oxfam Briefing Note. Retrieved from https://reliefweb.int/sites/reliefweb.int/files/resources/641341E1B76C279949256FD20010139E-oxfam-sasia-mar.pdf

[9] Neumayer, E., & Plümper, T. (2007). The gendered nature of natural disasters: The impact of catastrophic events on the gender gap in life expectancy, 1981–2002. *Annals of the Association of American Geographers,* 97(3), 551-566.

[10] United Nations. (2009). *Making disaster risk reduction gender sensitive.* Geneva, Switzerland: United Nations/ United Nations Office for Disaster Risk Reduction(UN/ISDR), United Nations Development Programme (UNDP) and International Union for Conservation of Nature (IUCN).

Women's role as mothers and primary care givers for the elderly, differently-abled and children lead to a uniquely significant role in deciding their disaster vulnerabilities.

responsibilities in society; these identities, roles and responsibilities cause gender based differences in disaster impacts, making women more vulnerable to natural disasters.[11] In particular, women's role as mothers and primary caregivers for the elderly, disabled and children performs a uniquely significant role in deciding their disaster vulnerabilities.

In this context, gender mainstreaming in DRM has become an essential element of a DRM policy formulation as 'fostering awareness about gender equity and equality etc., to help reduce the impact of disasters, and to incorporate gender analysis in disaster management, risk reduction and sustainable development, to decrease vulnerability'.[12] Ideally, gender mainstreaming covers the following aspects; policy design, decision-making, access to resources, procedures and practices, methodology, implementation and monitoring and evaluation.[13]

12.3 Policies on Disaster Management and Gender Main-streaming in Sri Lanka

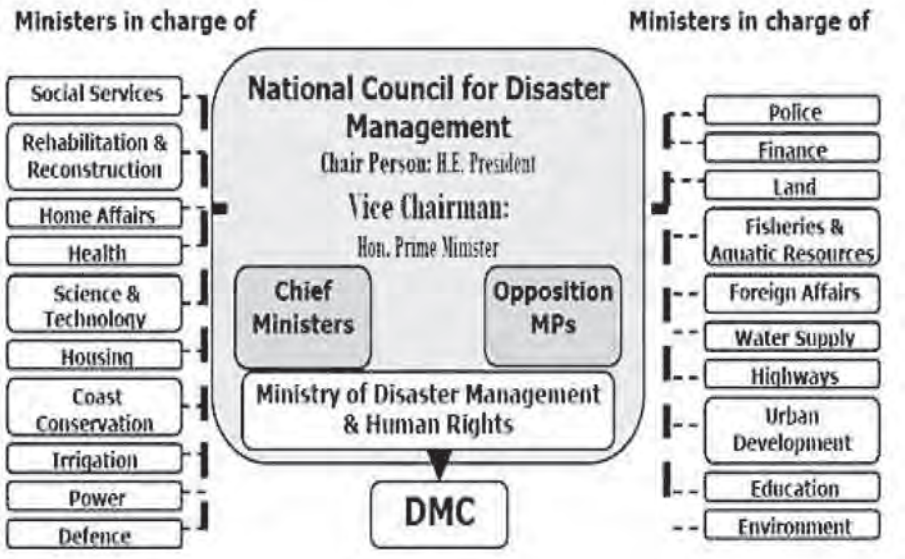
Sri Lanka's Disaster Management Act No. 13 of 2005 required the establishment of two important institutions, namely: the National Council for Disaster Management (NCDM) and the Disaster Management Centre (DMC). The NCDM is the supreme body for disaster management in Sri Lanka, whereby the President, Prime Minister, Chief Ministers, and five members from the

[11] Ginige K., Amaratunga, D., & Haigh, R. (2014). Tackling women's vulnerabilities through integrating a gender perspective into disaster risk reduction in the built environment. *Procedia Economics and Finance, 18*(2014), 327 – 335.

[12] United Nations/ United Nations Office for Disaster Risk Reduction. (2002). *Gender mainstreaming in disaster reduction.* Geneva, Switzerland: United Nations/ United Nations Office for Disaster Risk Reduction (UN/ISDR), p.3.

[13] Ginige, K., Amaratunga, R.D.G., & Haigh, R.P. (2008). *Gender mainstreaming in disaster reduction: Why and how?.* Paper presented at the International Conference on Building Education and research (BEAR), 11th-15th February 2008, Sri Lanka.

Figure 12.3
Composition of National Council for Disaster Management



Source: Based on data from the Disaster Management Center, Retrieved from http://www.dmc.gov.lk/01_AboutDMC/National%20COuncil.htm

opposition and ministers in charge of different ministries are its members. Notably, there is no representation from the Ministry of Women's Affairs at the NCDM (Figure 12.3).

The main government agencies responsible for disaster management include the Ministry of Disaster Management (MDM) and the organisations that come under the MDM (Disaster Management Centre, National Disaster Relief Services Centre, National Building Research Organisation, and the Department of Meteorology).

Sri Lanka's national policy on disaster management, the Comprehensive Disaster Management Programme (SLCDMP) 2014-2018, the National Adaptation Plan for Climate Change Impacts in Sri Lanka (NAP-CCI) 2016-2025, the Nationally Determined Contributions (NDCs), and the Post-Disaster Needs Assessment (PDNA) - Floods and Landslides May 2016, and the Lanka Rapid Post Disaster Need Assessments (PDNA) – Floods and Landslides May 2017, are the major policy documents which deal with disaster management in the country.

The National Policy on Disaster Management of 2010 stresses on equality, diversity and inclusion of disaster management, and states that disaster management should ensure gender equality, and in particular the empowerment of girls and women. The SLCDMP 2014-2018 prepared by the MDM has identified 'an enabling environment for gender mainstreaming' as a cross-cutting area, where the SLCDMP recognises the differences of disaster vulnerabilities related to men, women and children and offers to provide the base for agencies to come together onto a single platform. This in turn can be used to mainstream long felt

gender needs and to collect the required level of data and monitor the effectiveness of the implementation, and to take corrective action.

The NAP-CCI (2016-2025) prepared by the Climate Change Secretariat and Ministry of Mahaweli Development and Environment in 2016 aims to achieve Sri Lanka's objectives of sustainable development through appropriate, timely measures of adaptation so as to ensure a secure future for its citizens by minimising the impacts of climate change on human life, ecosystems, national assets and the economy. However, a specific gender focus or addressing gender related matters could not be observed in the NAP-CCI (2016-2025) document. The PDNA – Floods and Landslides 2016 and 2017, which was prepared under the leadership of the MDM and the Ministry of National Policies and Economic Affairs covers nine sectors and four cross-cutting themes and looks at the overall impacts of disasters. The PDNA identifies gender and social inclusion as a cross-cutting issue and stresses the importance of considering socially rooted inequalities and discrimination against certain social groups, including women in pre and post disaster conditions.

12.4 Policies in Practice - Gender Issues in DRM in Sri Lanka

From the above discussion, it is clear that in recent years, most of the important policy documents related to DRM in Sri Lanka have paid special attention to gender and related issues. However, still there are gaps in addressing gender and related issues in the context of disaster management in Sri Lanka. The PDNA 2017 has identified the following gender related issues in the aftermath of a disaster: i) non-availability of sex,

Most of the important recent policy documents related to disaster risk management in Sri Lanka have paid special attention to gender and related issues.

age and disability disaggregated data, systems for data collection and analysis at the national and local levels hampering informed planning, decision making, and in providing appropriate support in pre and post disaster situations; ii) gender insensitive space arrangements in temporary shelters with implications for the safety and security of women and children; iii) inadequate support to men, women and children dealing with loss of life of family members and other severe trauma; iv) loss of shelter and associated insecurities, uncertainties and fears related to relocation, and recovery of lost livelihoods; v) damages to women's and children's spaces – kitchens, toilets, wells and bathing areas, schools, learning spaces and equipment; vi) loss of livelihood, specifically women's self-employment ventures due to damages caused to dwellings and disruption of labour opportunities; vii) overall poor engagement of women when it comes to delivering early warning, preparedness for responses both at the community level and local official level, lapses in drawing on women's capacities in temporary shelter management, and recovery planning; and viii) lack of consultation by local level officials with affected men and women on recovery and relocation-related issues and suggestions.[14] Low participation by women in pre and post disaster decision making process is another critical issue as it creates lack of gender sensitivity in disaster management projects.[15] Further, it has been observed that even though the importance of including women's perspective on disaster management has been recognised at the research and policy level, it is not a process that has been implemented in practice.[16]

Even though the importance of including women's perspective to disaster management has been recognised at the research and policy level, it is not a process that has been implemented in practice.

[14] Ministry of National Policies and Economic Affairs and Ministry of Disaster Management. (2017). *Sri Lanka rapid post disaster needs assessment- floods and landslides May 2017.* Colombo, Sri Lanka: Ministry of Disaster Management.

[15] De Silva, K., & Jayatilake R. (2014). Gender in the context of disaster risk reduction: A case study of a flood risk reduction project in the Gampaha District in Sri Lanka. *Procedia Economics and Finance,* 18 (2014), 873 – 881.

[16] Ginige K., Amaratunga, D., & Haigh, R. (2014). Tackling women's vulnerabilities through integrating a gender perspective into disaster risk reduction in the built environment. *Procedia Economics and Finance, 18* (2014) 327 – 335.

Box: 12.2 Addressing Gender Dimension at the time of a Disaster: International Best Practices

Effective Usage of Gender Disaggregated Data - Tonga

"There is a clear trend towards more effective and sustainable humanitarian responses when sex and age disaggregated data are used. This was particularly apparent in the Tongan government's response to the Tropical Cyclone (TC) Ian in Ha'apai in early 2014. Sex and age disaggregated data were collected by the national and provincial authorities, and at all levels, responders were reasonably aware of the specific needs of women and girls. For example, on all affected islands, the numbers of pregnant and lactating women were identified early in the response, and they were prioritised for access to health services. Local first responders collected qualitative data on where women were having problems accessing distributions, and allocated targeted resources to address these issues. Evacuation centres were set up with the particular safety and security needs of women in mind; these included gender-separated bathrooms and sleeping areas segregated along family lines."

Source: The Guardian. (2014). *Why gender disaster data matters: In some villages, all the dead were women.* Retrieved from https://www.theguardian.com/global-development-professionals-network/2014/sep/08/disaster-humanitarian-response-data-gender

Village Women Play Decision-making Roles in Disaster Issues – India

"In the aftermath of the 30 September 1993 earthquake in Latur in southwestern India, a network of 3,500 women's self-help groups actively addressed practical needs regarding credit, livelihoods, water and sanitation, health and education, among other issues. With the facilitation of a NGO called „Swayam Shikshan Prayog' (SSP), the women's groups began playing public, community roles by monitoring disaster reconstruction efforts. Reconstruction was the largest component of an earthquake rehabilitation initiative involving house repair and reconstruction activities that covered 200,000 families across 1,300 villages in the two districts of Latur and Osmanabad in Maharashtra State in southwestern India…This initiative is a good practice because it provides a model of effective government-community partnership and facilitates policy support needed to foster a culture of risk reduction. It also completely transformed the traditional roles of women in the society. Indeed, the women have led community initiatives ranging from addressing infrastructural vulnerabilities to addressing systemic vulnerabilities. They fostered responsive and partnership-oriented local governance, thus increasing accountability through: (a) collecting and disseminating information on entitlements and creating access to them; (b) creating spaces for advancing their priorities; and (c) getting members into local governance institutions."

Source: United Nations. (2007). *Gender perspective: Working together for disaster risk reduction good practices and lessons learned.* Geneva, Switzerland: United Nations.

12.5 Concluding Remarks

From the available statistics as well as findings from research, it is clear that there is a gender dimension to disaster management where women are disproportionately affected by disasters related to climate change. This is particularly visible in the contexts where women do not enjoy equal rights and socio-economic status as men, and when women have less voice and influence than men in shaping policies and prioritising how climate finance is used. Given the unfavourable circumstances faced by women at the time of pre and post disaster situations, it is of great importance to ensure that polices include all the key aspects of DRM (mitigation, preparedness, response, and recovery) and that such polices are gender sensitive and pay special attention to women.

In recent years, especially after the tsunami of 2004 in Sri Lanka, policy makers have begun to pay special and progressive attention to DRM policies. Sri Lanka has taken some crucial steps (e.g. legislative acts, policy formulation and setting up institutional mechanisms) to address DRM and related issues. It could also be noticed that attention has been paid on gender mainstreaming efforts in forming these initiatives. However, it is also observed that there are gaps and issues in implementing these policies.

The absence of DRM related gender disaggregated data, low participation of women in decision making process, both in pre and post disaster contexts, and inadequacy of integrating gender aspect at the implementation level are some of the main gender related issues in DRM which are frequently mentioned.

Establishing a strong and reliable national level mechanism to generate gender disaggregated data should be considered as a top priority, as data would facilitate more effective and sustainable humanitarian responses. At the same time, it is also important that policy makers, implementers, researchers and other stakeholders use gender disaggregated data as much as possible. Enhancing women's participation in decision making process should be done at all levels. It can be noticed that women's representation at the national level as well as at the community level, is weak and there is a limited space for their voices to be heard. A compulsory number or a quota for female representation can be introduced as an initial step in addressing this issue.

A participatory approach is required in order to ensure equal and gender-sensitive participation of women and men leading to better DRM policy-making and designing of programmes. Further, monitoring mechanisms can be established to make sure that gender aspects are adequately addressed at the implementation stage of DRM programmes.

13. Social Protection and Disaster Risk Management in Sri Lanka

13.1 Introduction

Social protection can be identified as a set of policies that aim to reduce poverty and inequality, and contribute to improve the resilience of the most vulnerable. As identified by the World Bank, "social protection systems help the poor and the vulnerable cope up with crises and shocks, find jobs, invest in the health and education of their children, and protect the ageing population." [1]

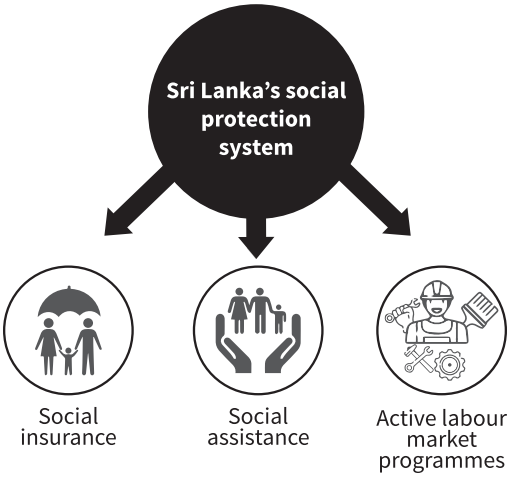
As such, social protection is a vital tool not only in reducing poverty, but also in ensuring that people do not fall into poverty due to various shocks. Its significance is gaining ground in the global arena, as reflected by the Sustainable Development Goals (SDGs) framework: SDG 1 on poverty alleviation identifies the implementation of social protection systems as a key step towards poverty eradication. Additionally, social protection – especially via non-contributory schemes – serves as a redistributive policy tool, promoting greater equality within countries.

Social protection is a vital tool not only in reducing poverty, but also in ensuring that people do not fall into poverty due to various shocks

In fact, the recent shocks, crises, and disasters across the globe have served to highlight the growing need for effective national social protection systems, especially given the increasing interconnectedness among countries. It has been estimated that, between 1980 and 2012, the annual frequency of natural disasters has increased by 250 per cent, with a 140 per cent increase in the number of people affected.[2] The effects of climate change can be expected to exacerbate the situation. Additionally, the world has become increasingly susceptible to pandemics (e.g. Ebola in West Africa, Zika in South America, MERS in the Middle East),

[1] World Bank. *Social protection.* Retrieved from http://www.worldbank.org/en/topic/socialprotection.
[2] World Bank. (2018). *The state of social safety nets 2018.* Retrieved from https://openknowledge.worldbank.org/bitstream/handle/10986/29115/9781464812545.pdf?sequence=5&isAllowed=y

with the number of new diseases per decade increasing nearly four times; it has been estimated that since 1980, the number outbreaks per year has more than tripled.[3] Other events like the financial crisis of 2007-08 – identified as the most severe since the Great Depression – which reverberated across the globe also has significant impacts on vulnerable populations.



Given the increasing incidence of crises and disasters around the world, 'adaptive' social protection is a concept that has been gaining ground globally. Its emphasis is on placing "an enhanced focus on better enabling social protection to address the impacts of all manner of shocks on households – including natural disasters and climate change, economic and financial crises, conflict and displacement, among others."[4] This concept stresses the need to build the resilience of households that are most vulnerable to shocks, and to increase the responsiveness of social protection programmes to adapt to the changed needs after the crisis/ shock.[5]

Adaptive social protection is a concept that has been gaining ground globally. It focusses on the need to address the impacts of all manner of shocks on households – including natural disasters and climate change, economic and financial crises, conflict and displacement.

[3] Walsh, B. (2017). *The world is not ready for the next pandemic.* Retrieved from http://time.com/magazine/us/4766607/may 15th-2017-vol-189-no-18-u-s/

[4] World Bank. (2018). *The state of social safety nets 2018.* Retrieved from https://openknowledge.worldbank.org/bitstream/handle/10986/29115/9781464812545.pdf?sequence=5&isAllowed=y)

[5] *Ibid.*

Box 13.1
ILO Social Protection Floors Recommendation 2012

The International Labour Organisation (ILO) defines social protection floors as "nationally defined sets of basic social security guarantees that should ensure, as a minimum that, over the life cycle, all in need have access to essential healthcare and to basic income security which together secure effective access to goods and services defined as necessary at the national level."

Adopted in 2012, ILO Social Protection Floors Recommendation provides a non-binding guideline fortthe ILO member states on:

a) Establishing and maintaining social protection floors as a fundamental element of their national social security systems

b) Implementing social protection floors within strategies that progressively ensure higher levels of social security to as many people as possible

The ILO defines social protection floors as "nationally defined sets of basic social security guarantees which secure protection aimed at preventing or alleviating poverty, vulnerability, and social exclusion."

Among principles that are thus recommended for nations in providing social protection are:

a) Universality of protection

b) Adequacy and predictability of benefits

c) Non-discrimination, gender equality and responsiveness to special needs

d) Social inclusion, including persons in the informal economy

e) Respect for the rights and dignity of people covered by the social security guarantees

f) Progressive realisation, including by setting targets and time frames

g) Solidarity in financing while seeking to achieve an optimal balance between the responsibilities and interests among those who finance and benefit from social security schemes

h) Consideration of diversity of methods and approaches, including of financing mechanisms and delivery systems

i) Transparent, accountable and sound financial management and administration

j) Financial, fiscal and economic sustainability with due regard to social justice and equity

k) Coherence across institutions responsible for delivery of social protection

l) High-quality public services that enhance the delivery of social security systems

m) Efficiency and accessibility of complaint and appeal procedures;

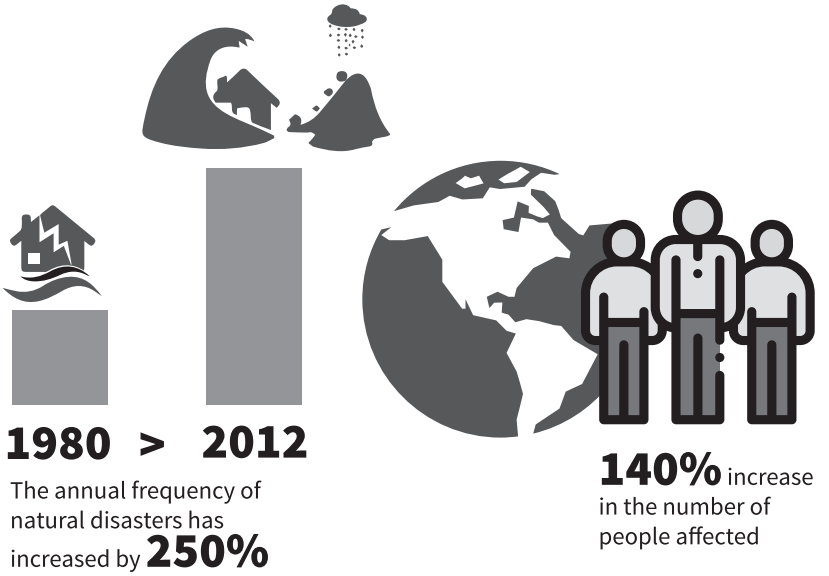
The ILO Social Protection Floors Recommendation 2012 asserts that the right to social security is a human right and recognises social protection as an important tool to prevent and reduce poverty, inequality, and social exclusion, as well as to support the transition from informal to formal employment. This recommendation identifies social security as an investment in people that empowers them to adjust to shocks to the economy and highlights the potential of social security systems to act as automatic social and economic stabilisers in contributing to stimulate aggregate demand in times of crisis as well as in facilitating the transition to a more sustainable economy.

It is evident that there is a burgeoning need for effective and flexible social protection, especially in line with the ILO Social Protection Floors Recommendation 2012 which provides guidance for countries on establishing and maintaining social protection floors (Box 13.1). As such, this policy brief examines the social protection schemes in Sri Lanka, especially with regard to its role in managing disaster risk.

13.2 Social Protection in Sri Lanka

Sri Lanka's social protection system consists of around 36 welfare programmes,[6] implemented by a number of government bodies at the national and sub-national level. These can be broadly categorised as: i) social insurance; ii) social assistance; and iii) active labour market programmes.[7]

Social insurance schemes aim at providing cover against life-cycle related contingencies. These include pension schemes and retirement benefit programmes such as the Public Servants Pension Scheme for government sector workers, Employees' Provident Fund and Employees' Trust Fund for private sector workers, as well as the voluntary contributory pension schemes for informal sector workers like farmers and fishermen. In addition, Samurdhi, the country's largest poverty alleviation programme has a social insurance component providing cover against life cycle-events like marriage, child birth, sickness, and death, via the Samurdhi Social Security Fund.[8]



[6] Ministry of National Policies and Economic Affairs. (2017). Public Investment Programme (PIP) 2017-2020. Colombo, Sri Lanka: Ministry of National Policies and Economic Affairs.

[7] Tilakaratna, G., & Jayawardena, S. (2015). Social protection in Sri Lanka: Current status and effect on labour market outcomes. *SARNET Working Paper,* No.3. Retrieved from http://www.ihdindia.org/sarnet/wp/SARNET_WP_3.pdf

[8] *Ibid.*

Social assistance programmes include various cash and in-kind transfer schemes targeted at specific vulnerable groups such as the poor, the elderly, the differently abled, internally displaced persons, children, and women. Samurdhi can be identified as the main social assistance programme for the poor in Sri Lanka, providing relief in the form of a monthly cash transfer. In the case of differently abled persons, the government provides assistance related to health, housing, and self-employment activities, in addition to financial assistance to low-income households with differently abled members. Social assistance to the elderly is provided in the form of financial transfers as well as in assistance provided to elders' day centres, elders' homes, and elders' committees.[9] Internally displaced persons are provided assistance via programmes such as Vulnerable Group Feeding, Food for Work, and Food for Training.[10] In addition to benefits received by all school children under free texts books and free uniforms policies, there are targeted programmes for more vulnerable groups such as the mid-day meal programme for primary school children from selected areas. The country's universal health policy is also further complemented by various nutrition programmes for pregnant and lactating mothers, and children.[11]

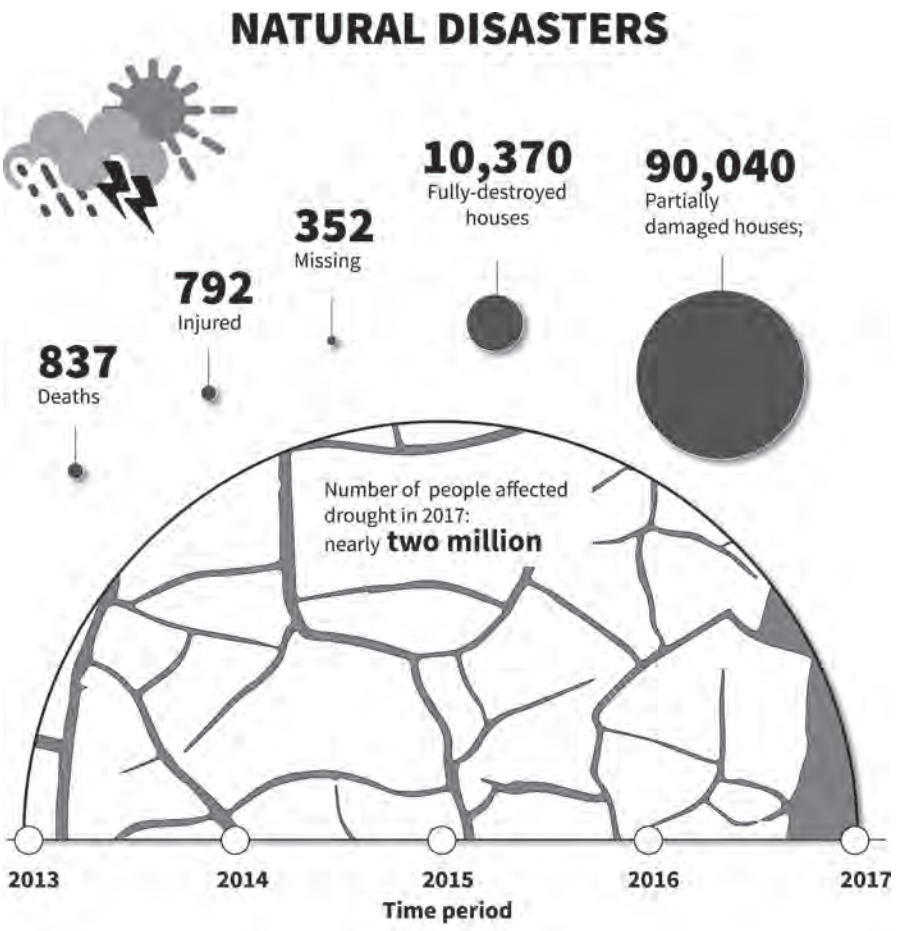
Active labour market programmes are livelihood and skills development programmes. Samurdhi plays a significant role in this via its livelihood development programme. In addition, there are various self-employment assistance programmes for vulnerable groups such as the differently abled, internally displaced persons, and single parents as well as several vocational training programmes carried out by a number of ministries and other government bodies.

13.3 Social Protection in Disaster Risk Management in Sri Lanka

In the recent past, Sri Lanka has become increasingly susceptible to natural disasters and climate-related extreme events, resulting in loss of life and damage to property and livelihoods. It has been estimated that in 2014, around 24,000 out of 100,000 people were directly affected by disasters.[12] During 2013-2017, disasters have led to 837 deaths, 792 injured persons, 352 missing persons, 10,370 fully-destroyed houses and 90,040 partially damaged houses; nearly two million Sri Lankans were affected by the severe drought conditions in 2017.[13]

The effects of increasing incidence and severity of disasters are felt even more harshly by the already vulnerable groups in the country. Although Sri Lanka has made considerable progress in poverty reduction, recording a poverty rate of 4.1 per cent in 2016, it has been identified that "there is the risk of a considerable proportion of the population slipping back towards poverty due to factors such as economic shocks and natural

[9] *Ibid.*
[10] Tilakaratna, G. (2014). Social protection and the MDGs in Sri Lanka – Implications for the post-2015 agenda. *Southern Voice Occasional Paper Series, No 12.* Southern Voice.
[11] Ibid.
[12] UNSTATS, SDG Indicators Global Database. Retrieved from https://unstats.un.org/sdgs/indicators/database/?area=LKA
[13] Central Bank of Sri Lanka. (2017). *Annual report.* Colombo, Sri Lanka: Central Bank of Sri Lanka.



disasters."[14] The need to strengthen mitigation mechanisms in the event of natural disasters such as early warning and forecasting systems has already been identified. Social protection systems also have a vital role to play in this regard; these can strengthen people's capacity to face natural disasters and rebuild. This is especially relevant given the fiscal burden posed by flood and drought relief activities which in 2017 cost around 0.1 per cent of GDP.[15] Social protection can play a complementary role in improving the resilience of people and reducing the government's expenditure after the occurrence of a disaster. In fact, taking an 'adaptive' social protection approach is more advisable, given the capacity of disasters to undermine the gains of poverty eradication activities. As such, an efficient social protection system needs to be proactive and take into account the risk and potential impact of disasters.

[14] Ibid.
[15] Central Bank of Sri Lanka. (2017). Annual report. Colombo, Sri Lanka: Central Bank of Sri Lanka.

Social protection can play a complementary role in improving the resilience of people and reducing government expenditure after the occurrence of a disaster.

Studies have shown that disaster afflicted persons tend to adapt coping mechanisms that would further entrench them in poverty and erode their wellbeing such as reducing the number and quality of the food consumed, and selling household assets.[16] Disaster-related social protection schemes can help abate such tendencies and ensure at least a minimum level of wellbeing during and after disasters.[17]

In the case of Sri Lanka, it is evident that universal health policy plays a pivotal role in providing relief in times of disasters, allowing free-of-charge access to health care at government hospitals. However, it can be argued that targeted social protection schemes have a bigger role to play. The effects of disasters are felt more intensely by the more vulnerable groups and targeted social protection schemes can address the specific needs of such vulnerable segments.

Disaster afflicted persons tend to adapt coping mechanisms that would further entrench them in poverty and erode their wellbeing.

[16] Wickramasinghe, K. (2014). Role of social protection in disaster management in Sri Lanka. Sri Lanka Journal Of Social Sciences, 35(1-2). doi: 10.4038/sljss.v35i1-2.7297

[17] *Ibid.*

For example, the country's main poverty alleviation programme, Samurdhi, has several schemes that can improve the resilience of afflicted low-income groups: the Samurdhi cash transfer scheme can help boost shortfalls in income in times of disaster; its social insurance programme can assist households in coping with expenses related to deaths and injuries due to disasters; the microfinance and livelihood development arms can contribute significantly in facing the aftermath of disasters and related rebuilding endeavours. Similarly, other cash and in-kind transfers and assistance provided by the government can contribute to reducing the burden of disaster-afflicted vulnerable groups in the country. However, there are gaps and issues which need to be overcome in order to realise the full potential of Sri Lanka's social protection programmes as effective tools for disaster risk management.

13.3.1 Gaps and Issues

The targeted social protection programmes in the country are subject to both exclusion and inclusion targeting errors: there are deserving households that have not managed to gain entry to the programmes while less deserving households are enjoying the benefits.[18] These targeting errors have been attributed to the lack of appropriate, clearly defined selection criteria for many of these targeted social protection schemes.[19] In order for these programmes to be effective in building resilience of vulnerable groups, it is necessary for the programmes to identify and cover all relevant individuals/ households.

Inadequacy of benefits is another major issue that needs to be overcome in order to ensure the effectiveness of the country's social protection system.[20] Even if Sri Lanka were to perfect its targeting mechanism, if the benefits received under the schemes are insufficient to meet a household's minimum requirements under normal conditions, such beneficiaries will not be able to cope with the extraordinary demands during and following a disaster.

Insufficient coverage of informal sector workers is another gap in Sri Lanka's social protection system.Unlike formal sector workers who are eligible for pension and retirement benefits, the pension schemes for the informal sector workers are subject to problems such as inadequate benefits as well as financial unsustainability of the programmes.[21] Overcoming this issue is extremely pertinent vis-à-vis improving resilience, given the growing informal sector employment in the country, which includes the majority of agriculture workers in the country. The agriculture sector which employed 26 per cent of the country's labour force in 2017 is arguably more susceptible to climate-related extreme events.

In addition, given that there are several government bodies implementing a number of social protection programmes, lack of institutional coordination has resulted in overlaps and duplications.[22]

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[18] For more information, refer State of the Economy 2016, Chapter 09
[19] Tilakaratna, G. (2014). Social protection and the MDGs in Sri Lanka – Implications for the post-2015 agenda. Southern Voice Occasional Paper Series, No 12. Southern Voice.
[20] *Ibid.*
[21] *Ibid.*
[22] *Ibid.*

13.4 Way Forward and Policy Implications

Addressing weaknesses in Sri Lanka's social protection schemes can significantly improve resilience in the face of disasters and reduce the related fiscal burden. The country has taken a significant step in addressing the targeting issues and improving institutional coherence in the provision of social protection via the first steps towards establishing an Integrated Social Safety Net initiative (Box 13.2).

It is clear that an 'adaptive' social protection system with an in-built disaster risk mitigation mechanism is beneficial in terms of improving the resilience of households as well as in reducing the fiscal burden of disaster relief. Although the country's social protection programmes appear geared to provide assistance in times of disaster, these were not formulated for providing specific relief.

As recommended by the World Bank, one strategy for ensuring that social protection systems are adaptive to shocks and disasters is to build the resilience of households;[23] in this regard, Sri Lanka's social protection strategies could be considered as being on the correct path, especially in the case of Samurdhi. As per World Bank recommendation, this strategy needs to be intertwined with a strategy of improving the capability of social safety nets to respond to shocks after they occur, by introducing greater flexibility and scalability: these programmes should be capable of scaling out to include afflicted non-beneficiary households in times of disaster, as well as being able to scale up the benefits as appropriate. This helps leverage existing transfer and assistance mechanisms to provide rapid relief, minimising government expenditure on distributing relief as well as enabling the affected parties to get back on their feet faster. This is an area that Sri Lanka needs to focus on in strengthening the country's capacity to weather the increasing incidence of disasters and climate-related extreme events.

An adaptive social protection system with an in-built disaster risk mitigation mechanism is beneficial to improve the resilience of households as well as reduce the fiscal burden of disaster relief.

[23] World Bank. (2018). *The state of social safety nets 2018.* Retrieved from https://openknowledge.worldbank.org/bitstream/handle/10986/29115/9781464812545.pdf?sequence=5&isAllowed=y

Box 13.2
Welfare Benefit Board and the Integrated Social Safety Net of Sri Lanka

In 2016, Sri Lanka signed a USD 75 million agreement to improve the country's welfare programmes. As a part of this, the Welfare Benefit Board (WBB) was established in 2016, following the re-enactment of the Welfare Benefits Act, No. 24 of 2002. The WBB is charged with building a unified social registry containing data on all current and former programme beneficiaries and new applicants, as well as formulating/modulating the selection criteria of all social protection schemes.

The project will be implemented in four stages. The first stage deals with registration and selection, under which a database will be developed on existing and potential beneficiaries. This is undertaken by the Information and Communication Technology Agency of Sri Lanka (ICTA). This stage also deals with establishing clear selection criteria for each programme. The second stage deals with payments, i.e. establishing appropriate transfer channels and ensuring that the beneficiaries receive the benefits in a timely and convenient manner. The third stage is on monitoring and evaluation, followed by the fourth stage which deals with ensuring that these beneficiaries are empowered to the point where they can graduate from the programme.

Currently, WBB is working on the social protection schemes carried out by the Ministry of Social Empowerment: Samurdhi, elder payments, disability payments, and kidney patient payments. For each programme, WBB needs to develop a Welfare Benefit Payment Scheme (WBPS) in consultation with relevant authorities. A WBPS specifies the eligibility criteria, benefits to be granted, the time period for which persons are entitled to receive payments, and how the benefits will be transferred to the beneficiary. Once developed, WBPS for each programme needs to be presented for Cabinet approval, gazetted, and presented in Parliament. Eventually, WBB's scope is expected to encompass all welfare programmes operating in the country.

The integrated social safety net is expected to rectify the targeting errors that undermine Sri Lanka's social protection programmes. It will further serve to improve the institutional coordination among all relevant government bodies and eliminate any overlaps.

Sources:
-Interviews with the WBB.
-Welfare Benefit Act, No. 24 of 2002. Retrieved from https://www.srilankalaw.lk/YearWisePdf/2002/WELFARE_BENEFITS_ACT,_No._24_OF_2002.pdf)
-World Bank press release. Sri Lanka signs $75 million social safety nets project. Retrieved from http://www.worldbank.org/en/news/press-release/2016/12/28/sri-lanka-signs-75-million-social-safety-nets-project)
- World Bank (2018). Projects: Social safety nets project. Retrieved from http://projects.worldbank.org/P156056?lang=en

14. Climate Change and Occupational Health: A Growing Concern for Sri Lanka

14.1 Introduction

Climate change causes significant variations in the atmospheric temperature, rainfall and wind patterns, including a rise in sea levels. This results in extreme weather conditions, which can lead to mortality and morbidity among humans. Such weather related health issues are more severe for people engaged in outdoor occupations. Extreme weather conditions induce occupational health risks and cause productivity and work day losses. For example, temperatures of approximately 35°C and above is found to decrease work capacity and labour productivity.[1] Not surprisingly perhaps, it is predicted that there will be more than a 10 fold increase in work hours lost due to climate change during the period 2015 to 2085 for countries in Asia, Pacific, West Africa, Latin America and the Caribbean.[2]

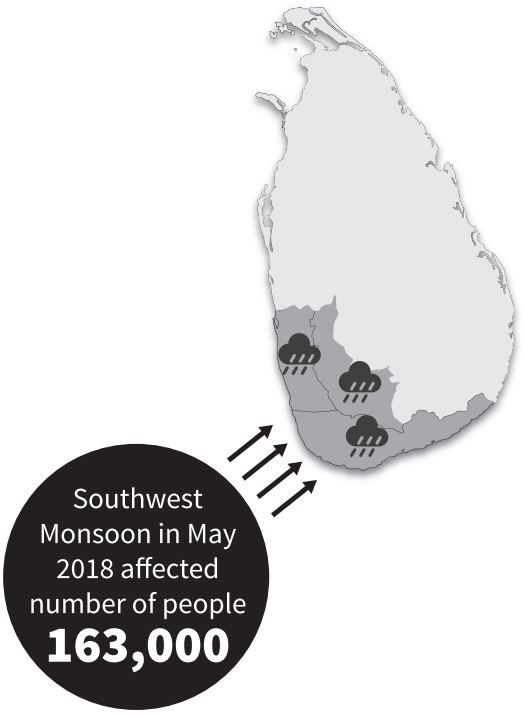
It is predicted that there will be more than a 10 fold increase in work hours lost due to climate change during the period 2015 to 2085 for countries in Asia, Pacific, West Africa, Latin America and the Caribbean.

Extreme weather events such as storms and floods create injury and displacement, causing widespread disruption to livelihoods of local communities. For instance, the recent south-west monsoon in May 2018 in Sri Lanka triggered floods, landslides and heavy damage to both property and livestock, affecting 163,000 people.[3] The resultant health risks can be many. Polluted

[1] United Nations Development Programme. (2016). *Climate change and labour: Impact of heat in the workplace.* Retrieved from http://www.ilo.org/global/topics/green-jobs/publications/WCMS_476194/lang--en/index.htm

[2] *Ibid.*

[3] Daily Mirror. (2018). Southwest Monsoon now active. Retrieved from http://www.dailymirror.lk/article/Southwest-Monsoon-now-active-150554.html



water during floods expose farmers to vector and water-borne diseases; the destructions of crop and asset damages due to extreme weather conditions pull farmers into poverty, and deprive them of proper nutrition. As a result, farmers encounter health issues arising from poverty and lack of nutrition. Emergency rescue workers are another group that face health issues induced by weather changes. They are particularly at risk of contracting water-borne diseases such as typhoid, leptospirosis and dysentery.

While the negative implications of climate change on human health are multiple and known to a certain extent, the absence of climate related health issues and other relevant data limits research on how climate change affects the health of workers. Research studies highlight that although climate change may heighten the prevalence, distribution and severity of occupational hazards, the potential interactions among known risks and working conditions could lead to new hazards and further risks to health.[4]

This policy brief will focus predominantly on the health hazards relating to ultraviolet (UV) radiation and ambient temperatures and air pollution in both the global and Sri Lankan contexts, and thereafter assess the impacts of climate change on worker productivity. Finally, the challenges that Sri Lanka is facing in mitigating the negative impacts of climate change on occupational health will be discussed and some associated recommendations will be proposed.

14.2 Health Impacts of Climate Change on Occupational Health Hazards

14.2.1 UV Radiation and Ambient Temperatures

Exposure to UV radiation from excessive contact with sunlight causes the development of malignant skin diseases.[5] As such, this is most evident for people in countries in close proximity to the equator. For example, Ecuador

[4] Adam-Poupart, A., Labrèche, F., Smargiassi, A., Duguay, P., Busque, M., Gagné, C., & Zayed, J. (2013). *Impacts of climate change on occupational health and safety.* Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST). Retrieved from https://www.irsst.qc.ca/media/documents/PubIRSST/R-775.pdf

[5] Bharath, A.K., & Turner, R. J . (2009). Impact of climate change on skin cancer. *Journal of the Royal Society of Medicine,* 102(6): 215–218. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2697050/

is faced with a twin problem in two regions of the country due to climate change issues; exposure to UV radiation is 40 per cent greater in Ecuador, Quito and the inter-Andean regions compared to other low land areas, especially since these cities are 2,800-3,000 meters above sea level. Similarly, outdoor workers employed in the Ecuadorian coast are exposed to increased risk of heat stress due to increases in temperatures of 25-30°C and poor working conditions.[6] Hence, outdoor workers in both regions of Ecuador suffer repeated dehydration resulting in the sudden development of cramps forcing workers to seek immediate medical attention.

Like Ecuador, Sri Lanka too lies in close proximity to the equator where the UV radiation levels are much higher. However, Sri Lankans are less prone to developing skin cancers due to the darker skin tones, although excessive UV exposure causes premature ageing. Despite this, there is strong evidence to support the fact that exposure to UV radiation can lead to skin cancer later on in life.[7] Unfortunately, there is an absence of rigorous statistical evidence to substantiate a direct causation of skin cancer and other skin related diseases owing to exposure to UV radiation.

Nonetheless, it is known that working outdoors at high temperatures and humidity levels cause excessive sweating. This can lead to heat exhaustion and increased heart rate, which could eventually result in the failure of the central thermoregulatory system causing dehydration, injuries, heat fatigue and cardiovascular diseases, and weakening the immune system. These health effects could be further aggravated due to a lack of acclimatisation, unforeseen heat exposure and an inadequate understanding of the dangers of heat exposure. As such, outdoor employees in the tropical and sub-tropical regions engaged in agriculture, and construction workers involved in heavy physical work without access to shade or sufficient water, are particularly at heightened risk of health effects arising from heat exposure.

Many agricultural workers in Sri Lanka do not wear protective clothing necessary to shield themselves from injuries relating to excessive exposure to heat.

[6] Arjona, R., Piñeiros, J., Ayabaca, M., & Freire, F. (2016). Climate change and agricultural workers' health in Ecuador: Occupational exposure to UV Radiation in hot environments. *Ann Ist Super Sanità, 52(3), 368-373.* Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/27698295

[7] Nawarathna, N.G.P.D., Herath, H.M.D.R., Wickramarathne, Sakeenam M.H.F., Gunawardhane, C.B., & Sudeshika, S.H.T. (2016). *Awareness of usage of sunscreens among school children in Kandy, Sri Lanka.* Bhopal, India: Innovare Academic Sciences Private Ltd.

In Sri Lanka too, the proportion of the workforce engaged in such activities are relatively high. According to the Labour Force Survey 2016, 18.1 per cent and 16 per cent of total employment in Sri Lanka constitute of agricultural and construction workers, respectively. Many agricultural workers in Sri Lanka do not wear protective clothing necessary to shield themselves from injuries relating to excessive exposure to heat.

Furthermore, extreme weather patterns such as continued droughts are more frequent in recent years in Sri Lanka, predominantly due to changes in temperature and climatic conditions. High temperatures, coupled with increasing droughts and water shortages in the dry zone, particularly affect outdoor workers such as agricultural farmers. These farmers working outdoors for a long period at high temperatures of 34-36°C require larger quantities of water to keep themselves adequately hydrated.[8] In fact, dehydration adversely affects kidney function. There is further evidence to indicate that repeated episodes of heat stress, coupled with water loss, can cause kidney injury and lead to permanent kidney damage over time. Despite the fact that research findings remain inconclusive, many scientists state that excessive heat stress coupled with repeated dehydration has strong links to different types of chronic kidney diseases.

Sri Lanka is equally prone to extreme disasters such as floods, cyclones, coastal erosion, rise in sea levels and landslides. Floods were the third most common type of natural disaster between 1974 and 2017 in the country. Heavy floods in mid-2016 in particular displaced approximately 225,000 people.[9] Although there were no infectious disease outbreaks in the affected areas, vulnerable populations such as the fishing and farming communities and rescue workers were at increased risk of contracting vector-borne, water-borne and diarrhoeal diseases, leptospirosis, fungal diseases and acute respiratory infections. Labourers and construction workers employed in unprotected work environments, including farming and fishing communities were severely affected by these natural disasters. Flooding imposes a threat to human life of the fishing community and increases the likelihood of contaminated water with urine causing wounds, dermatitis, conjunctivitis and infections. Although not epidemic prone, these diseases cause short to medium term negative health impacts on medical services, incomes and livelihoods.



[8] Bandarage, A. (2013). Political economy of epidemic kidney disease in Sri Lanka. SAGE Publication, p.1-13. Retrieved from http://journals.sagepub.com/doi/pdf/10.1177/2158244013511827

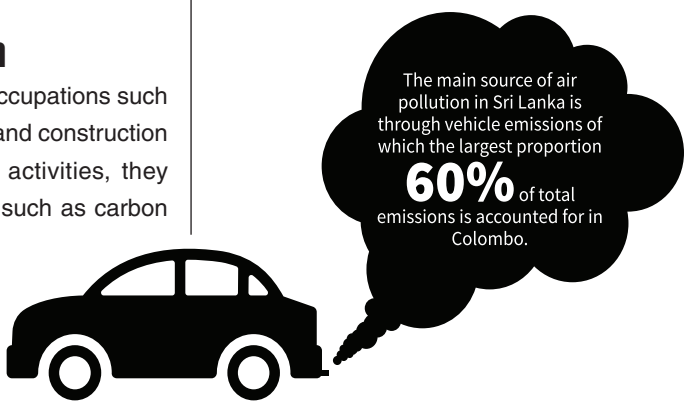
[9] Farley, J., Suraweera, I., Perera, W. L. S. P., Hess, J., & Ebi, K. (2017). Evaluation of flood preparation in government healthcare facilities in eastern province, Sri Lanka. Global Health Action, 10:1-10. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/28612689

Fishing and farming communities and rescue workers are at increased risk of contracting vector-borne, water-borne and diarrhoeal diseases, leptospirosis, fungal diseases and acute respiratory infections.

14.2.2 Air Pollution

Given that workers in outdoor occupations such as transportation, landscaping and construction spend a long time in outdoor activities, they are vulnerable to air pollutants such as carbon monoxide, lead, and nitrogen oxides which are all linked to asthma and other chronic lung diseases. According to a report on the Global Burden of Disease, approximately 1•1 million people died and 21•8 million disability-adjusted life-years (DALYs) were lost due to air pollution in China in 2015.[10] A study on taxi and bus drivers and bus conductors revealed that a large proportion of mortality and morbidity was due to cardiopulmonary diseases. Increased outpatient and emergency visits and the presence of respiratory symptoms and diseases such as phlegm and chronic pharyngitis are increasingly evident in these groups of occupations.[11]

In Sri Lanka however, this situation is not as grave as in heavily polluted countries such as China. Research indicates that the main source of air pollution in Sri Lanka is through vehicle emissions, of which the largest proportion (60 per cent) of total emissions is accounted for in Colombo. Nitrogen oxide levels have shown an increasing trend in Colombo compared with other pollutants such as carbon dioxide and ground level ozone. Air pollution in Colombo has been relatively stable and range from 72 to 82 µg/m3.[12] Although Sri Lanka is well within the pollution



[10] Huang, J., Pan, X., Guo, X., & Li, G. (2018). Health impact of China's air pollution prevention and control action plan: An analysis of national air quality monitoring and mortality data. *Lancet Planet Health* 2018; 2: e313–23. Retrieved from https://www.thelancet.com/pdfs/journals/lanplh/PIIS2542-5196(18)30141-4.pdf

[11] *Ibid.*

[12] Nandasena, Y., Wickramasinghe, A., & Sathikumar, N. (2010). Air Pollution and health in Sri Lanka: A review of epidemiologic Studies. BMC Public Health, 10:300. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2893095/

There is a void in data availability and research to assess a direct causality of air pollution on health outcomes on several outdoor occupations.

limits set by the World Health Organisation (WHO), there is a void in data availability and research to assess a direct causality of air pollution on health outcomes on several outdoor occupations.

Although the ill health effects of air pollution cannot be substantiated with evidence yet, outdoor workers such as construction workers and police officers are more vulnerable. Especially since these groups of workers spend considerable time outdoors, they are at a greater risk of respiratory and allergic reactions, and cardio-circulatory and respiratory diseases which have long term negative health implications on the pulmonary function. Pollution decreases lung functioning and leads to cardiac arrests; further, the inhalation

Table 14.1
Selected Climate Change Related Health Hazards

Selected Climate Related Change	Health Effects	Nature of Evidence	Examples
Increased ambient temperature	Heat strokes/stress, fatigue, impact on immune function	Heat related deaths among outdoor workers such as labourers and construction workers.	South African mine workers, US agricultural workers, China, India, Qatar
Air pollution	Asthma and other respiratory diseases	Increased ozone related deaths, asthma and respiratory symptoms among outdoor workers.	China, India
Extreme weather	Mental stress, communicable diseases, contraction of water and vector-borne diseases.	Increased frequency of floods, droughts and fires. Economic disruption and population displacement from sea level rise and flood events.	US. South African mine workers, Thailand, Sri Lanka
Ozone depletion leading to increased UV radiation	Skin cancer and other skin related diseases that disturb the immune function.	Daily exposure to maximum temperature and the incidence of skin cancer. Increased susceptibility to infection.	Latin American countries

Sources: Based on studies of climate change;[13] and occupational health.[14]

[13] Schulte, P., & Chun, H. (2009). Climate change and occupational safety and health: Establishing a preliminary framework. *Journal of Occupation and Environmental Hygiene, 6:542-554.* Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/19551548

[14] Kjellstrom, T., Briggs, D., Freyberg, C., Lemke, B., Otto, M., & Hyatt, O. (2016). Heat, human performance and occupational health: A key issue for the assessment of global climate change impacts. *Annual Review of Public Health:* 37:97-112. Retrieved from http://arjournals.annualreviews.org/doi/full/10.1146/annurev-publhealth-032315-021740?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%3dpubmed

of diesel fumes can exacerbate the risk of lung, kidney and ovarian cancers. The extent to which individuals contract these diseases is severely dependent on the type, amount, duration and frequency of air pollutant exposure.

14.3 Consequences of Climate Change on Workers' Productivity

Climate change impacts on occupational health are varied, both in terms of direct and indirect health consequences. Outdoor workers are most affected by extreme weather conditions due to prolonged periods of droughts. Excessive heat during periods of drought leads to heat exhaustion. Induced due to the nature and intensity of work, heat exhaustion usually occurs during the warmest days in most outdoor workplaces. This alters motor cognitive responses, resulting in decreased performance and low productivity; changes in the emotional status of individuals cause irritability, anger and decreased attentiveness. Workers affected by heat stress are likely to slow down and take more rest breaks to avoid the negative implications of heat which result in a decrease of hourly output and productivity. As such, there is a trade-off between the health impacts of climate change and the productivity of workers involved in heavy physical activities exposed to extreme heat conditions.

Extreme weather conditions aggravate mental stress and reduce the capacity and productivity of the worker. Mental stress is triggered usually in the aftermath of disasters related to psychiatric trauma – such as severe anxiety reactions, depression and complex psychopathology – leading to low work efficiency, reduced labour skills, poor concentration and muscular fatigue. In fact, symptoms of depression are twice as likely among relief workers, and in some instances, victims are at risk of developing acute stress reaction which requires rehabilitation and treatment.[15]

Climate change indirectly affects the health of workers. The scarcity of clean drinking water during periods of droughts affects the incidence of water borne diseases such as diarrhoea in Sri Lanka.[16] This issue is further compounded by the absence of awareness on the efficient use of water and sanitary facilities, coupled with low education outcomes in poorer communities, especially in less affluent districts of the country. The slow disaster preparedness of the communities and relevant government authorities to extreme weather conditions results in the spread of diseases; this results in poor health of workers that negatively impact on the productivity of workers. Nonetheless, the impact of climate change on people, including on occupational health, is a relatively new area of policy concern. At present, the Climate Change Secretariat (CCS) is the national focal point to address these issues. While there have been concerted efforts to address impending climate related issues, limited resources coupled with other institutional constraints have impeded progress made to date.

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[15] Schulte, P., & Chun, H. (2009). Climate change and occupational safety and health: Establishing a preliminary framework. *Journal of Occupation and Environmental Hygiene, 6:542-554.* Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/19551548

[16] Global Facility for Disaster Reduction and Recovery. (2011). *Vulnerability, risk reduction, and adaptation to climate change –Sri Lanka*. Retrieved from http://sdwebx.worldbank.org/climateportalb/doc/GFDRRCountryProfiles/wb_gfdrr_climate_change_country_profile_for_LKA.pdf

The slow disaster preparedness of communities and relevant government authorities to extreme weather conditions results in the spread of diseases.

14.4 Challenges in Climate Change Adaptation for Occupational Health

14.4.1 Gaps in Information, Research and Awareness

Given that the impact of climate change is often uncertain, Sri Lanka lacks research studies to assess the health effects of climate induced diseases on several occupations. Although the Department of Meteorology (DOM) at present provides weather forecasts on a daily basis, there is limited accessibility on specific studies, data and relevant research on the health impacts of climate change. This is further constrained by the absence of more reliable climate change projections and quality of information, which are essential for developing adaptive actions in different sectors.

The CCS – in the National Adaptation Plan for Climate Change Impacts (NAP-CCI) in Sri Lanka 2016-2025 – has acknowledged this gap and as such, bestowed responsibility to the Ministry of Health (MOH) and the Medical Research Institute to strengthen the alertness of the health system against climate induced incidents. The same plan has emphasised the need to develop the capacity of institutes to conduct research on climate and health issues. The National Science Foundation (NSF) has been given the responsibility of controlling climate induced disease incidents, including identifying strategies for the management of these diseases. Furthermore, the National Climate Change Adaptation Strategy: 2011-2016 outlined the threat of climate change on several sectors including the health sector. While it is heartening to note that these challenges are known to relevant ministries and government agencies, the extent to which these plans will be executed, and that all government agencies work collaboratively to enhance the accuracy of climate related data to minimise the health implications on several vulnerable occupations remain to be realised.

Similarly, there is insufficient awareness of the negative implications of climate change on several occupational sectors. While the NAP- CCI in Sri Lanka 2016-2025 has delineated steps to launch an awareness programme on climate and health risks for both health care workers and the public, the extent to which the availability of financial resources and political commitment to implement these plans is not clear.

14.4.2 Inadequate Surveillance and Monitoring of Climate-related Health Hazards.

Given that Sri Lanka is largely vulnerable to deaths due to vector borne diseases, landslides and floods, and diseases due to air pollution and heat related morbidity among farmers and construction workers, investments in technology for climate change adaptation are central. Although the NAP-CCI in Sri Lanka 2016-2025 intends to establish a surveillance programme to detect and monitor climate induced diseases, prepare vulnerability maps on climate change and related health hazards, and develop a mechanism whereby meteorological, clinical and entomological information could be shared, it is central to recognise the necessity for cross-cutting national needs of adaptation (Box 14.1). Further, the CCS of the Ministry of Environment and Renewable Energy has initiated a project to undertake a technological needs assessment for adaptation and development of climate resilient technologies.[17] This however demands time and financial resources in a severely under-resourced economy.

Box 14.1
Climate Change Adaptation Action: France

The Ministry of Ecology and Sustainable Development in France has taken steps to draw up a climate change adaptation action plan consisting of 20 sectors that include health, water resources, agriculture, forests, fisheries and aquaculture, etc. France has further set up mechanisms by which the relationship between human health and climate change can be further investigated by placing a strong emphasis on research, governance and international co-operation. Towards this goal, expert teams comprising of multidisciplinary scientists are formed with the responsibilities of evaluating the health risk relationship under extreme weather; maintaining and developing health climate research, identifying and monitoring the risk causing factors; and improving and developing protective health measures and increase awareness through education. Due to these strategic decisions, France has estimated that if precautionary actions against climate change are not taken, it would cost the country 5-20 per cent of gross national product (GNP). However, if France takes stringent action towards climate resilient adaptation activities, the costs will be reduced to 1-2 per cent of GNP.

Source: Based on research on climate change.
United Nations Development Programme. (2016). Climate change and labour: Impact of heat in the workplace. Retrieved from http://www.ilo.org/global/topics/green-jobs/publications/WCMS_476194/lang--en/index.htm

[17] Senaratne, A. (2014). *Policy challenges in climate adaptation in Sri Lanka: Identifying major gaps.* Retrieved from http://www.ft.lk/columns/policy-challenges-in-climate-adaptation-in-sri-lanka-identifying-major-gaps/4-281806

14.5 Policy Recommendations

As discussed earlier, the extent to which research is conducted on climate induced diseases such as the negative health effects of air pollution on outdoor occupations, or the negative health implications of floods and storms on rescue workers are areas which are severely under-researched in Sri Lanka. Thus, it is important to facilitate studies on climate related occupational health hazards, and strengthen access and quality of data on climate related health issues. For instance, lessons could be drawn from France, where a multi-disciplinary team of scientists are engaged in further research on climate change and its associated impacts on human health (Box 14.1).

The importance of raising awareness on influences of climate change has been acknowledged in many government plans, reviews and policy documents. Although the MOH has taken several initiatives to raise awareness on the health hazards among the general public, more could be done. Awareness campaigns should be targeted at different occupations, as the ill effects of climate change vary significantly across occupations. For instance, students at schools should be educated on the negative health implications of exposure to excessive sunlight. Similarly, outdoor workers such as construction workers and police officers should be educated on the importance of rest breaks and continuous rehydration to prevent excessive fatigue that can lead to other health implications. Local communities should be kept informed of the spread of disease and infections through floods and storms. Rescue and health workers on the other hand should be skilled up to be effectively prepared to handle rescue operations, and contain the disease and infections following floods/storms. These awareness campaigns should be an on-going process, so that the general public are continuously informed of precautionary measures well ahead of any disasters. However, initiating awareness campaigns alone are insufficient to mitigate the negative health implications of climate change on occupations.

Technological advancements are central to monitor and predict the likelihood of extreme weather events, and curtail the negative health implications on various occupations. Early warning systems would definitely help mitigate the negative health impacts on the farming and fishing communities, since communicating the risks and prevention responses will ensure food and nutrition security, and concurrently assist in contracting water and vector-borne diseases. Further, initiating air quality monitoring facilities and strengthening early warning systems for extreme events will help in reinforcing information sharing and collaboration between the disaster management agencies and the health management agencies. While it is certainly costly in most cases and time consuming to develop climate resilient advanced technologies, low cost methods could be developed with the assistance of the international donor community and private sector.

15 Sri Lanka's Learning Crisis

15.1 Introduction

Education is a central element of local and global efforts to combat climate change. Education equips children and young people with the knowledge and skills to understand and address the impacts of climate change, encourages changes in their attitudes and behaviour, and helps them adapt to a changing environment. Indeed, this year's World Development Report (WDR) titled 'Learning to Realise Education's Promise' is the first ever devoted entirely to education, in recognition of the critical importance of education, particularly at a time of rapid economic, social, and environmental change.

The main message of the WDR is that schooling is not the same as learning. While countries across the world have made significant headway in enrolling children in school, progress in ensuring that these children actually learn and acquire much needed skills – which is what truly builds human capital – is far less impressive, thus constituting a 'learning crisis'. Schooling without learning is not only an immense waste of scarce resources and human potential, but also an injustice. The children whom society is failing the most are often the ones who are in greatest need of a good education to succeed in life. The many benefits of education – including employment creation, poverty reduction, good health outcomes, expansion of economic opportunities, economic growth, social mobility, institution strengthening, and social cohesion – largely depend on skills acquired through

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learning, and not just on the number of years spent in school. Without proper learning, disadvantaged students for whom learning conditions are often below average will remain in poverty and deprivation.

Moreover, the future world of work will place a premium on learning. While today's dynamic labour market requires multidimensional skills – including problem-solving, technical, socio-emotional, and adaptability skills – the foundational reading, writing, and numeracy skills cannot be bypassed, and are critical in developing higher-order skills.

The WDR discusses the learning crisis across three dimensions. The first dimension examines trends in learning outcomes across the world. The second and third dimensions examine underlying causes behind poor education outcomes: poor-quality schools that fail learners (intermediate causes) and poor education systems which fail schools (deeper causes). This policy brief examines the learning crisis in Sri Lanka across these three dimensions, and discusses policy options to ensure that schooling translates into actual learning for all Sri Lankans.

15.2 Poor Learning Outcomes

Recent expansions in school enrollment and completion rates around the world, particularly in developing countries, have been impressive. The number of years of schooling completed by the average adult in the developing world more than tripled from two to seven years between 1950 and 2010.[1] By 2008, the average low-income country was enrolling students in primary school at nearly the same rate as the average high-income country.[2] Nevertheless, in many developing countries, the time spent in school has not translated into significant learning outcomes, as measured by literacy and numeracy skills. For example, in rural India in 2016, only a half of grade five students could fluently read text at the level of the grade two syllabus.[3] In urban Pakistan in 2015, only three-fifths of grade three students could correctly perform a subtraction such as 54–25.[4] In South Africa in the late 2000s, the majority of students in grade four had grasped only the mathematics curriculum from grade one, and most of those in grade nine had mastered only the mathematics syllabus from grade five.[5]

Sri Lanka has been a notable overachiever in education in the developing world. The net primary enrollment rate stood at 99 per cent in 2015 – even above the average for high income countries – while the secondary enrollment rate at 85 per cent is considerably higher than both the middle income and South Asian averages.[6] These achievements have been recorded across all districts in the country, for both the males and females. Learning outcomes at the primary level also appear to be comparatively good. Since 2003, the National Educational Research Centre (NEREC) based at the University of Colombo

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1 Barro, R. J., & Lee, J.W. (2013). A new data set of educational attainment in the world, 1950–2010. *Journal of Development Economics,* 104: 184–98.

2 World Bank. (2018). *World development report 2018: Learning to realise education's promise.* Washington D.C.: World Bank.

3 ASER Centre. (2017). *Annual status of education report (rural) 2016.* Retrieved from http://img.asercentre.org/docs/Publications/ASER%20Reports/ASER%202016/aser_2016.pdf.

4 ASER Pakistan. (2015). *Annual status of education report: ASER Pakistan 2015 national.* Lahore, Pakistan: South Asian Forum for Education Development.

5 Spaull, N., & Kotze, J. (2015). Starting behind and staying behind in South Africa: The case of insurmountable learning deficits in mathematics. *International Journal of Educational Development,* 41: 13–24.

6 World Bank. (2018). *World development indicators 2017.* Retrieved from http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

has administered tests in the first language (Sinhala and Tamil), mathematics, science, and English to grade four and grade eight students in a representative sample of schools across the country. According to the latest assessment of grade four students in 2015, close to 80 per cent of grade four students gave correct responses to questions related to multiplication and addition of numbers with two to three digits, while 70-80 per cent were able to read and comprehend simple passages and perform well in vocabulary.[7]

However, disparities in performance levels by school type, location, gender, and medium of instruction are significant. Moreover, learning outcomes at higher levels of education are weaker, and disparities are wider. National assessment mean scores of grade eight students in 2016 were only 51 per cent for mathematics, 42 per cent for science, and 36 per cent for English,[8] in subjects that are essential for individuals to succeed in a competitive knowledge economy. As Figure 15.1 shows, test scores also show wide variation by school type and location;[9] students attending the more prestigious 1AB schools outperform their counterparts in other school types in all three subjects, while students in Type 2 schools score at the bottom of the distribution. Similarly, children from affluent areas attending urban schools do better than their rural counterparts.

Disparities in performance levels by school type, location, gender, and medium of instruction are significant. Moreover, learning outcomes at higher levels of education are weaker, and disparities are wider.

[7] National Educational Research Centre. (2016). National report – *National assessment of achievement of students completing grade 4 in year 2015 in Sri Lanka.* Colombo, Sri Lanka: Ministry of Education.

[8] National Educational Research Centre. (2017). National report – *National assessment of achievement of students completing grade 8 in year 2016 in Sri Lanka.* Colombo, Sri Lanka: Ministry of Education.

[9] Type 1AB schools, considered to be the best, span grades 1–13 or 6–13 and offer science, arts, and commerce streams for the A-Levels. Type 1C schools also span grades 1–13 or 6–13 but do not offer science at the A-levels. Type 2 schools span grades 1–11, and Type 3 schools refer to primary-only (grades 1–5) or lower secondary (grades 1–8) schools.

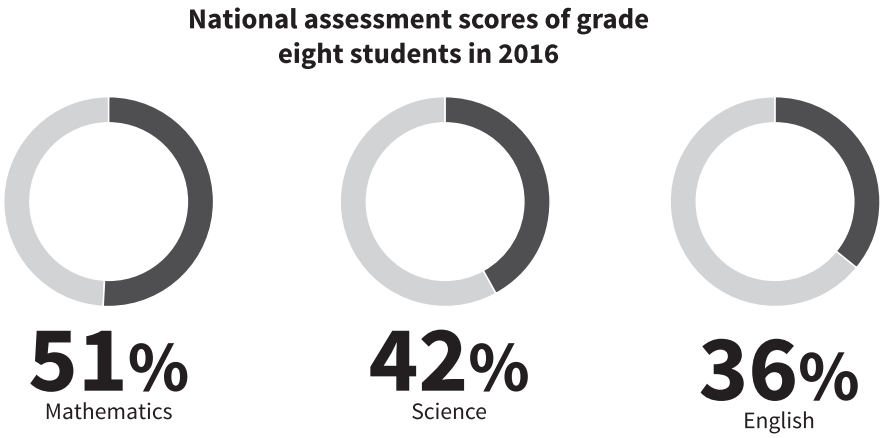
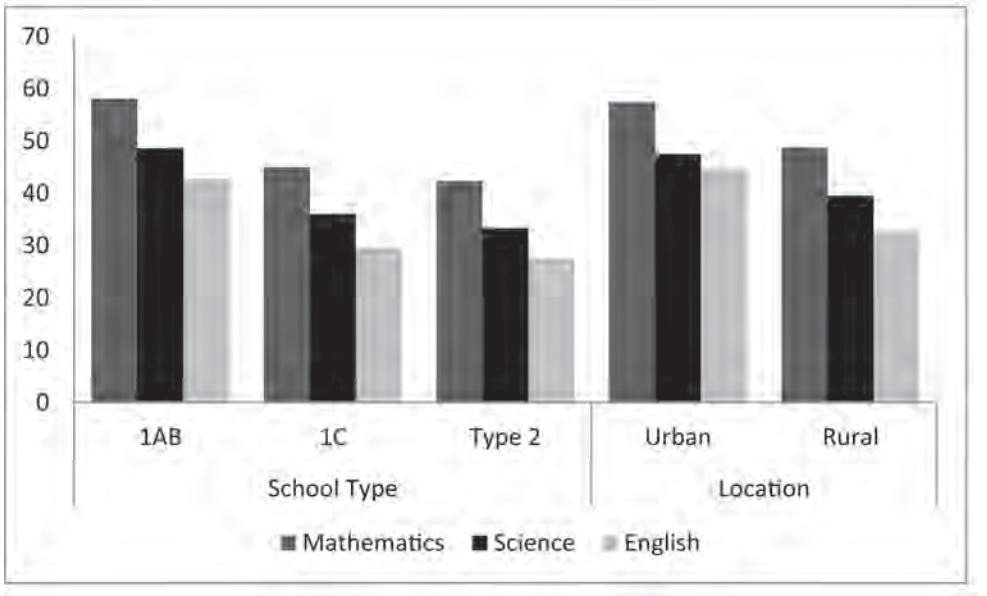


Figure 15.1
National Assessment Scores of Grade Eight Students by School Type and Location, 2016



Source: National Educational Research Centre. (2017). National report – National assessment of achievement of students completing grade 8 in year 2016 in Sri Lanka. Colombo, Sri Lanka: Ministry of Education.

International assessments of literacy and numeracy, such as the Programme for International Student Assessment (PISA), Progress in International Reading Literacy Study (PIRLS), and Trends in International Mathematics and Science Study (TIMSS), also point to striking gaps in learning outcomes between developed and developing countries. The average student in low-income countries, for instance, performs worse than 95 per cent of the students in high-income countries, suggesting that many high-performing students in middle and low-income

countries would rank at the bottom of a test score distribution in a richer country.[10]

The above finding also applies to Sri Lanka. While Sri Lanka does not participate in any international assessments, since 2012, a paper comprising of TIMSS test items which are representative of the Sri Lankan grade eight mathematics curriculum has been administered. The latest assessment in 2016 reveals a markedly low national mean score of 23 per cent, compared to 51 per cent for mathematics and 42 per cent for science in the national assessments, with 87 per cent of students scoring below the pass mark of 40.[11] This indicates that Sri Lanka's education system performs poorly in an international perspective, and highlights the inadequacies of national assessments as comprehensive benchmarks of learning outcomes.

While poverty, conflict, and disability are some key factors that keep children out of school or inhibit school completion, the learning crisis is also to blame. If parents perceive education to be of poor quality, they will be less willing to sacrifice to keep their children in school. Confronting the learning crisis requires identifying its causes, both at an intermediate and a deeper level.

15.3 Schools that Fail Learners

According to the WDR, learning requires four key school-level ingredients: i) prepared learners; ii) effective teaching; iii) learning-focused inputs; and iv) skilled management and governance. When one or more of these ingredients are lacking, education systems are unable to guarantee good learning outcomes.

Sri Lanka's education system performs poorly in an international perspective, and highlights the inadequacies of national assessments as comprehensive benchmarks of learning outcomes.

[10] World Bank. (2018). *World development report 2018: Learning to realise education's promise.* Washington D.C.: World Bank.
[11] National Educational Research Centre. (2017). *Patterns and trends in achievement: TIMSS.* Colombo, Sri Lanka: Ministry of Education of Sri Lanka.

15.3.1 Unprepared Students

Children often arrive in school unprepared to learn, particularly children from low socio-economic backgrounds or those with disabilities. They are disadvantaged at the start due to poor developmental foundations stemming from malnutrition, illness, low parental investments, and lower levels of exposure to preschool education. Analysis of PISA scores suggests that in nearly all participating countries, students' family backgrounds – including parental education, socio-economic status, and conditions at home (such as access to books) – are the strongest determinants of learning outcomes.[12] While PISA is not conducted in Sri Lanka, analysis using NEREC data indicates a similar situation, with factors such as educated parents, better nutrition, high daily attendance, electric lighting, and children's books at home increasing learning among fourth graders, and hearing problems having a strong negative effect.[13]

Early Childhood Development (ECD) programmes aimed at nurturing school readiness can help children transition into new learning environments and reduce gaps in cognitive development between students from different socio-economic backgrounds.[14] In Sri Lanka, 76 per cent of 3–5 year-olds are in some form of learning programme, but only 50 per cent attend a pre-school programme. Further, disparities in enrollment by income are significant; only 39 per cent of 3–4 year-olds in the poorest expenditure quintile are enrolled in a pre-school programme,[15] compared to 56 per cent in the richest quintile.[16] Moreover, a large share of early education institutes lacks adequate resources for teaching and learning, especially for children with special needs.

15.3.2 Unqualified and Unmotivated Teachers

Teachers have been identified as the single most important factor affecting student learning outcomes. Similar to evidence on the importance of teacher effectiveness in many countries, in Sri Lanka, schools with larger shares of both subject-qualified and experienced teachers perform better, both at the primary and secondary levels.[17] Research also shows that there is a notable shortage of good-quality teachers in Sri Lanka for subjects such as science, mathematics, and English.[18]

Unlike in many developed countries, a professional qualification – typically covering subject knowledge, pedagogy, and supervised practical teaching experience – is not required to enter the teaching profession in Sri Lanka. This stems from the limited opportunities for pre-service teacher training, which is offered either via a Bachelor of Education (BEd) degree in only two out of the 17 state universities, or a National Diploma in Teaching (NDT) at one of the 18 National Colleges of Teacher Education in the country. While many teachers undergo in-service

[12] World Bank. (2018). *World development report 2018: Learning to realise education's promise.* Washington D.C.: World Bank.
[13] Aturupane, H., Glewwe, P., & Wisniewski, S. (2013). The impact of school quality, socio-economic factors and child health on students' academic performance: Evidence from Sri Lankan primary schools. *Education Economics,* 21(1), 2—37.
[14] Dundar, H., Millot, B., Riboud, M., Shojo, M., Aturupane, H., Goyal, S., & Raju, D. (2017). *Sri Lanka education sector assessment: Achievements, challenges, and policy options.* Washington D.C.: World Bank.
[15] *Ibid.*
[16] *Ibid.*
[17] Abayasekara, A., & Arunatilake, N. (2017). *Better schools for better o-level results in Sri Lanka.* Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.
[18] Arunatilake, N., & Abayasekara, A. (2017). *Are there good quality teachers for all classrooms in Sri Lanka?. Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.*

teacher training after joining teacher service – offered in the form of postgraduate diplomas in education at universities, and teacher certificate programmes at teacher training colleges – in the interim, students miss out on effective teaching. In-service teacher training is also found to be negatively associated with teacher effectiveness, because training takes teachers away from the classroom or makes teaching additionally burdensome.[19]

As indicated in Table 15.1, a vast majority of Sri Lankan teachers have been trained on the job; 95 per cent of teachers with GCE O-Level qualifications and 64 per cent with A-Level qualifications have a trained teacher certificate, while over 50 per cent of teachers with higher levels of educational qualifications hold postgraduate diplomas in education. On the other hand, teachers obtaining professional qualifications before entering teacher service – either via a BEd or NDT– are virtually non-existent among those with lower academic qualifications, and stand only at 5 per cent even among teachers with a bachelor's degree. Further, 26 per cent of those with a bachelor's degree and 13 per cent of those with a master's degree or higher, have no pedagogical training.

Unlike in many developed countries, a professional qualification – typically covering subject knowledge, pedagogy, and supervised practical teaching experience – is not required to enter the teaching profession in Sri Lanka.



[19] Harris, D. N., & Sass, T.R. (2011). Teacher training, teacher quality and student achievement. *Journal of Public Economics*, 95: 798–812.

Table 15.1
Distribution of Professional and Academic Qualifications of Sri Lankan Teachers

Professional Qualification	Academic Qualification			
	GCE O/L	GCE A/L	Bachelor's	Masters or Higher
None	0.024	0.031	0.259	0.127
Trained teacher certificate	0.949	0.644	0.070	0.043
Postgraduate diploma in education	0.011	0.021	0.572	0.530
NDT	0.015	0.302	0.051	0.032
BEd or higher	0.001	0.002	0.048	0.268
Total Observations (N)	8,043	115,404	103,175	4,226

Source: Dundar, H., Millot, B., Riboud, M., Shojo, M., Aturupane, H., Goyal, S., & Raju, D. (2017). *Sri Lanka education sector assessment: Achievements, challenges, and policy options.* Washington D.C.: World Bank, based on 2014 School Census data.

Teacher motivation is also critical for teacher effectiveness. Teacher absenteeism appears to be a notable problem in many developing countries, with national averages of teacher absenteeism ranging from 3-27 per cent. [20] In Sri Lanka, utilisation of teacher leave in number of days as a share of the total number of working school days stands at around 15 per cent, and is found to have a comparatively large significant negative effect on student performance.[21] Further, utilisation of teacher leave is concentrated among teachers assigned to disadvantaged schools, possibly reflecting the low satisfaction that teachers experience in such schools.[22] Low pay and resultant poor job satisfaction contribute to low motivation and commitment of teachers in Sri Lanka, and also discourage higher calibre prospective candidates from joining teacher service.[23]

15.3.3 Lack and Poor Utilisation of Learning-focused Inputs

School infrastructure and related inputs is another important factor determining learning outcomes, provided that these are used effectively to promote learning. Sri Lankan schools are generally well equipped with basic school infrastructure such as furniture and textbooks, owing to the provision of free state education. School Census data indicate that 99 per cent of schools have access to electricity, and 86 per cent to computer facilities. Sri Lanka's average student-teacher ratio stands at 18, which is within the range considered as acceptable internationally, although many schools, particularly in rural areas, do not have the right combination of teachers.

[20] Guerrero, G., Leon, J., Zapata, M., Sugimaru, C., & Cueto, S. (2012). *What works to improve teacher attendance in developing countries? A systematic review.* EPPI Centre, Social Science Research Unit. London, United Kingdom: Institute of Education, University of London.

[21] Abayasekara, A., & Arunatilake, N. (2017). *Better schools for better o-level results in Sri Lanka.* Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

[22] Aturupane, H. (2009). *The pearl of great price: Achieving equitable access to primary and secondary education and enhancing learning in Sri Lanka.* Research Monograph 29, Consortiums for Research on Educational Access, Transitions, and Equity. London, United Kingdom: Institute of Education, University of London.

[23] Dundar, H., Millot, B., Riboud, M., Shojo, M., Aturupane, H., Goyal, S. & Raju, D. (2017). *Sri Lanka education sector assessment: Achievements, challenges, and policy options.* Washington D.C.: World Bank.

However, having inputs alone is not enough; these need to be utilised effectively to have an impact on learning outcomes. In many developing countries, poor utilisation of resources received by schools is an issue, particularly among disadvantaged schools. In Brazil, for instance, a year after a 'One Laptop per Child' initiative was implemented, 40 per cent of teachers reported they never or rarely used them in classroom activities.[24] Evaluations of a similar programme initiated in Sri Lanka among primary students are more positive, where computer-based training has been used in a way that benefitted students, teachers, as well as parents.[25] Nevertheless, evidence shows that utilisation rates of a World Bank-funded Education Quality Inputs (EQI) scheme providing funds for expenditure on consumable goods, capital goods, and external consultancy services are low in less privileged schools due to capacity issues. Over 60 per cent of funds were unutilised in underprivileged schools, compared to below 40 per cent in highly privileged schools.[26]

15.3.4 Poor Management and Governance

Effective school management is important in influencing learning outcomes indirectly by improving teacher quality and ensuring the effective use of resources. The WDR describes effective school leadership as situations where school principals are actively involved in helping teachers solve problems, providing instructional advice, and setting goals that prioritise learning. The WDR also points to the importance of support provided by parents and communities in driving school quality.

Principals with sufficient qualifications and training are likely to be the most effective leaders. Principals in Sri Lanka are categorised into several classes based on educational and professional qualifications, experience in administration and teaching, as well as problem-solving, logical thinking, and communication skills. The classes are, in descending order of ranking: i) Sri Lanka Education Administration Service (SLEAS); ii) Sri Lanka Principals Service (SLPS); and iii) Sri Lanka Teachers Service (SLTS). It is concerning to note that only 4 per cent of principals in Sri Lanka belong to the highest ranking SLEAS category, who are almost exclusively concentrated in privileged schools.[27] Principals of the lowest-ranking category, comprising 27 per cent of all principals, mostly head underprivileged schools. Community support – as measured by the share of funds a school receives from parents, well-wishers, and past pupil associations and community-level non-government organisations (NGOs) – is also much greater in affluent schools.[28]

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[24] Lavinas, L., & Veiga, A. (2013). Brazil's one laptop per child program: Impact evaluation and implementation assessment. *Cadernos de Pesquisa, 43*(149).

[25] Mozelius, P., Rahuman, K., & Wikramanayake, G. (2012). *Two years of one-to-one computing in Sri Lanka – The impact on formal and informal learning in primary school education.*

[26] Arunatilake, N., & Jayawardena, P. (2013). *School funding formula's in Sri Lanka.* Paris, France: United Nations Educational, Scientific and Cultural Organisation (UNESCO).

[27] Abayasekara, A., & Arunatilake, N. (2017). Better schools for better o-level results in Sri Lanka. Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

[28] *Ibid.*

15.4 Systems that Fail Schools

15.4.1 Technical Challenges

Many education systems fail in promoting effective learning due to both misalignment and incoherence. Alignment requires all components or actors of the system to share the same goal of learning, while coherence means that the components reinforce each other in achieving the goals set by the system. Alignment becomes difficult when actors have goals other than learning, and learning is not necessarily prioritised as the most important. For example, in a school building project, construction firms and bureaucrats can collude to provide poor-quality infrastructure, since their priority could be maximising profit, over and above the goal of improved learning conditions.

Coherence requires all system elements to work together for a policy to have an impact. For example, for the newly established A-Level technology stream in Sri Lanka to meet its objectives of generating more science scholars to meet demands in the current job market and providing students with technical and professional skills, all actors in the system need to work together. Schools need to be equipped with appropriate infrastructure and teachers need to be trained to teach new curricula. Similarly, universities need to develop degree programmes to absorb these students and liaise with prospective employers to ensure that students are being equipped with the right set of skills. The need for coherence also makes it risky to directly borrow system elements from other countries which may not work locally.

15.4.2 Political Challenges

Competing interests in the political sphere once again pose challenges to achieving a given target. Politicians often act to preserve their position in power, and they could target particular groups (geographic, ethnic, or economic) irrespective of actual needs that help them remain in power. Bureaucrats may focus more on keeping politicians and teachers satisfied than on promoting student learning, or they may try to protect their own positions. Teachers could also place more importance on secure employment or incomes over effective and committed teaching. While this does not necessarily indicate that education actors do not care about learning in poorly managed systems, such competing interests may overshadow learning-aligned interests (Table 15.2). As a result, the choice of a particular policy is often determined by how powerful an actor is in the political arena, rather than by whether it improves learning outcomes.

In poorly managed systems, competing interests may overshadow learing-aligned interests.

Table 15.2
Multiple Interests of Education Stakeholders

Stakeholders	Examples of...	
	Learning-aligned interests	Competing interests
Teachers	Student learning, professional ethic	Employment, job security, salary, private tuition
Principals	Student learning, teacher performance	Employment, salary, good relations with staff, favo uritism
Bureaucrats	Well-functioning schools	Employment, salary, rent -seeking
Politicians	Well-functioning schools	Electoral gains, rent -seeking, patronage
Parents and students	Student learning, employment of graduates	Family employment, family income, outdoing others
Employers	Skilled graduates	Low taxes, narrowly defined self -interests
Non-government schools	Innovative, responsive schooling	Profit, religious mission, funding
International donors	Student learning	Domestic strategic interests, taxpayer support, employment

Source: World Bank. (2018). *World development report 2018: Learning to realise education's promise.* Washington D.C.: World Bank.

15.5 Policy Implications

For learning outcomes to improve, education systems need to take learning seriously and use learning as a guide and metric. This requires three complementary strategies as discussed below.

15.5.1 Assess Learning

Proper assessment of learning is a crucial first step in making learning a serious goal. Credible and reliable information generated from well-developed learning matrices, if presented in a salient and acceptable manner, can encourage active political engagement and better service delivery. Comprehensive measurement can also improve education equity by bringing to light hidden learning exclusions, which unlike exclusions from school, are invisible, as long as there is no comprehensive measurement.

Sri Lanka currently does not participate in any international learning assessments, thus inhibiting both credible benchmarking against other countries and validation of national assessment results. International assessments can also be powerful political tools; by raising awareness of how a country lags behind its peers in building human capital – a critical ingredient of creating knowledge-based competitive economies which is a common goal of country leaders – it can move politicians to action. Sri Lanka's 2018 budget proposals to allocate Rs. 25 million for a PISA is a good starting point in this regard.

15.5.2 Act on Evidence

Once a country has well-developed learning matrices, subsequent evidence needs to be used effectively to guide innovation and practice. Countries with the most effective learning systems, such as Finland, South Korea, and Singapore, are those that have succeeded in closing gaps between evidence and practice. Evidence from multiple settings on the four elements hindering school performance – unprepared learners, ineffective teachers, shortage of learning-focused inputs, and low managerial capacity – sheds light on what types of interventions are most likely to improve learning outcomes.

Addressing learner preparation – the first crucial step to better learning – requires setting children on high development trajectories through early childhood nutrition and education, stimulation, and care. Demand-side programmes that increase a student's effort and capacity to learn are also important, such as conditional cash transfers tied to student performance.[29]

To improve teacher effectiveness, it is important to expand opportunities for pre-service teacher training, in line with the current demand for teachers for different subjects. Individually targeted programmes around a specific pedagogical technique with follow-up coaching have proved effective in South Asia and Africa.[30] It is also important to target teaching to the level of the student to ensure that learners are not falling behind. Often, teachers teach to the most advanced students in the class, or teach at a relatively fast speed, given the large and complex curricula that need to be covered within a specific time. Evidence points to strategies such as using community teachers to provide remedial lessons to low performers, reorganising classes by ability, or using technology to adapt lessons to individual student needs.[31] Improvements in pay, benefits, and working conditions for school teachers are also important in attracting and retaining effective teachers and increasing teacher motivation.

Evidence on effective school inputs and management practices highlight three main principles: i) provide additional inputs in ways that complement, rather than substitute for, teachers. In India and Kenya, computer-assisted learning programmes and tablets to support instruction improved learning when integrated with the curriculum;[32] ii) ensure that new information and communication technology (ICT) is implementable in current systems. Sri Lankan schools have faced issues with hardware support and internet access under the One Lap Top Per Child programme;[33] and ii) focus school management and governance reforms on improving teacher-student interactions, for instance by training principals in how to improve that interaction. Evidence from a wide range of both developing and developed countries, including Sri Lanka, shows that the management capacity of school principals significantly impacts student performance.[34]

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[29] Barrera-Osorio, F., & Filmer, D. (2013). *Incentivising schooling for learning: Evidence on the impact of alternative targeting approaches.* Policy Research Working Paper 6541, Washington, D.C.: World Bank.

[30] Banerjee, A.V., Cole, S., Duflo, E., & Linden, L. (2007). Remedying education: Evidence from two randomised experiments in India. *Quarterly Journal of Economics,* 122(3): 1235–64; Conn, K. M. (2017). *Identifying effective education interventions in Sub-Saharan Africa: A meta-analysis of impact evaluations.* Review of Educational Research.

[31] Duflo, E., Dupas, P., & Kremer, M. (2011). Peer effects, teacher incentives, and the impact of tracking: Evidence from a randomised evaluation in Kenya. *American Economic Review,* 101 (5): 1739–74.

[32] Linden, L. L. (2008). *Complement or substitute? The effect of technology on student achievement in India.* InfoDev Working Paper 17, Washington, D.C.: World Bank; Piper, B., Jepkeimei, E., Kwayumba, D., & Kibukho, K. (2015). *Kenya's ICT policy in practice: The effectiveness of tablets and e-readers in improving student outcomes.* Forum for International Research in Education 2(1): 3–18.

[33] Mozelius, P., Rahuman, K., & Wikramanayake, G. (2012). *Two years of one-to-one computing in Sri Lanka* – The *impact on formal and informal learning in primary school education.*

[34] Abayasekara, A., & Arunatilake, N. (2017). *Better schools for better o-level results in Sri Lanka.* Colombo, Sri Lanka: Institute of Policy Studies of Sri Lanka.

15.5.3 Align Actors

For student and school-level interventions to have an impact on learning, Sri Lanka needs to tackle system-level technical and political barriers to change. As discussed earlier, better information can improve both the political and technical alignment and coherence of the system. More importantly, to ensure that better information works as a catalyst for reform and garners adequate support for prioritising learning, forming coalitions to advocate for broad-based learning as well as rebalancing political incentives of multiple stakeholders are necessary steps. Further, given the vast amount of evidence from diverse settings and the need for country-specific home-grown solutions, innovation, agility, and adaptation are essential ingredients to deciphering which approaches work best for Sri Lanka. This involves using evidence to identify viable starting points, and then using metrics to monitor output, and adjust interventions accordingly.

16. Addressing Persistent Income Inequality in Sri Lanka

16.1 Introduction

The 2030 Agenda of the United Nations has given very high priority to inequality both as a stand-alone goal as well as a cross-cutting issue. Although there was no specific goal on inequality under the Millennium Development Goals (MDGs), the Sustainable Development Goals (SDGs) provide for SDG 10 to 'reduce inequality within and among countries'. As inequalities are a cross-cutting issue, the success of most of the SDGs will depend on a reduction of all forms of inequalities. For example, SDG 1 on eradication of poverty in all its forms is intrinsically linked to inequality, as a more balanced and equitable distribution of a country's economic and environmental resources are crucial components of poverty eradication.

Inequalities are also closely connected to the environmental goals of Agenda 2030, as the costs associated with environmental degradation are unequally distributed, affecting mostly the poorer segments of the society. The destruction of land or water ecosystems significantly affects the communities depending on these resources. The poor also suffer from the adverse effects of climate change. Inequalities can also create vicious circles of political instability and conflict.[1] Studies have further shown that growing inequality leads to an increased fragility of growth, effectively lessening the speed and durability of economic development.[2] Achieving the vision of the 2030 Agenda and keeping the promise of 'leaving no one behind' requires policy action that ensures that development and economic growth are inclusive and empower those who are most in need. Economic growth in a country that is not inclusive, may be short lived and unsustainable, as it risks being undermined by social and economic instability as well as by declining human capital.[3]

The main aim of this policy brief is to highlight and examine income inequality in Sri Lanka. It looks not only at the trends in inequality in the past two and a half decades, based on the Household Income and Expenditure Surveys (HIESs) conducted by the Department of Census and Statistics (DCS) from 1990/1991 to 2016, but also the regional variations using the most recent HIESs conducted in 2012/2013 and in 2016, which covered all 25 districts in the country.[4] Although the national estimates based on the surveys up to

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[1] United Nations Department of Economic and Social Affairs. (2016). Policy integration and the 2030 agenda: Policy tools and approaches to tackle inequality. New York: United Nations Department of Economic and Social Affairs (UNDESA).

[2] Ostry, J.D., Berg, Andrew., & Tsangaride, C.G. (2014). Redistribution, inequality, and growth. IMF Staff Discussion Note 14/02.

[3] United Nations Department of Economic and Social Affairs. (2016). Policy integration and the 2030 agenda: Policy tools and approaches to tackle inequality. New York: United Nations Department of Economic and Social Affairs (UNDESA).

[4] Only the results of these two surveys were used to analyse the regional variations, as the earlier HIES data did not cover the entire country, due to the unfavourable security situation which prevailed in the Northern and Eastern Provinces until 2009.

2009 did not give the complete picture, these were used in this analysis as more than 87 per cent of the population had been covered in the surveys.

16.2 National Trends in Income Inequality and Poverty

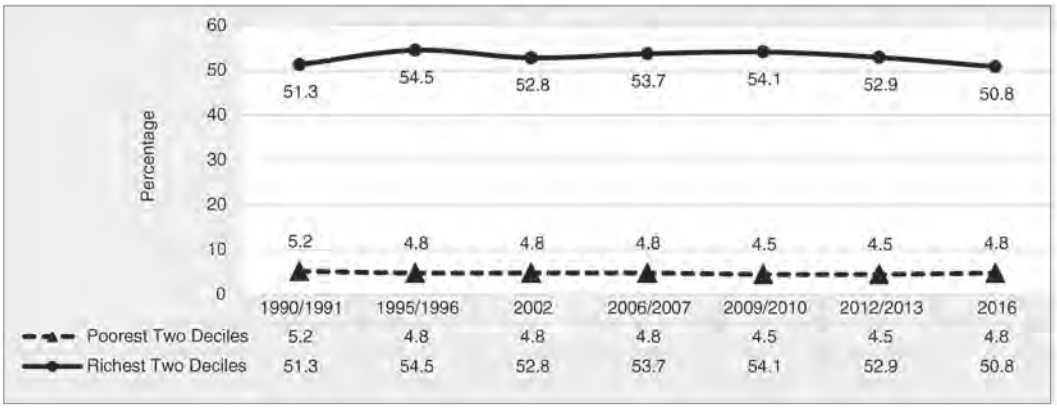
Persistent income inequality in Sri Lanka is a major issue which needs the urgent attention of the planners and policy makers. Although Sri Lanka has managed to reduce income poverty from 26.1 per cent in 1990/1991 to 4.1 per cent in 2016 which is a notable achievement, income inequality has remained more or less unchanged for the last 3-4 decades.

Table 16.1
Share of Household Income by Household Income Deciles – From 1990/1991 to 2016

Household Income Decile	Share of Household Income (%)						
	1990/ 91	1995/1996	2002	2006/2007	2009/2010	2012/2013	2016
D1	1.9	1.8	1.7	1.7	1.6	1.5	1.6
D2	3.3	3.0	3.1	3.1	2.9	3.0	3.2
D3	4.3	4.0	4.1	4.0	3.9	4.1	4.3
D4	5.3	5.0	5.0	4.9	4.9	5.1	5.3
D5	6.4	5.7	6.0	5.9	6.0	6.2	6.4
D6	7.5	6.9	7.3	7.1	7.1	7.3	7.6
D7	9.2	8.4	8.8	8.6	8.7	8.9	9.2
D8	10.8	10.7	11.2	10.9	10.8	10.9	11.5
D9	14.8	14.7	15.4	15.0	14.6	14.9	15.4
D10	36.5	39.8	37.4	38.7	39.5	38.0	35.4
All Groups	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Based on Household Income and Expenditure Surveys-1990/1991, 1995/1996, 2002, 2006/2007, 2009/2010, 2012/2013 and 2016, Department of Census and Statistics, Colombo, Sri Lanka.

Figure 16.1
Share of Household Income of Poorest 20% of Households and Richest 20% of Households –1990/1991 to 2016



Source: Based on Household Income and Expenditure Surveys-1990/1991, 1995/1996, 2002, 2006/2007, 2009/2010, 2012/2013 and 2016, Department of Census and Statistics, Colombo, Sri Lanka.

The SDG Target 4.1 urges countries to progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average by 2030. On the basis of historical trends, it will be difficult for Sri Lanka to achieve this target within the next 12 years.

Table 16.2
Nominal Mean Household Income, Gini Coefficients of Household Income/Expenditure and Income Poverty Related Indicators – 1990/1991 to 2016

Household Income Decile	Mean Household Income (At Prices Prevailed during the Survey Periods or Nominal Mean Household Income) - Rs.						
	1990/ 1991	1995/ 1996	2002	2006/ 2007	2009/ 2010	2012/ 2013	2016
D1	1,661	1,139	2,123	4,412	5,723	6,700	10,419
D2	1,165	1,938	3,971	7,789	10,691	13,790	19,914
D3	1,540	2,614	5,251	10,207	14,285	18,962	26,810
D4	1,900	3,210	6,441	12,472	17,833	23,589	33,204
D5	2,256	3,830	7,733	14,999	21,712	28,291	39,855
D6	2,646	4,515	9,295	18,107	26,047	33,597	47,462
D7	3,176	5,535	11,319	21,898	31,656	40,582	57,288
D8	3,935	7,092	14,328	27,654	39,448	50,640	71,399
D9	5,309	9,750	19,666	38,213	53,192	68,362	95,000
D10	12,963	26,187	47,569	98,500	143,969	174,376	162,460
Mean Household Income per Month	3,549	6,476	12,803	26,286	36,451	45,878	62,237
Real Household Income (adjusted for inflation of prices using National Consumer Price Index (NCPI) based on 2009/2010 prices					36,451	37,398	43,320
No. of times Mean Income of Richest 10% compared to that of Poorest 10%	7.8	23.0	22.4	22.3	25.2	26.0	15.6
Median Household Income per Month	2,547	3,793	8,482	16,735	23,746	30,814	43,511
Gini Coefficient of Household Income	0.43	0.46	0.47	0.49	0.49	0.48	0.45
Gini Coefficient of Household expenditure	-	0.36	0.41	0.41	0.37	0.40	0.41
Income Poverty Headcount (%)	26.1	28.8	22.7	15.2	8.9	6.7	4.1
Poverty Gap Index (%)	5.6	6.6	5.1	3.1	1.7	1.2	0.6
Poverty Severity	1.8	2.2	1.6	0.9	0.5	0.3	0.1
Household Size	3.8	3.9	4.2	4.1	4.0	3.9	3.8
Food Ratio (%)	60.9	54.4	44.5	37.6	42.3	37.8	34.8

Source: Based on Household Income and Expenditure Surveys-1990/1991, 1995/1996, 2002, 2006/2007, 2009/2010, 2012/2013 and 2016, Department of Census and Statistics, Colombo, Sri Lanka.

In 1990/1991, the ratio of the nominal mean household income of the richest 10 per cent of households compared to that of the poorest 10 per cent was 7.8. This ratio has increased to 23.0 in 1995/1996, and has remained around the same level until 2006/2007. Since then, it increased to 26.0 in 2012/2013, but by 2016, the ratio had declined to 15.6, mainly due to the reduction in mean household income in the richest 10 per cent of households (Table 16.2). The Gini Coefficient of household income increased from 0.43 in 1990/1991 to 0.49 in 2009/2010 and thereafter it started to decline, reaching 0.45 in 2016. Additionally, there is a drop in the share of household income in the richest 10 per cent of households, from 38.0 per cent to 35.4 per cent in 2016. In all other decile groups, there are marginal increases in the shares, especially in the eighth and ninth decile groups. This may be due to the increase in salaries of public servants in 2015. Although all these facts indicate a marginal decline in overall income inequality, the gap between the rich and the poor is still very high.

As observed in Table 16. 1 and Figure 16.1, the share of household income in the poorest 20 per cent of households has remained less than 5.0 per cent after 1990/1991. On the other hand, household income share of the richest 20 per cent of households has remained at more than 50 per cent. After 2009/2010, the share of this group is on a declining trend, from 54.1 per cent in 2009/2010 to 50.8 per cent in 2016. The share of household income of the poorest 10 per cent has not shown any improvement and has remained very low (less than 1.8 per cent) throughout the period from 1990 to 2016. It is important to note that all the income-poor households are within this decile. If Sri Lanka is to achieve SDG 1 and SDG 10 by 2030, households in this group need to be pushed out of poverty.

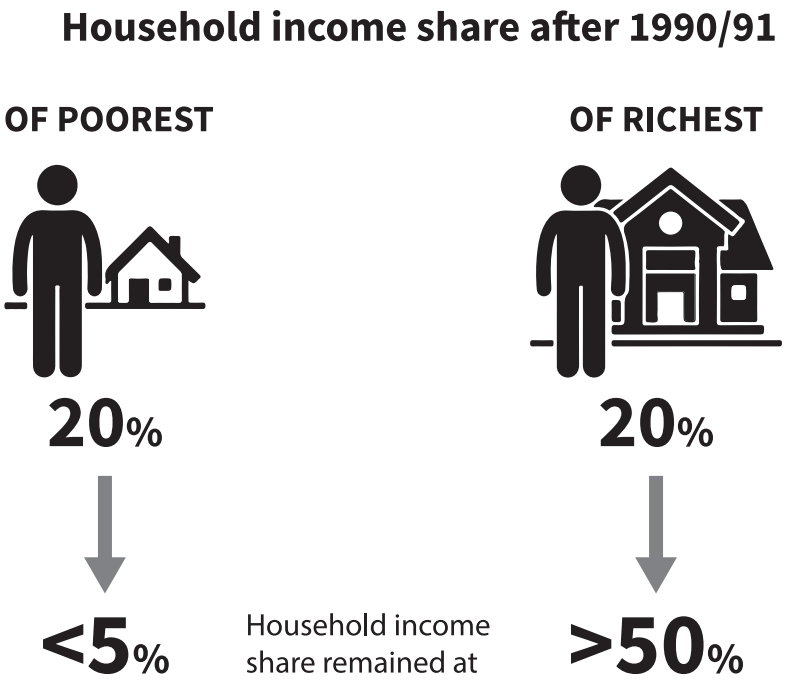


Table 16.2 also provides trends in nominal mean household by household income deciles, median household income, indicators related to poverty, etc., which are useful in the analysis of income inequality and poverty at the national level. The nominal mean household income from 1990/1991 to 2016 indicates that the overall mean household income has increased 17.5 times during this period. It is also observed that the increase in all deciles had been more than 17 times, except in the richest and the poorest deciles. The mean household income of the richest 10 per cent of households (or households in the 10th decile) has increased by 12.5 times during the above period. This indicates that households in deciles two to nine (D2 to D9) have done better compared to the richest group. However, while all other groups have shown a significant increase in income in the poorest 10 per cent of households, the mean household income has increased by only 6.5 times during the period 1990/1991 to 2016.

16.3 Importance of Providing Quality Education to All Children

To break the above intergenerational poverty trap, it is important to ensure that the poor and vulnerable children are provided access to quality education, in all regions. It is also important to ensure that these children do not leave school education after the compulsory age for schooling due to poverty or poverty related issues.

Analysis of the HIES 2012/2013 data indicates that 23.8 per cent of poor children (in income poverty and/or multi-dimensional poverty) aged 15-16 years and 64.7 per cent of poor children aged 17-18 years are leaving formal school education due to poverty related issues.[5] The importance of providing access to quality education to all, in order to eradicate extreme poverty, reduce poverty and thereby to reduce income inequality, is well documented. The United Nations Children's Fund (UNICEF) Child Poverty in Post 2015 argues that extreme child poverty can lead to an intergenerational poverty cycle.[6] It further highlights the need to break this intergenerational poverty cycle by eradicating child poverty for the sustainable eradication of extreme poverty. Similarly, it is argued that equal access to quality education is essential in eradicating poverty and that it gives the underprivileged children a better chance for a decent and fulfilling life.[7] The Education for All (EFA) Global Monitoring Report shows that equal opportunities for education not only helps to develop the skills needed to improve livelihoods, but it also generates productivity gains that boost economic growth.[8] It notes however, that for economic growth to reduce poverty, it is necessary to overcome inequality by improving the lives of the poorest and the marginalised the most.

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5 Nanayakkara, W. (2017). *Poverty and access to education: An old problem affecting young generation of Sri Lanka.* Retrieved from http://www.ips.lk/talkingeconomics/2017/10/09/poverty-and-access-to-education-an-old-problem-affecting-the-young-generation-of-sri-lanka/

6 Based on United Nations Children's Fund (UNICEF), Issue Brief (2014) on Child Poverty in the Post 2015 Agenda.

7 World Education Blog (2013). We will never eradicate poverty without quality education.

8 Based on United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2013), Education Transforms.

Quality education for all is vital, because it can help to ensure that the benefits of economic growth are fairly distributed. Educated men and women are more likely to hold jobs that are secure, with good working conditions and decent pay. Therefore, it is important to take a closer look at the education offered to poor children in Sri Lanka, and examine as to w hy nearly one-fourth of poor children leave after the compulsory age for schooling, and also why nearly two-thirds of poor children after 16 years of age leave formal school education.

16.4 Identifying the Most Deprived and Targeting in Social Welfare Programmes

To take effective and appropriate action to eradicate extreme poverty, it is important to identify the poorest, most deprived, and vulnerable groups. Sri Lanka's HIES data show that the poorest people in Sri Lanka are among those living in households headed by 'agricultural or non-agricultural labourers', 'skilled agricultural workers' and 'persons, who are disabled or too old to work'. As such, fur ther reduction of poverty or eradication of extreme poverty and reduction of income inequalities, will depend on precise targeting of these most vulnerable groups. The HIES data also show that some of the most deserving and vulnerable families are not covered in social protection programmes like 'Samurdhi', while those not deserving continue to receive such benefits.[9]

It is important to take a closer look at the education offered to poor children in Sri Lanka, and examine why nearly one-fourth of poor children leave after the compulsory age for schooling, and why nearly two-thirds of poor children after 16 years of age leave formal school education.

[9] Nanayakkara, W. (2016). *Can Sri Lanka eradicate poverty and reduce income inequality.* Retrieved from http://www.ips.lk/talkingeconomics/2016/06/03/can-sri-lanka-eradicate-poverty-and-reduce-income-inequality-by-2030/

Most of the poor are largely rural based, which includes those in the estate sector as well. As explained above, a majority of them rely on agriculture for their livelihood. Although the agricultural sector shows relatively slow growth and its contribution to gross domestic product (GDP) is less than 8 per cent, around 30 per cent of the employed population in the country are still engaged in agriculture. This fact cannot be and should not be ignored when developing strategies to reduce poverty and eradicate extreme poverty. Any attempt to weaken or neglect the agriculture sector, will affect the lives of many families depending on agriculture and related activities, especially the poor. Sufficient attention needs to be given to increase agricultural productivity by improving extension services, introducing new technology, agriculture based industries, etc., which can create new employment opportunities for rural youth. Improvements to rural infrastructure and marketing facilities to address high costs of middlemen in the food value chain are also important.

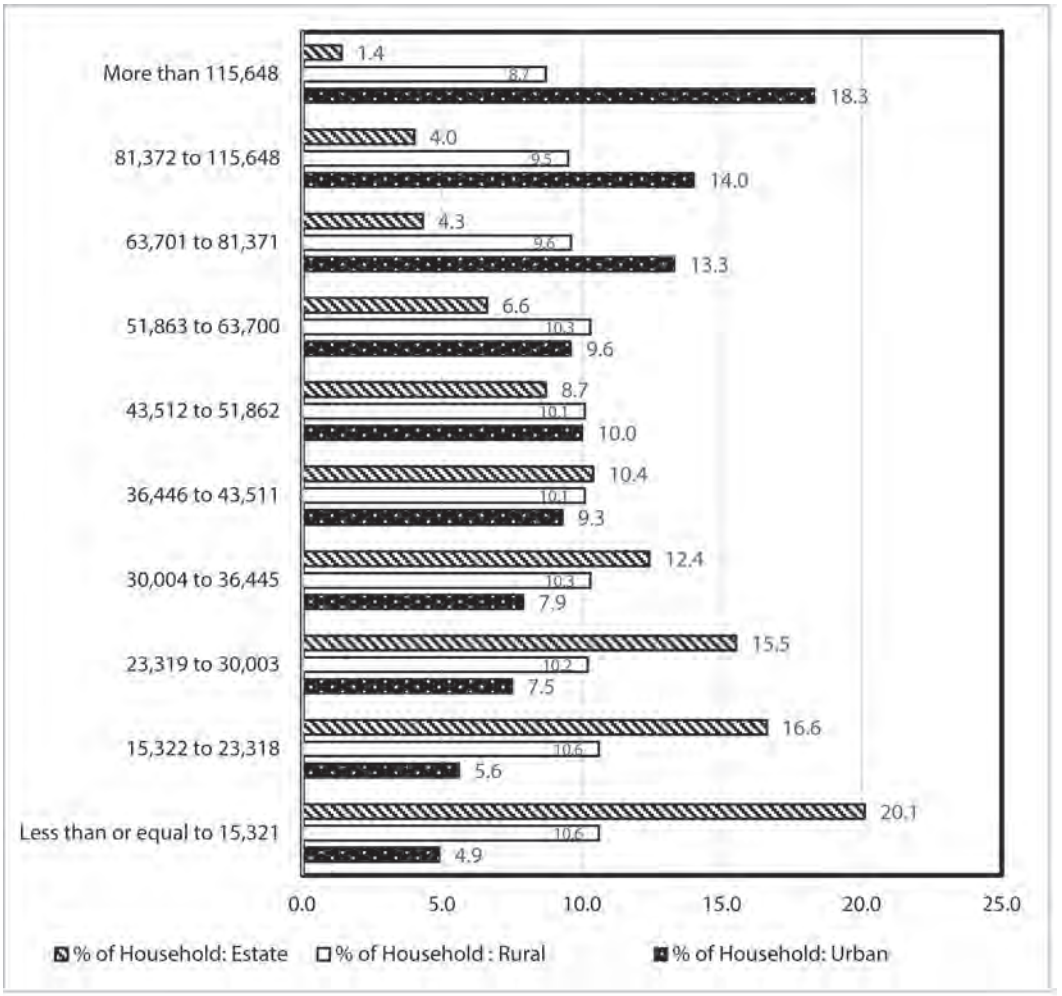
16.5 Regional Variations in Income Inequality

It is important to have a closer look at the income distribution patterns by sectors and also by districts to identify where inequality is highest. Figure 16.2 shows the share of households by national household income deciles, within each sector.

The percentages against each bar for any particular sector, represents the percentage of households within the respective sector under national household income deciles, one to ten (D1 to D10). For example, 18.3 per cent of households

Although the agricultural sector shows relatively slow growth and its contribution to GDP is less than 8 per cent, around 30 per cent of Sri Lanka's employed population is engaged in agriculture. This fact cannot be ignored when developing strategies to reduce poverty and to eradicate extreme poverty.

Figure 16.2
Inequality in Household Income Levels by Sector – 2016: Percentage of Households by National Household Income Deciles and Sectors – 2016



Source: Based on Household Income and Expenditure Survey- and 2012/2013 and 2016, Department of Census and Statistics, Colombo, Sri Lanka.

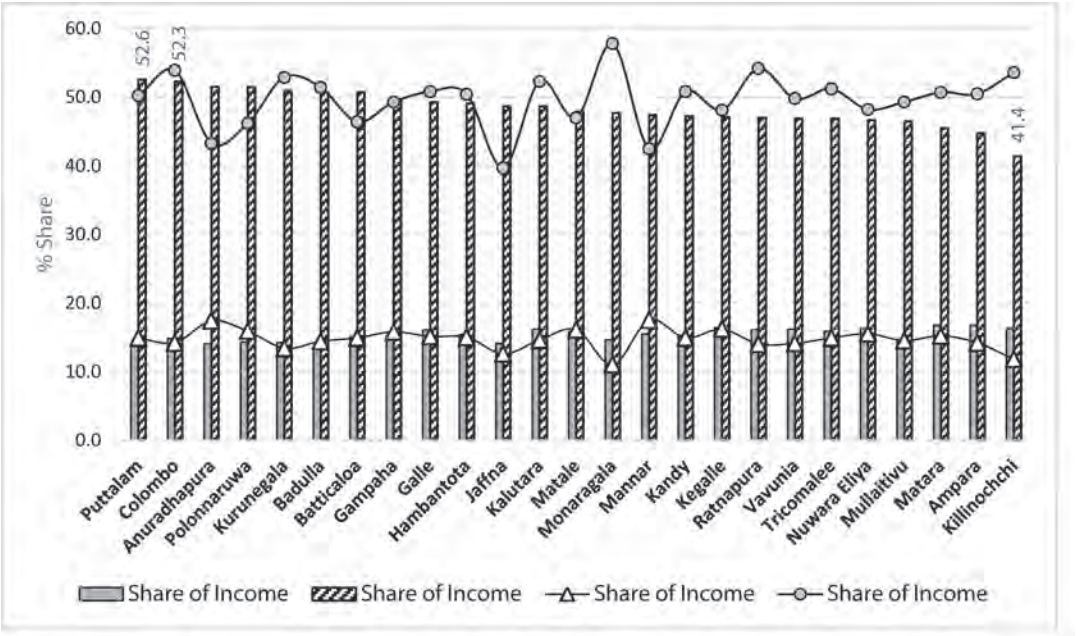
in the urban sector are to be found in the 10th or richest national household income decile. As such, 18.3 per cent of households in the urban sector receive a total household income of more than or equal to Rs. 115,648 per month. On the other hand, only 1.4 per cent of households in the estate sector are within the richest national household income decile. The corresponding figure for the rural sector is 8.7 per cent.

It is also important, to note that 64.6 per cent of the households in the estate sector are among the four poorest national household income deciles, or among the poorest 40 per cent of households in the country. This also shows that 64.6 per cent of households in the estate sector receive a household income of less than Rs. 36,445 per month. The corresponding percentages for rural and urban sectors are 41.1

and 25.5, respectively. Figure 16.2 also shows that 20.1 per cent of households in the estate sector receive a total household income of less than Rs. 15,322 per month. The percentages of households in the rural and urban sectors falling into the poorest national household income decile are 10.1 and 4.9, respectively.

highest in the Puttalam district (52.6 per cent) followed by the Colombo district (52.3 per cent), when the household income distribution within each district is compared using the 'Household Income Deciles' of each district. The share is lowest in the Killinochchi district (41.4 per cent). The share of household income of the richest 20

Figure 16.3
Inequality in Household Income within Districts: Percentage Share of Poorest 40% of Households and Richest 20% of Households by Districts – 2012/2013 and 2016



Note: Based on Household Income Deciles within each District.
Source: Based on Household Income and Expenditure Survey-2012/2013 and 2016, Department of Census and Statistics, Colombo, Sri Lanka.

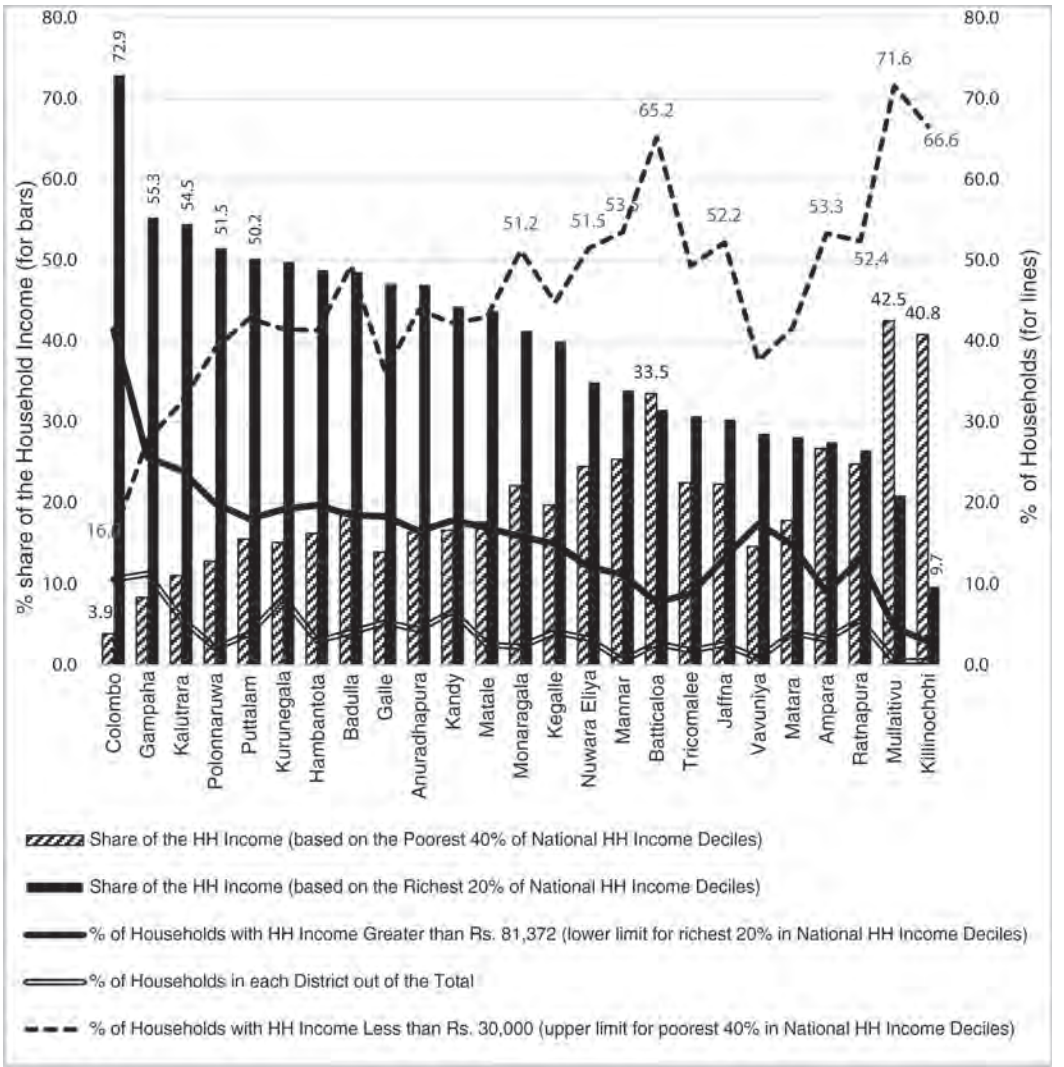
Figure 16.3 compares inequality in household incomes among districts between 2016 and 2012/2013. The two lines represent the percentage shares of household incomes of the poorest 40 per cent of households and the richest 20 per cent of households in 2012/2013. The bars represent the corresponding percentages for 2016. The share of household income in the richest 20 per cent of households in 2016 is

per cent of households has increased in 2016 compared to 2012/2013 in Jaffna, Anuradhapura, Polonnaruwa, Batticaloa, Mannar and Puttalam.

The highest reduction in the share of household income of the richest 20 per cent of households in 2016 compared to 2012/2013 are to be found in the Kilinochchi district (reduced by 12.2 percentage points), followed by the Monaragala

district (reduced by 10.1 percentage points). The highest increase in the share of household income of the poorest 40 per cent of households is also observed in the Kilinochchi district (increased by 4.5 percentage points) and the Monaragala district (increased by 3.6 percentage points). Other districts showing increases are Ampara (by 2.6 percentage points), Ratnapura (by 2.1 percentage points) and Vavuniya (by 2.1 percentage points). In other districts, changes in the share of household income of the poorest 40 per cent of households are marginal, except in Anuradhapura where the share has declined by 3.4 percentage points.

Figure 16.4
Share of Household Incomes and Percentages of Households Falling into Richest 20% and Poorest 40% (Based on the NHIDs) in Districts



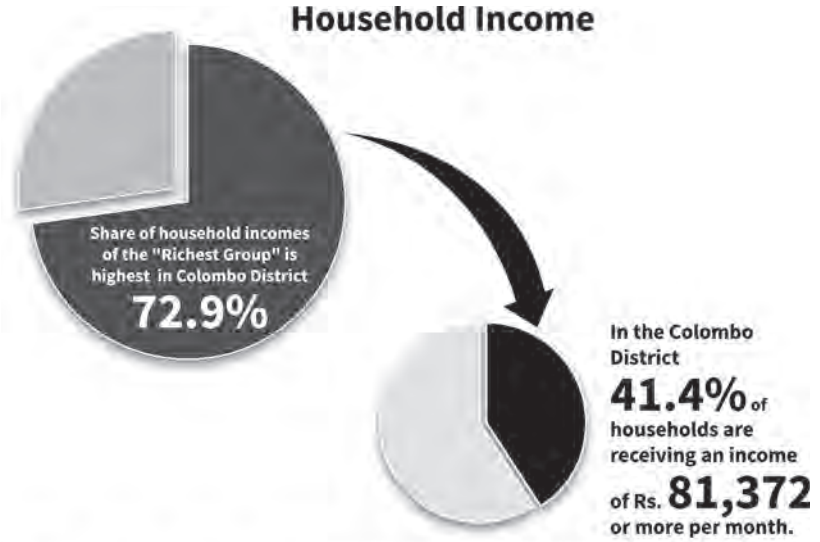
Source: Based on Household Income and Expenditure Survey-2016, Department of Census and Statistics, Colombo, Sri Lanka

Using Household Income Deciles of each district separately is more appropriate to measure inequality within districts. To arrive at the total picture on actual regional variation in the distribution of household incomes and overall patterns in inequality, it is more appropriate to consider National Household Income Deciles (NHIDs). Figure 16.4 shows the household shares and household income shares of the poorest 40 per cent and richest 20 per cent of the NHIDs – i.e. by dividing the households at national level to 10 equal groups, based on the household incomes and applying these deciles to each district.

This allows for a comparison of household incomes of the poor and the rich in each district, relative to the corresponding household incomes at the national level. Therefore, Figure 16.4 provides a clearer picture on district variations in household incomes as all comparisons are done based on the NHIDs, which brings the household income distributions in all districts to a common scale.

When district comparisons are based on the NHIDs, the household income distribution patterns show a completely different picture than the district comparisons done using the Household Income Deciles of each district separately. The latter takes into account only the distribution pattern within each district, while the former provide a more accurate comparison of inequality between districts. As such, the following analysis is based entirely on the NHIDs.

Households receiving a monthly income of Rs. 81,372 or more are in the richest 20 per cent in the NHIDs scale and are considered the 'richest group'. Those households receiving less than Rs. 30,000 in the poorest 40 per cent in the NHIDs scale are considered the 'poorest group'. Based on this classification, as observed in Figure 16.4, the share of household income of the richest group is highest in the Colombo district (72.9 per cent); 41.4 per cent of households in this district are receiving an income of Rs. 81,372 or more per month. Colombo is followed by Gampaha (share of 55.3 per cent and percentage of households



★ *Households receiving a monthly income of Rs. 81,372 or more, which is the lower limit for richest 20% at national level considered the 'Richest Group'.*

at 25.6 per cent), Kalutara (share of 54.5 per cent and percentage of households at 24 per cent), Polonnaruwa (share of 51.6 per cent and percentage of households at 19 per cent) and Puttalam (share of 50.2 per cent and percentage of households at 18 per cent). Figure 16.4 clearly shows that the Puttalam district, which ranked first in terms of the share of household incomes for the richest 20 per cent of households, moves to fifth place when Household Income Deciles for each district are considered separately.

The Killinochchi district has the lowest share of the household income for the 'richest group' (9.7 per cent) and only 2.9 per cent of households fall into this group. A similar situation is observed in the Mullaitivu district as well, with only 4.7 per cent falling into the 'richest group". However, the total share of household income of this group is 20.9 per cent.

The highest percentage of households falling into the 'poorest group', with a monthly household income of less than Rs. 30,000, is in the Mullaitivu district (71.6 per cent) followed by Killinochchi (66.6 per cent) and Batticaloa (65.2 per cent). On the other hand, only 16 per cent of households in the Colombo district fall into the 'poorest group'. But in absolute terms, Colombo has more than five times the number of households in 'poorest group' compared to the corresponding number in Mullaitivu. It should be noted that the percentages of households out of the total number of households in the country are extremely small in districts such as Mullaitivu (0.5 per cent), Killinochchi (0.5 per cent), Mannar (0.5 per cent) and Vavuniya (0.8 per cent). As such, it is important to consider both the percentage as well as the absolute number of households with very low levels of income, when taking any action to improve the conditions of people living in poorer households.

Income inequality needs to be addressed early, to prevent any undesirable consequences in the future, as Sri Lanka has already suffered a number of times due to imbalances in opportunities and wide gaps in income levels and as well as in living standards, between the rich and poor.

16.6 Way Forward

Past trends as seen above indicate that it is not an easy task to reduce income inequality in Sri Lanka although the country has been successful in reducing poverty to an appreciable extent. However, eradicating extreme poverty can still be a challenge, unless effective strategies are developed to precisely identify the poorest and most vulnerable for any interventions to move them out of poverty.

To handle the problem of persistent income inequality, more detailed and in-depth analysis is needed to understand the root causes for the prevailing situation. Income inequality in Sri Lanka needs to be addressed early, to prevent any undesirable consequences in the future, as Sri Lanka has already suffered a number of times due to imbalances in opportunities and wide gaps in income levels and as well as in living standards, between the rich and poor. Priority action needs to be taken on the following:

Ensure access to quality equitable education to all children, regardless of their family income, where they live, their gender or ethnicity or whether they are differently abled. This will help them to develop the skills needed to improve their livelihoods, and thereby to move out of poverty. This can also ensure that the benefits of economic growth are fairly distributed and thereby help reduce income inequality.

In addition to providing access to quality education to all, it is also important to develop the necessary skills which will meet present and future demands, as there is a shortage of skills as well as a mismatch at present. High priority needs to be given to assess the future demand for different skills, which is essential to attract more investors to high-tech industrial ventures in all regions of the country so that

Access to quality equitable education to all children, regardless of their family income, where they live, their gender or ethnicity or whether they are differently-abled should be ensured. This will help them to develop the skills needed to improve their livelihoods, and thereby to move out of poverty.

youth with necessary skills will have employment opportunities in all regions. This will help in minimising regional inequality.

While improving the industrial and service sectors, it is also extremely important to develop the agriculture sector and the living conditions of those engaged in agriculture and related activities. The agriculture sector can play a major role in achieving SDGs 1, 2 and 10, if proper attention is given to develop effective strategies to improve the sector.

Well-designed labour market policies can also help to reduce income inequality; relatively high minimum wages can narrow the distribution of labour income. However, such minimum wages should not impose excessive costs on business, which could dampen its inequality reducing effect.[10]

As the female labour force participation is very low in Sri Lanka, encouraging more women to participate in the labour force can also help in improving their family income and living conditions. Increasing employment opportunities for females in the regions where they reside, flexible working hours, allowing them to work from home in certain types of jobs as in the field of information and communication technology (ITC), may help in attracting more females to the labour force.

The spatial inequalities as seen in Figures 16.2, 16.3 and 16.4, between urban and rural/ estate sectors and across districts, need to be minimised. Where a person lives often determines access to opportunities and therefore to income sources. Further development of infrastructure to improve regional connectivity can reduce spatial inequalities, as it will enhance opportunities for those living in less developed regions to have access to available opportunities in more developed regions.[11]

It is important to ensure that policies formulated and implemented to reduce inequality will not slowdown economic growth, but help in sharing the benefits of growth more equitably.

[10] Based on Asian Development Blog (2017), Responding to income inequality in Asia.

[11] *Ibid.*

APPENDICES

Appendix A: Macroeconomic Indicators (Statistical Base)

Table A1: Socio-Economic Indicators

1. Basic indicator	Unit					
Area:	Sq. km.	65,610				
Mid year population (2017)	('000)	21,444				
Population growth rate (2015)	%	n.a.				
Life expectancy at birth (2015)	years	75				
Infant mortality rate (2015)	per 1000 live births	8.5				
Gross school enrolment ratio (2005)(a)	%	62.7				
Adult literacy rate (2016)	%	93.1				
Human development index (HDI) (2015)	Value	0.766				
Human poverty index (HPI) (2005)	Value	17.8				
2. Output, labour force and employment		**2013**	**2014**	**2015**	**2016(**	**2017e)**
GNP at current market prices	Rs. bn.	8,448	9,545	-	-	-
GDP at current market prices	Rs. bn.	9,592	10,361	10,951	11,907	13,289
GDP per capita at current market prices	US$	3,609	3,821	3,842	3,857	4,065
Labour force (n)(p)	Mn.	8.0 (l)	8.0 (l)	8.2 (l)	8.3 (l)	8.6 (l)
Labour force participation (n)(p)	%	53.7 (l)	53.2 (l)	53.8 (l)	53.8 (l)	54.1 (l)
Unemployment (n)(p)	%	4.4 (l)	4.3 (l)	4.7 (l)	4.4(l)	4.2(l)
3. Real output growth (g)						
GDP	%	3.4	5.0	5.0	4.5	3.1
Agriculture, forestry, and fishing	%	3.2	4.9	4.8	-3.8	-0.8
Mining and quarrying	%	7.6	2.2	-5.2	14.4	5.9
Manufacturing	%	2.3	2.3	4.9	3.2	3.9
Construction	%	7.5	6.6	-2.7	8.3	3.1
Services	%	3.8	5.2	5.7	4.7	3.2
4. Prices & wages						
CCPI (2006/07 = 100) - annual average	% change	6.9	3.3	0.9	3.7	-
CCPI (2013 = 100) - annual average	% change	-	-	2.2	4.0	6.6
NCPI (2013 = 100) annual average	% change	-	-	3.8	4.0	7.7
WPI - anuual average	% change	9.2	3.2	1.0	4.2	-
GNI deflator(g)		6.2	2.9	0.6	4.1	8.3
Real wage rates (q)						
Workers in wages boards trades	% change	-1.2	0.4	1.9	-3.6	-5.9
Government employees	% change	-2.7	6.7	27.0	-0.1	-7.2
5. Consumption, investment, and savings (g)						
Consumption	% of GDP	75.4	75.8	76.4	72.4	70.7
Gross domestic capital formation	% of GDP	33.2	32.3	31.2	35.0	36.5
Gross domestic savings	% of GDP	24.6	24.2	23.6	27.6	29.3
Gross national savings	% of GDP	29.9	29.8	28.8	32.8	33.9
Net Imports of goods and services	% of GDP	-8.6	-8.1	-7.5	-7.3	-7.2
6. Government finance (g)						
Revenue	% of GDP	11.9	11.5	13.3	14.2	13.8
Expenditure & net lending	% of GDP	17.4	17.3	20.9	19.6	19.4
Current expenditure	% of GDP	12.6	12.8	15.5	14.8	14.5
Capital expenditure & net lending	% of GDP	4.8	4.6	5.4	4.8	4.9
Current a/c balance	% of GDP	-0.7	-1.2	-2.3	-0.6	-0.7
Budget deficit						
Primary deficit	% of GDP	-0.8	-1.5	-2.9	-0.2	0.0
Overall deficit (before grants)	% of GDP	-5.4	-5.7	-7.6	-5.4	-5.5
Public debt						
External	% of GDP	30.9	30.0	32.4	34.0	35.5
Domestic	% of GDP	40.0	41.3	45.3	44.9	42.1

	Unit	2013	2014	2015	2016	2017(e)
7. External trade						
Terms of trade	% change	4.6	4.3	2.7	4.0	1.2
Import price index	% change	-4.7	-1.5	-11.8	-5.3	1.2
Export price index	% change	-0.3	2.7	-9.4	-1.5	2.4
Import volume index	% change	-1.5	9.5	10.6	7.0	8.1
Export volume index	% change	6.7	4.3	4.6	-0.7	7.6
8. External finance (g)						
Trade balance	% of GDP	-10.2	-10.4	-10.4	-10.9	-11.0
Current account balance	% of GDP	-3.4	-2.5	-2.3	-2.1	-2.6
Capital & financial account balance	% of GDP	-4.0	-1.9	-2.8	-2.6	-2.5
Foreign direct investments	% of GDP	-1.2	-1.0	-0.8	-0.8	-1.6
Foreign portfolio investments	% of GDP	0.3	0.2	-0.1	0.0	0.4
Import capacity	Months of imports (d)	5.7	6.1	5.9	5.3	6.0
External debt	% of GDP	53.7	54.1	55.7	56.8	59.5
Debt-service ratio	% of exports	26.8	21.7	28.2	25.6	23.9
9. Exchange rates (year end)						
U.S.A.	Rs./US$	130.8	131.0	144.1	149.8	152.9
U.K.	Rs./UK Pound	215.6	204.0	213.6	184.0	205.5
Japan	Rs./Yen	1.2	1.1	1.2	1.3	1.4
European Union	Rs./Euro	180.5	159.4	157.4	157.9	182.5
India	Rs./Rs. Indian	2.1	2.1	2.2	2.2	2.4
SDR	Rs./SDR	201.4	189.9	199.6	201.4	217.7
10. Money supply						
Narrow money supply (M1)	% change	7.7	26.3	16.8	8.6	2.1
Broad money supply (M2)	% change	16.7	13.4	17.8	18.4	16.7
Domestic credit	% change	13.7	10.5	23.5	16.4	12.5
External banking assets	% change	-195.5	119.8	-2071.2	22.4	152.6
11. Interest rates						
Treasury bill yield rates						
3 month	% per annum	7.5	5.7	6.5	8.7	7.7
12 months	% per annum	8.3	6.0	7.3	10.2	8.9
Call money rates	% per annum	7.7	6.2	6.4	8.4	8.2
Average prime lending rate	% per annum	10.1	6.3	7.5	11.5	11.6
Commercial banks saving	% per annum	9.1	8.0	8.0	9.0	9.5
NSB saving	% per annum	5.0	5.0	5.0	4.3	4.0
Commercial banks fixed deposits	% per annum	16.0	12.0	15.0	15.0	15.0
NSB fixed deposits	% per annum	9.5	6.5	7.3	11.0	11.0
12. Share Market Indicators						
Annual turnover	Rs. bn.	200.5	340.9	253.3	176.9	220.6
Companies listed	No.	289	294	294	295	
Market capitalisation	Rs. bn.	2,460	3,105	2,938	2,745	2,899
Net purchases by non-nationals	Rs. mn.	22,783	21,217	-5,372	338	17,655
Share price indices						
CSE share	(Index, 1985 = 100)	5,912.8	7,299.0	6,894.5	6,228.3	6,369.3
CSE sensitive(f)	(Index, 1998 Dec = 1000)	-	-	-	-	-
	(Index, 2004 Dec = 1000)	3,263.9	4,089.1	3,625.7	3,496.4	3,671.7

Notes:
(a): Combined first, second, and third level gross enrolment ratio.
(b): Excluding Northern and Eastern Provinces.
(c): Average of four quarters.
(d): Months of same year imports.
(e): Provisional.
(f): The Milanka Price Index(MPI) was introduced in Janaury 1999, to replace the Sensityive Price Index. With effect from 1 January 2013, the MPI was replaced by S&P SL 20 index.
(g): From 2003, data are based on GDP estimates compiled by the Department of Census and Statistics and from 2010 onwards rebased GDP estimates (base year 2010) have been used.
(h): Excluding Northern Province.
(i): Excluding Mullaitivu and Killinochchi districts.
(j): From 2007 onwards, trade indices have been calculated with a wider coverage using 2010 as the base year.
(k): Estimates from 2006 onwards are based on National Accounts data of the Department of Census and Statistics.
(l): Data covers the entire island.
(m): The rebased CCPI (2006/07 = 100) has replaced CCPI (2002 = 100) from 2011.
(n): In July 2016, Department of Census and Statistics published a re-weighted and revised labour force data series for 2011 onwards.
(p): Data up to 2011 for household population aged 10 and above while that of 2012 onwards for those aged 15 and above.
(q): Real wage rate indices for government employees are based on NCPI (2013 = 100) and real wage rate index for workers in wages boards trades is based on CCPI (2006/07 = 100).
(r): The data is based on the base year 2010 GDP estimates of the Department of Census and Statistics.

Sources: IPS database; Central Bank of Sri Lanka, *Annual Report*, various issues; Colombo Stock Exchange, *Annual Report*, various issues
Dept. of Census and Statistics, *Quarterly Report of the Sri Lanka Labour Force Survey*, various issues.

Table A2: Gross Domestic Product (GDP), Mid-year Population (POP), Per Capita GDP (PGDP), and their Growth Rates, 1995-2017

	Constant Prices (c)			Growth Rates		
	GDP	PGDP	POP(b)	GDP	PGDP	POP
	Rs. mn.	Rs.mn.	('000)			
1995	670,742.2	36,984.0	18,136	5.5	4.0	1.4
1996	695,934.0	37,954.5	18,336	3.8	2.6	1.1
1997	739,763.0	39,840.7	18,568	6.3	5.0	1.3
1998	774,796.0	41,247.7	18,784	4.7	3.5	1.2
1999	808,340.0	42,419.2	19,056	4.3	2.8	1.4
2000	857,035.0	44,866.2	19,102	6.0	5.8	0.2
2001	843,794.0	44,889.8	18,797	-1.5	0.1	-1.6
2002	877,284.0	46,365.6	18,921	4.0	3.3	0.7
2003(c)	1,733,222.0	90,399.1	19,173	5.9	4.6	1.3
2004	1,827,597.0	94,036.4	19,435	5.4	4.0	1.4
2005	1,941,671.0	98,843.0	19,644	6.2	5.1	1.1
2006	2,090,548.0	105,274.9	19,858	7.7	6.5	1.1
2007	2,232,656.0	111,415.5	20,039	6.8	5.8	1.2
2008	2,365,501.0	116,837.9	20,246	6.0	4.9	1.1
2009	2,449,214.0	119,613.9	20,476	3.5	2.4	1.1
2010	6,413,668.0	310,213.7	20,675	8.0	7.0	1.0
2011	6,952,720.0	332,793.4	20,892	8.4	7.3	1.0
2012	7,588,517.0	371,530.8	20,425	9.1	11.6	0.9
2013	7,846,202.0	381,161.1	20,585	3.4	2.6	0.8
2014	8,235,429.0	396,486.9	20,771	5.0	4.0	0.9
2015	8,647,833.0	412,469.4	20,966	5.0	4.0	0.9
2016	9,034,290.0	426,085.5	21,203	4.5	3.3	1.1
2017(d)	9,315,488.0	434,410.0	21,444	3.1	2.0	1.1

Notes: (a): Up to 2002 data are based on 1996 prices, from 2003 onwards data are based on 2002 prices and from 2010 onwards data are based on 2010 prices.

(b): From 2001 figures are based on Census of Population and Housing - 2001.
From 2012 figures are based on Census of Population and Housing - 2012.
From 2014 figures are provisional.

(c): From 2003, data are based on GDP estimates compiled by the Department of Census and Statistics and from 2010 onwards rebased GDP estimates (base year 2010) have been used.

(d): Provisional.

Source: Central Bank of Sri Lanka, *Annual Report*, various issues.

Table A3: Structure and Growth of Output, 2011-2017

	Unit	2011	2012	2013	2014	2015	2016	2017(a)
1. Structural of output								
Agriculture, forestry and fishing	% of total output	8.2	7.8	7.8	7.8	7.7	7.1	6.9
Manufacturing, mining and quarrying and other industries	% of total output	20.7	20.0	20.0	19.5	19.3	19.4	19.6
Construction	% of total output	6.1	6.8	7.1	7.4	6.9	7.1	7.1
Wholesale and retail trade, transportation and storage, accommodation and	% of total output	23.6	23.6	23.5	23.1	23.2	23.1	22.9
food service activities		0.5	0.5	0.5	0.5	0.6	0.6	0.6
Information and communication	% of total output	10.2	10.6	11.1	11.4	12.3	12.9	13.4
Financial and insurance activities and real estate activities	% of total output	11.1	11.7	12.3	12.2	11.9	11.5	11.5
(including ownership of dwelling)		9.5	9.6	8.7	8.8	8.7	8.7	8.3
Professional services and other personal service activities	% of total output							
Public administration, defense, education, human health and social work activities	% of total output							

	Unit	2011/10	2012/11	2013/12	2014/13	2015/14	2016/15	2017/16(a)
2. Real output growth								
Agriculture, forestry and fishing	% growth	4.6	3.9	3.2	4.6	4.7	-3.8	-0.8
Manufacturing, mining and quarrying and other industries	% growth	5.1	5.5	2.9	2.6	4.0	4.9	4.2
Construction	%growth	26.3	21.2	7.5	10.6	-2.5	8.3	3.1
Wholesale and retail trade, transportation and storage, accommodation andes	% growth	12.6	9.1	2.7	3.5	5.1	4.0	2.5
food service activiti		6.8	8.5	7.7	11.6	11.0	8.0	10.2
Information and communication	% growth	9.3	13.1	8.8	7.5	13.4	9.2	7.0
Financial and insurance activities and real estate activities	% growth	9.4	15.0	9.0	4.2	2.2	0.9	3.3
(including ownership of dwelling)		0.0	10.2	-5.5	5.5	3.6	4.9	-1.2
Professional services and other personal service activities	% growth	8.4	9.1	3.4	5.0	5.0	4.5	3.1
Public administration, defense, education, human health and social work activities	% growth							
GDP	% growth							

Notes: (a): Provisional.

Source: Department of Census and Statistics, National Accounts of Sri Lanka.

Table A4: Value Added in Industry and Industrial Production, 2011-2017

	2011	2012	2013	2014	2015	2016	2017(a)
1. Value added, current prices (Rs. mn.)							
Food, beverages & tobacco products	604,367	798,849	801,748	759,354	823,461	866,921	976,820
Textiles, wearing apparel and leather related products	289,134	346,377	365,685	415,363	399,291	402,540	477,409
Wood and of products of wood and cork except furniture	28,203	23,397	27,365	22,269	29,023	27,771	24,793
Paper products, printing and reproduction of media production	28,325	26,989	28,261	36,585	39,575	43,487	44,682
Coke and refined petroleum products	5,872	40,339	66,064	66,690	20,399	5,049	4,688
Chemical products and basic pharmaceutical products	41,293	54,254	62,740	74,134	73,804	87,444	87,769
Rubber and plastic products	66,871	85,188	74,995	77,754	81,853	94,206	107,076
Basic metals and fabricated metal products	29,705	32,086	34,300	33,635	39,298	53,537	68,943
Machinery and transport equipment	34,119	33,735	34,584	33,421	46,309	51,049	62,953
Electricity, gas, steam and air conditioning supply	67,665	78,833	90,539	77,639	82,966	86,874	88,102
Construction	451,714	621,140	715,455	813,689	830,412	934,706	1,027,860
Total	1,647,268	2,141,187	2,301,736	2,410,533	2,466,391	2,653,584	2,971,095
2. Composition of industrial production (%)							
Food, beverages & tobacco products	36.7	37.3	34.8	31.5	33.4	32.7	32.9
Textiles, wearing apparel and leather related products	17.6	16.2	15.9	17.2	16.2	15.2	16.1
Wood and of products of wood and cork, except furniture	1.7	1.1	1.2	0.9	1.2	1.0	0.8
Paper products, printing and reproduction of media prod	1.7	1.3	1.2	1.5	1.6	1.6	1.5
Coke and refined petroleum products	0.4	1.9	2.9	2.8	0.8	0.2	0.2
Chemical products and basic pharmaceutical products	2.5	2.5	2.7	3.1	3.0	3.3	3.0
Rubber and plastic products	4.1	4.0	3.3	3.2	3.3	3.6	3.6
Basic metals and fabricated metal products	1.8	1.5	1.5	1.4	1.6	2.0	2.3
Machinery and transport equipment	2.1	1.6	1.5	1.4	1.9	1.9	2.1
Electricity, gas, steam and air conditioning supply	4.1	3.7	3.9	3.2	3.4	3.3	3.0
Construction	27.4	29.0	31.1	33.8	33.7	35.2	34.6
Total	100	100	100	100	100	100	100

Notes: (a): Provisional.

Source: Central Bank of Sri Lanka, *Annual Reports*, various issues.

Table A5: Major Agricultural Crops, Production and Prices, 1995-2017

	Tea			Rubber			Coconut		Paddy	
	Production	Price		Production	Price		Production	Price(a)	Production	Price(b)
	Mn. kg.	Colombo (net) Rs/kg.	Export (f.o.b.) Rs/kg.	Mn. kg.	Colombo (RSS 1) Rs/kg.	Export (f.o.b.) Rs/kg.	Mn.nut	Rs./nut	'000 Mt	Rs./bushel(c)
1995	245.9	72.2	102.3	105.7	72.0	83.7	2,755	6.08	2,810	155.00
1996	259.0	103.9	139.6	112.5	67.9	79.7	2,546	9.42	2,061	155.00
1997	277.4	119.4	158.4	105.8	56.7	75.4	2,631	9.63	2,239	155.00
1998	280.7	134.4	184.9	95.7	49.8	67.7	2,504	8.31	2,692	155.00
1999	284.2	115.3	162.4	96.6	45.4	53.7	2,828	9.95	2,857	155.00
2000	306.8	135.5	184.7	87.6	54.9	66.9	3,096	7.35	2,860	155.00
2001	296.3	144.0	208.9	86.2	54.8	66.2	2,796	7.05	2,695	-
2002	310.6	149.3	216.3	90.5	68.8	69.5	2,392	12.06	2,859	-
2003	304.8	149.1	221.0	92.0	93.6	105.3	2,562	9.98	3,071	-
2004	309.4	180.7	248.4	94.7	127.2	127.3	2,591	11.03	2,628	-
2005	317.2	185.8	263.8	104.4	141.0	148.0	2,515	13.04	3,246	-
2006	310.8	198.9	280.0	109.2	202.2	204.7	2,785	12.08	3,342	-
2007	305.2	279.1	364.3	117.6	234.2	234.5	2,869	16.26	3,131	-
2008	318.7	301.6	430.6	129.2	269.5	278.4	2,909	23.46	3,875	-
2009	291.0	360.8	470.1	136.9	211.7	202.3	2,853	18.23	3,652	-
2010	331.4	371.5	496.3	152.9	403.0	377.5	2,584	24.64	4,301	-
2011	327.5	360.7	510.4	158.2	508.8	535.4	2,808	39.15	3,894	-
2012	328.4	392.4	563.9	152.0	416.5	420.7	2,940	28.80	3,846	-
2013	340.0	445.8	623.9	130.4	376.9	389.9	2,513	29.36	4,621	-
2014	338.0	459.0	649.4	98.6	286.1	362.8	2,870	39.08	3,381	-
2015	328.8	401.5	593.1	88.6	248.2	342.0	3,056	54.54	4,819	-
2016	292.6	473.2	639.9	79.1	239.3	294.3	3,011	41.16	4,420	-
2017(d)	307.7	620.4	807.4	83.1	336.7	343.6	2,450	62.03	2,383	-

Notes: (a): Average export price of the three major coconut products only.
(b): Guaranteed price.
(c): 20.9 kg. of paddy = 1 bushel of paddy.
(d): Provisional.

Source: Central Bank of Sri Lanka, *Annual Report*, various issues.

Table A6: Labour Force Participation of the Household Population All Island, 2005-2017

	Household population (10 yrs. & over)	Labour force	Labour force participation	Labour force			
				Employed		Unemployed	
	No. mn.	No. mn.	rate (%)	No. mn.	Rate	No. mn.	Rate
2005 (c)	16.9	8.1	48.3	7.5	92.3	0.6	7.7
2006 (d)							
q1	14.8	7.6	51.7	7.1	92.8	0.5	7.2
q2	14.8	7.5	51.1	7.1	93.7	0.5	6.3
q3	15.0	7.6	50.7	7.1	93.6	0.5	6.4
q4	15.0	7.6	51.0	7.1	93.7	0.5	6.3
2007(d)							
q1	15.0	7.5	49.8	7.0	93.8	0.5	6.2
q2	15.0	7.4	49.0	6.9	93.5	0.5	6.5
q3	15.0	7.5	50.2	7.1	94.4	0.4	5.6
q4	15.1	7.6	50.1	7.2	94.5	0.4	5.5
2008 (a)							
q1	16.3	8.0	49.1	7.6	94.9	0.4	5.1
q2	16.3	8.0	49.0	7.6	94.5	0.4	5.5
q3	16.3	8.2	50.3	7.7	94.5	0.4	5.5
q4	16.4	8.2	49.7	7.7	94.6	0.4	5.4
2009 (a)							
q1	16.6	8.2	49.2	7.7	94.5	0.5	5.5
q2	16.5	8.0	48.3	7.5	93.8	0.5	6.2
q3	16.7	8.1	48.7	7.6	94.1	0.5	5.9
q4	16.6	8.1	48.5	7.6	94.3	0.5	5.7
2010 (a)							
q1	16.9	8.1	48.2	7.7	95.0	0.4	5.0
q2	16.8	8.1	47.9	7.6	94.6	0.4	5.4
q3	16.8	8.0	47.4	7.6	95.1	0.4	4.9
q4	17.0	8.3	48.8	7.9	95.5	0.4	4.5
2011 (a)							
q1	16.9	8.1	48.0	7.8	95.7	0.3	4.3
q2	17.2	8.3	48.3	8.0	95.8	0.4	4.2
q3	17.1	8.3	48.3	7.9	96.1	0.3	3.9
q4 (f)	-	-	-	-	-	-	-
2012 (e)							
q1 (f)	-	-	-	-	-	-	-
q2	17.8	8.3	46.4	7.9	96.1	0.3	3.9
q3	17.8	8.4	47.2	8.1	95.9	0.3	4.1
q4	18.1	8.7	48.1	8.4	96.1	0.3	3.9
2013 (e)(g)							
q1	16.4	8.9	54.2	8.5	95.4	0.4	4.6
q2	16.4	8.9	54.2	8.5	95.6	0.4	4.4
q3	16.4	8.8	53.8	8.4	95.6	0.4	4.4
q4	16.4	8.7	53.0	8.3	95.9	0.4	4.1
2014 (e)							
q1	16.4	8.8	53.4	8.4	95.9	0.4	4.1
q2	16.5	8.8	53.6	8.4	95.5	0.4	4.5
q3	16.6	8.9	53.2	8.5	95.8	0.4	4.2
q4	16.6	8.8	52.9	8.4	95.6	0.4	4.4
2015 (e)							
q1	16.6	8.9	53.6	8.5	95.3	0.4	4.7
q2	16.6	9.0	54.3	8.6	95.5	0.4	4.5
q3	16.7	9.0	53.8	8.6	95.0	0.5	5.0
q4	16.7	8.9	53.6	8.6	95.7	0.4	4.3
2016 (e)							
q1	15.4	8.3	54.1	8.0	95.8	0.3	4.2
q2	15.4	8.2	53.3	7.8	95.4	0.4	4.6
q3	15.6	8.4	53.8	8.0	95.5	0.4	4.5
q4	15.5	8.4	54.0	8.0	95.8	0.3	4.2
2017 (e)							
q1	15.7	8.6	54.7	8.2	95.9	0.4	4.1
q2	15.8	8.5	53.9	8.1	95.5	0.4	4.5
q3	15.9	8.5	53.6	8.2	95.8	0.4	4.2
q4	16.0	8.6	54.1	8.3	96.0	0.3	4.0

Notes: Up to 4th quarter 2002, data excludes both Northern and Eastern provinces.
(a) Including Eastern province but excluding Northern province.
(b) Excluding Vavunia, Mullaitivu, Kilinochchi districts.
(c) Quarterly labour force survey was conducted as a one off survey in August 2005.
(d) Excluding Northern & Eastern provinces.
(e) All the districts are included.
(f) Labour Force Survey was not conducted for this quarter.
(g) All persons of age 10 years and over are considered to be in the working age (Labour Force), before 2013. However, this was changed as age 15 and over from 2013 onward.

Source: Department of Census and Statistics, *Quarterly Report of the Sri Lanka Labour Force*.

Table A7: Gross Domestic Fixed Capital Formation, 1995-2017

	Private(a)	Public(b)	Total	Private(a)	Public(b)	Total	Private(a)	Public(b)	Total	Private(a)	Public(b)	Total
	(Rs. mn., current market prices)			(As % of GDP)			(At constant prices(c)(d))			(Growth in real terms)		
1995	147,280	23,595		22.1	3.5		1651.1	264.5		-0.6	23.6	
1996	160,181	23,328		20.9	3.0		1601.8	233.3		-3.0	-11.8	
1997	186,950	29,923		21.0	3.4		1721.5	275.5		7.5	18.1	
1998	221,754	33,960		21.8	3.3		1882.5	288.3		9.4	4.6	
1999	266,518	35,210		24.1	3.2		2165.1	286.0		15.0	-0.8	
2000	311,460	41,132		24.8	3.3		2372.1	313.3		9.6	9.5	
2001	267,298	42,346		19.0	3.0		1811.0	286.9		-23.7	-8.4	
2002	298,731	31,812		18.9	2.0		1867.1	198.8		3.1	-30.7	
2003e)	318,909	46,285		17.5	2.5		1896.0	275.2		1.6	38.4	
2004	422,060	51,262		20.2	2.5		2306.3	280.1		21.6	1.8	
2005	478,917	94,347		19.5	3.8		2369.7	466.8		2.7	66.7	
2006	624,972	105,938		21.3	3.6		2778.9	471.0		17.3	0.9	
2007	714,084	170,604		20.0	4.8		2785.0	665.4		0.2	41.3	
2008	852,708	262,602		19.3	6.0		2858.6	880.3		2.6	32.3	
2009	838,629	308,811		17.3	6.4		2655.6	977.9		-7.1	11.1	
2010(f)	-	-	1,522,847			23.7	-	-	4,493	-	-	-
2011	-	-	1,896,225			26.3	-	-	5,390	-	-	20.0
2012	-	-	2,533,056			29.0	-	-	6,497	-	-	20.5
2013	-	-	2,809,789			29.3	-	-	6,782	-	-	4.4
2014	-	-	2,874,377			27.7	-	-	6,743	-	-	-0.6
2015	-	-	2,814,288			25.7	-	-	6,559	-	-	-2.7
2016	-	-	3,175,779			26.7	-	-	7,111	-	-	8.4
2017(g)	-	-	3,502,124			26.4	-	-	7,245	-	-	1.9

Notes: (a): Private sector and public corporations.
(b): Government and public enterprises.
(c): Current series deflated by GDP deflator.
(d): Up to 1995 data are based on 1982 prices. From 1996-2002 data are based on 1996 prices. 2003-2009 data are based on 2002 prices. 2010 onwards data are based on 2010 prices
(e): From 2003, data are based on GDP estimates compiled by the Department of Census and Statistics.
(f): From 2010, data are based on the base year 2010 GDP estimates of the Department of Census and Statistics.
(g): Provisional.

Source: Central Bank of Sri Lanka, *Annual Report*, various issues.

Table A8: Saving and Investment, 2003-2017

	2003 (c)	2004	2005	2006	2007	2008	2009	2010(d)	2011	2012	2013	2014	2015	2016	2017(a)
(As % of GDP)															
Gross domestic capital formation	22.0	25.3	26.8	28.0	28.0	27.6	24.4	30.4	33.4	39.1	33.2	32.3	31.2	35.0	36.5
Gross domestic savings	16.0	16.4	17.9	17.0	17.6	13.9	17.9	23.1	20.2	27.2	24.6	24.2	23.6	27.6	29.3
Net imports of goods and non-factor services (b)	6.0	8.8	8.9	11.0	10.4	13.7	6.5	-7.3	-13.2	-11.9	-8.6	-8.1	-7.5	-7.3	-7.2
Net factor income from abroad	-0.9	-1.0	-1.2	-1.4	-1.1	-2.4	-1.2	-1.1	-1.0	-1.8	-2.4	-2.3	-2.5	-2.7	-2.7
Net private transfers	6.4	6.5	7.1	6.7	6.8	6.3	7.0	6.5	7.1	7.9	7.6	7.8	7.7	7.9	7.2
Gross national savings	21.5	22.0	23.8	22.3	23.3	17.8	23.7	28.5	26.3	33.3	29.9	29.8	28.8	32.8	33.9
Foreign savings	5.5	5.6	5.9	5.3	5.7	3.9	5.8	5.4	6.1	6.1	5.3	5.6	5.2	5.2	4.6

Notes: (a): Provisional.
(b): Also referred to as external inflow or the resources gap.
(c): From 2003, data are based on GDP estimates compiled by the Department of Census and Statistics.
(d): From 2010 ,data are based on the base year 2010 GDP estimates of the Department of Census and Statistics.

Sources: IPS database; Central Bank of Sri Lanka, *Annual Report,* various issues.

Table A9: Summary of Government Fiscal Operations, 2005-2017

(As % of GDP)	2005	2006	2007	2008	2009	2010(d)	2011	2012	2013	2014	2015	2016	2017(b)
Revenue	16.1	16.3	15.8	14.9	14.5	14.6	14.3	13.9	13.1	11.4	13.3	14.2	13.8
Grants	1.4	1.0	0.9	0.7	0.5	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Expenditure													
Current expenditure	18.7	18.6	17.4	16.9	18.2	16.7	15.4	14.9	13.9	12.7	15.5	14.8	14.5
Capital & net lending	6.0	5.6	6.1	5.7	6.7	6.1	6.0	5.6	5.4	4.5	5.4	4.8	4.9
Current account balance	-2.7	-2.4	-1.6	-2.0	-3.7	-2.1	-1.1	-1.0	-0.8	-1.2	-2.3	-0.6	-0.7
Primary deficit	-3.6	-2.9	-2.6	-2.2	-3.5	-1.7	-1.4	-1.1	-0.8	-1.5	-2.9	-0.2	0.0
Overall deficit (before grants)	-8.7	-8.0	-7.7	-7.7	-9.9	-8.0	-6.9	-6.5	-5.9	-5.7	-7.6	-5.4	-5.5
Financing budget deficit													
Foreign financing	2.0	1.4	2.8	-0.1	4.8	4.4	3.4	3.8	1.4	2.0	2.2	3.3	3.3
Domestic financing	5.2	5.6	3.6	7.1	5.1	3.6	3.5	2.7	4.5	3.6	5.4	2.1	2.2
Market borrowings	5.0	5.6	3.6	7.0	4.9	3.4	3.6	2.7	4.4	3.8	5.4	2.1	1.9
Bank	1.1	2.7	0.4	4.4	1.0	-	2.9	1.7	3.4	1.2	2.7	1.2	1.4
Non-bank	3.9	2.9	3.1	2.6	3.8	3.5	0.7	0.9	1.0	2.5	2.7	0.9	0.5
Other borrowings	0.2	-	-	0.1	0.2	0.2	-0.1	-	0.1	-0.1	-	-	0.3
Privatisation proceeds(a)	-	-	-	-	-	-	-	-	-	-	-	-	

Notes: (a): Since 1994, privatization proceeds have been shifted from the capital expenditure and net lending category to the financing section.
(b): Provisional.
(c): From 2003, data are based on GDP estimates compiled by the Department of Census and Statistics.
(d): From 2010 ,data are based on the base year 2010 GDP estimates of the Department of Census and Statistics.

Source: Central Bank of Sri Lanka, *Annual Report,* various issues.

Table A10: Money Supply and Underlying Factors, 1998-2017

	Unit	1998	1999	2000	2001	2002	2003(b)	2004	2005	2006	2007
1. Financial depth											
Narrow Money Supply	M1/GDP	9.5	9.8	9.4	8.7	8.8	8.9	9.0	9.4	8.8	7.4
Broad Money Supply	M2/GDP	31.1	32.4	32.2	32.0	32.3	31.9	32.9	33.6	33.8	32.1
2. Monetary Expansion/Contraction											
Narrow Money Supply	% growth	12.1	12.8	9.1	3.2	14.0	16.0	16.6	22.4	12.6	2.7
Broad Money Supply	% growth	9.7	13.3	13.0	11.4	13.2	13.8	18.5	19.6	20.7	15.6
3. Causal Factors											
3.1 External Banking Assets	Rs. mn.	93,724	83,892	59,448	80,019	101,717	129,487	129,152	167,147	185,005	225,989
	% growth	5.0	-10.5	-29.1	34.6	27.1	27.3	-0.3	29.4	10.7	22.2
3.2 Domestic Credit	Rs. mn.	369,517	432,888	549,927	638,876	680,396	731,872	895,942	1,067,385	1,382,004	1,607,786
	% growth	14.4	17.1	27.0	16.2	6.5	7.6	22.4	19.1	29.5	16.3
3.2.1 to Government	Rs. mn.	64,618	93,915	147,304	201,311	192,994	176,236	220,462	249,565	357,289	374,100
	% growth	42.8	45.3	56.8	36.7	-4.1	-8.7	25.1	13.2	43.2	4.7
3.2.2 to Private Sector	Rs. mn.	294,868	325,927	364,369	396,754	444,371	519,444	634,310	801,149	993,159	1,184,519
	% growth	12.0	10.5	11.8	8.9	12.0	16.9	22.1	26.3	24.0	19.3
3.3 Other Liabilities	Rs. mn.	-97,425	-106,660	-136,035	-163,867	-168,544	-181,111	-207,515	-246,438	-348,644	-431,759
	% growth	-22.0	-9.5	-27.5	-20.5	-2.9	-7.5	-14.6	-18.8	-41.5	-23.8

Contd..

	Unit	2008	2009	2010(c)	2011	2012	2013	2014	2015	2016	2017(a)
1. Financial depth											
Narrow Money Supply	M1/GDP	**6.3**	**7.0**	**6.3**	**6.1**	**5.2**	**5.1**	**5.9**	**6.5**	**6.5**	**6.0**
Broad Money Supply	M2/GDP	**29.1**	**31.8**	**28.3**	**30.4**	**29.7**	**31.9**	**33.4**	**37.1**	**40.5**	**42.6**
2. Monetary Expansion/Contraction											
Narrow Money Supply	% growth	**4.0**	**21.4**	**20.9**	**7.7**	**2.6**	**7.7**	**26.3**	**16.8**	**8.6**	**2.1**
Broad Money Supply	% growth	**11.7**	**19.9**	**18.0**	**20.9**	**18.3**	**18.0**	**13.1**	**17.2**	**18.9**	**17.5**
3. Causal Factors											
3.1 External Banking Assets	Rs. mn.	**88,760**	**358,554**	**390,284**	**150,916**	**112,395**	**133,808**	**318,203**	**206,923**	**167,111**	**534,863**
	% growth	**-60.7**	**304.0**	**8.8**	**-61.3**	**-25.5**	**19.1**	**137.8**	**-35.0**	**-19.2**	**220.1**
3.2 Domestic Credit	Rs. mn.	**1,897,500**	**1,907,748**	**2,262,861**	**3,037,970**	**3,696,131**	**4,200,783**	**4,640,146**	**5,732,034**	**6,671,677**	**7,504,715**
	% growth	**18.0**	**0.5**	**18.6**	**34.3**	**21.7**	**13.7**	**10.5**	**23.5**	**16.4**	**12.5**
3.2.1 to Government	Rs. mn.	**582,907**	**640,326**	**627,185**	**833,610**	**1,045,232**	**1,301,342**	**1,435,900**	**1,759,492**	**1,972,133**	**2,168,517**
	% growth	**55.8**	**9.9**	**-2.1**	**32.9**	**25.4**	**24.5**	**10.3**	**22.5**	**12.1**	**10.0**
3.2.2 to Private Sector	Rs. mn.	**1,267,601**	**1,194,189**	**1,491,099**	**2,005,860**	**2,358,421**	**2,534,343**	**2,758,199**	**3,449,577**	**4,204,430**	**4,821,837**
	% growth	**7.0**	**-5.8**	**24.9**	**34.5**	**17.6**	**7.5**	**8.8**	**25.1**	**21.9**	**14.7**
3.3 Other Liabilities	Rs. mn.	**-452,423**	**-503,460**	**-548,895**	**-644,287**	**-741,230**	**-706,605**	**-779,418**	**-867,954**	**-1,034,843**	**-1,318,191**
	% growth	**-4.8**	**-11.3**	**-9.0**	**-17.4**	**-15.0**	**4.7**	**-10.3**	**-11.4**	**-19.2**	**-27.4**

Notes: (a): Provisional; (b): From 2003, data are based on GDP estimates compiled by the Department of Census and Statistics; (c): From 2010, data are based on the base year 2010 GDP estimates of the Department of Census and Statistics.

Source: Central Bank of Sri Lanka, *Annual Report*, various issues.

Table A11: Interest Rates, 2004-2017

(%, end of period)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017(a)
Bank rate	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Treasury bills, yield rates														
3 month	7.25	10.10	12.80	21.30	17.33	7.73	7.24	8.68	10.00	7.54	5.74	6.45	8.72	7.69
12 month	7.65	10.37	12.96	19.96	19.12	9.30	7.55	9.31	11.69	8.29	6.01	7.30	10.17	8.90
Repurchase rate	7.50	8.75	10.00	10.50	10.50	7.50	7.25	7.00	7.50	6.50	6.50	6.00	7.00	7.25
Call money rate														
Maximum	10.63	10.98	15.13	40.00	20.00	9.05	8.35	9.10	9.85	7.75	6.50	6.40	8.44	8.25
Minimum	9.50	10.50	12.75	16.00	13.25	8.00	7.75	8.75	9.50	7.50	6.00	6.40	8.40	8.10
Weighted average prime lending rate	10.17	12.14	14.74	17.00	19.17	11.10	9.27	10.49	14.29	9.96	6.35	7.40	11.73	11.33
Commercial bank saving														
Maximum	7.75	10.25	10.50	16.50	16.50	10.50	9.50	8.50	10.50	9.14	8.00	8.00	9.00	9.50
Minimum	3.00	3.00	3.00	3.00	3.00	1.50	1.50	1.00	0.75	0.75	0.50	0.50	0.50	0.50
NSB saving	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.25	4.00
Commercial bank fixed deposit (one year)														
Maximum	9.75	11.50	14.00	20.00	20.25	19.00	17.00	11.00	17.00	16.00	12.00	15.00	15.00	15.00
Minimum	5.50	5.50	5.50	8.50	8.50	7.25	5.05	5.55	5.00	6.00	3.95	3.95	4.50	4.89
NSB fixed deposit (one year, paid on maturity)	8.00	9.00	11.00	15.00	15.00	9.50	8.50	8.50	12.50	9.50	6.50	7.25	11.00	11.00

Sources: Central Bank of Sri Lanka, *Annual Report*, various issues.

Notes: (a): Provisional
(b): Repurchase rate was renamed as Standing Deposit Facility Rate (SDFR) with effect from 2 January 2014

Table A12: Basic Indicators of the General Price Level, 1997-2017

	CCPI (1952 = 100) (b)	% change	CCPI (2002 = 100) (b)	% change	CCPI (2006/07 = 100) (c)	% change	CCPI (2013 = 100) (d)	% change	NCPI (2013 = 100) (e)	% change	WPI (1974 = 100)	% change	GDPD (1996 = 100)	% change
1997	2,089.1	9.6									1,224.3	6.9	108.6	8.6
1998	2,284.9	9.4									1,298.7	6.1	117.8	8.4
1999	2,392.1	4.7									1,295.3	-0.3	123.1	4.4
2000	2,539.8	6.2									1,317.2	1.7	131.3	6.7
2001	2,899.4	14.2									1,471.2	11.7	147.6	12.4
2002	3,176.4	9.6	100								1,628.9	10.7	160.0	8.4
2003	3,377.0	6.3	105.8								1,679.1	3.1	168.2	5.1
2004	3,632.8	7.6	115.3	9.0							1,889.0	12.5	183.0	8.8
2005	4,055.5	11.6	128	11.0							2,105.9	11.5	202.1	10.4
2006	4,610.8	13.7	140.8	10.0							2,351.5	11.7	224.9	11.3
2007	5,416.1	17.5	163.1	15.8							2,924.4	24.4	256.4	14.0
2008			199.9	22.6	129.2						3,653.6	24.9	298.3	16.3
2009			206.8	3.4	133.6	3.5					3,500.9	-4.2	315.8	5.9
2010			219.1	5.9	141.9	6.2					3,893.0	11.2	338.9	7.3
2011			226.5	6.9	151.5	6.7					4,306.5	10.6	351.8	3.8
2012			-	-	162.9	7.6					4,457.3	3.5	389.9	10.8
2013			-	-	174.2	6.9					4,867.9	9.2	414.3	6.2
2014			-	-	179.9	3.3	105.1		105.5		5,022.1	3.2	426.3	2.9
2015			-	-	181.5	0.9	107.4	2.2	109.5	3.8	5,072.7	1.0	429.1	0.6
2016			-	-	188.3	3.7	111.7	4.0	113.8	3.9	5,284.0	4.2	446.6	4.1
2017(a)			-	-	-	-	119.0	6.5	122.6	7.7	5,674.7	7.4	483.4	8.2

Notes: (a): Provisional.
(b): Represents the consumption basket of urban households within the Colombo District. Compilation of this index was discontinued since June 2011.
(c): Represents the consumption basket of urban households within the Colombo District. Compilation of this index was discontinued since January 2017.
(d): Represents the consumption basket of urban households within the Colombo District.
(e): Represents the consumption basket of households in the entire island.
CCPI: Colombo Consumers Price Index.
WPI: Wholesale Price Index.
NCPI: National Consumer Price Index
GDPD: GDP Deflator.

Sources: Central Bank of Sri Lanka, *Annual Report*, various issues.

Table A13: Wage Rate Indices, 1996-2017 (December 1978 = 100)

	Workers in wages boards trades(a)		Government employees(b)	
	Nominal	Real(d)	Nominal	Real(e)
1996	801.7	100.7	818.2	103.0
1997	849.1	97.3	906.5	104.0
1998	953.3	99.9	1001.4	104.9
1999	977.6	97.8	1001.4	100.2
2000	1000.4	94.3	1084.7	102.1
2001	1049.3	86.6	1310.8	108.1
2002	1126.5	84.9	1525.3	115.0
2003	1205.2	85.4	1525.0	108.1
2004	1233.0	81.3	1872.1	123.3
2005	1329.7	78.5	2417.5	142.7
2006	1358.2	70.5	3150.8	163.5
2007	1648.8	73.6	3828.4	171.6
2008	2070.4	75.5	4116.1	150.4
2009	2171.4	76.7	4502.8	159.0
2010	2865.3	95.3	90.6	107.7
2011	2996.1	93.3	96.7	107.6
2012	3662.0	106.2	100.0	107.0
2013	3869.2	104.9	106.3	104.1
2014	4012.2	105.3	117.5	111.1
2015	4127.1	107.3	154.8	141.1
2016	4127.9	103.5	160.8	140.9
2017(c)	4128.6	97.4	160.8	130.9

Notes: The wage rates used in the calculation of index numbers are minimum wages.
(a): Combined index for workers in agriculture, industry and commerce, and services.
(b): The nominal wages index (1978 = 100) covers non executive government employees and school teachers only. The new index (2012 = 100) used from 2010 onwards covers all levels of public sector employees, under the disaggregation of senior, tertiary, secondary and primary levels.
(c): Provisional.
(d): Based on CCPI (2002 = 100) from 2007 to 2009 and based on CCPI (2006/07 = 100) from 2010 onwards.
(e) Based on CCPI (2002 = 100) from 2007 to 2009 and based on CCPI (2006/07 = 100) from 2010 to 2011 and based on NCPI (2013 = 100) from 2012 onwards.

Source: Central Bank of Sri Lanka, *Annual Report*, various issues.

Table A14: Sri Lanka's Direction of Foreign Trade, 2000-2017

	Unit	2000	2001	2002	2003	2004	2005	2006	2007	2008
1. Exports to selected countries and groupings										
U.S.A	US$mn.	2,193	1,926	1,763	1,777	1,869	1,988	2,006	1,970	1,869
U.K.	US$mn.	737	576	590	640	779	777	880	1,018	1,090
Germany	US$mn.	230	198	199	232	274	272	329	438	405
Japan	US$mn.	230	186	140	162	158	145	164	160	159
EC	% of total exports	33.4	27.2	30.0	30.0	32.5	30.9	33.7	37.6	37.4
Germany	% of exports to EC	15.2	15.4	14.1	15.1	14.6	13.9	14.2	15.2	13.4
UK	% of exports to EC	48.5	44.8	41.6	41.6	41.6	39.6	37.9	35.4	35.9
ASEAN	% of total exports	3.5	2.5	2.5	2.0	2.2	2.3	2.8	3.0	3.2
Singapore	% of exports to ASEAN	38.7	48.1	60.3	62.7	68.6	54.4	38.5	34.4	29.0
Malaysia	% of exports to ASEAN	5	5.7	7.2	11.9	7.1	9.9	12.7	15.5	16.8
SAARC	% of total exports	4.2	3.3	5.4	6.8	8.8	10.3	8.7	8.5	6.9
India	% of exports to SAARC	30.6	45.6	66.4	70.0	77.3	86.7	81.6	79.8	74.5
NAFTA	% of total exports	50.5	42.9	39.4	36.6	34.4	33.3	30.9	27.6	24.9
USA	% of exports to NAFTA	95.4	95.1	94.6	94.6	94.5	94.1	94.2	93.3	92.4
Canada	% of exports to NAFTA	3.1	3.4	3.3	3.4	3.6	3.7	3.6	3.7	4.4
APEC	% of total exports	57.8	55.2	51.5	48.4	44.9	43.6	42.3	39.2	37.8
USA	% of exports to APEC	83.5	73.8	72.6	71.5	72.2	71.9	68.9	65.8	60.9
Japan	% of exports to APEC	8.7	7.1	5.8	6.5	6.1	5.2	5.6	5.3	5.2
Singapore	% of exports to APEC	2.3	2.2	3.0	2.7	3.3	2.9	2.6	2.7	2.5
2. Imports from selected countries and groupings		**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Japan	US$mn.	646	337	355	448	412	380	450	413	426
India	US$mn.	600	602	834	1,073	1,439	1,835	2,173	2,610	3,447
Hong Kong	US$mn.	516	501	491	560	619	648	659	725	695
U.S.A	US$mn.	255	267	218	198	240	205	201	412	279
U.K.	US$mn.	311	221	263	273	312	277	303	230	250
Taiwan	US$mn.	390	323	288	276	291	279	275	264	251
EC	% of total imports	18.8	16.0	15.2	16.5	15.7	14.5	13.7	12.4	12.5
Germany	% of imports from EC	16.5	15.9	13.2	13.0	15.4	13.9	15.8	16.4	16.0
UK	% of imports from EC	32.8	25.5	28.6	24.8	24.8	21.6	21.5	16.5	14.2
ASEAN	% of total imports	21.0	19.4	19.1	19.8	20.0	20.5	21.7	17.4	18.3
Singapore	% of imports from ASEAN	46.7	44.8	46.0	46.2	51.2	48.2	52.9	56.9	48.2
Malaysia	% of imports from ASEAN	20.5	22.7	21.7	25.6	24.1	25.7	23.7	14.4	13.9
SAARC	% of total imports	14.0	13.2	15.5	17.6	19.7	22.4	22.9	24.9	26.0
India	% of imports from SAARC	84.8	84.4	89.2	91.5	91.4	92.6	92.4	92.7	94.0
NAFTA	% of total imports	6.0	5.4	3.9	3.5	3.6	3.2	4.1	4.4	4.7
USA	% of imports from NAFTA	84.1	91.5	93.8	85.4	84.4	71.2	48.0	83.5	42.2
Canada	% of imports from NAFTA	15.6	8.2	5.8	14.3	15.3	28.0	51.5	16.1	57.3
APEC	% of total imports	54.9	55.6	52.1	49.2	46.4	44.0	43.8	46.3	45.2
USA	% of imports from APEC	9.2	8.4	7.0	5.7	6.1	4.9	4.1	7.9	4.4
Japan	% of imports from APEC	23.2	10.6	11.4	13.0	10.4	9.2	9.1	7.9	6.7
Singapore	% of imports from APEC	17.8	12.9	13.8	15.1	17.6	17.8	20.2	21.4	19.5

Cont./

	Unit	2009	2010	2011	2012	2013	2014	2015	2016	2017(a)
1. Exports to selected countries and groupings										
U.S.A	US$mn.	1,576	1,701	2,145	2,126	2,494	2,731	2,810	2,810	2,909
U.K.	US$mn.	1,024	990	1,112	1,059	1,078	1,116	1,029	1,044	1,036
Germany	US$mn.	347	400	510	455	468	498	476	500	540
Japan	US$mn.	139	171	223	217	224	237	216	202	209
EU	% of total exports	38.5	33.3	33.9	33.0	31.5	31.4	28.7	30.1	29.1
Germany	% of exports to EU	12.7	13.9	14.3	14.1	14.3	14.3	15.7	16.1	16.4
UK	% of exports to EU	37.6	34.4	31.1	32.8	32.9	32.0	34.0	33.7	31.4
ASEAN	% of total exports	3.9	5.5	6.9	4.1	2.8	3.9	2.8	3.5	4.7
Singapore	% of exports to ASEAN	31.4	107.7	56.1	25.3	35.6	32.6	27.9	32.0	35.0
Malaysia	% of exports to ASEAN	17.0	15.4	13.5	17.4	15.9	10.4	12.4	10.1	10.0
SAARC	% of total exports	6.2	7.2	6.6	7.8	7.4	7.9	8.4	8.0	8.8
India	% of exports to SAARC	73.0	76.8	74.1	74.4	70.4	70.9	72.2	67.0	69.2
NAFTA	% of total exports	24.1	21.6	22.4	24.3	26.4	27.1	29.4	30.3	28.9
USA	% of exports to NAFTA	92.2	91.5	90.5	89.6	90.8	90.6	90.7	90.0	88.6
Canada	% of exports to NAFTA	4.3	5.0	5.4	6.1	5.5	5.7	5.8	5.8	6.4
APEC	% of total exports	37.7	37.5	38.5	38.3	39.9	41.6	43.4	44.5	46.6
USA	% of exports to APEC	59.0	52.6	52.7	56.8	60.2	58.9	61.4	61.3	55.0
Japan	% of exports to APEC	5.2	5.3	5.5	5.8	5.4	5.1	4.7	4.4	4.0
Singapore	% of exports to APEC	3.3	15.8	10.1	2.7	2.5	3.0	1.8	2.5	3.6
2. Imports from selected countries and groupings		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017(a)**
Japan	US$mn.	224	584	1,025	552	668	941	1,389	950	1,038
India	US$mn.	1,820	2,570	4,431	3,640	3,171	4,023	4,268	3,815	4,527
Hong Kong	US$mn.	517	580	632	605	430	351	365	466	422
U.S.A	US$mn.	259	168	266	234	416	492	471	539	492
U.K.	US$mn.	254	267	304	297	281	290	364	327	268
Taiwan	US$mn.	201	264	352	365	435	443	460	496	482
EU	% of total imports	12.6	10.9	9.2	9.3	9.2	8.2	8.9	9.5	8.2
Germany	% of imports from EU	19.3	17.2	18.3	17.9	23.1	20.6	20.6	23.9	23.4
UK	% of imports from EU	19.8	18.2	16.4	16.7	16.9	18.3	21.6	18.0	15.7
ASEAN	% of total imports	18.3	19.2	16.1	14.8	19.2	16.9	14.1	15.2	15.3
Singapore	% of imports from ASEAN	57.1	60.7	65.2	59.3	48.6	38.3	40.0	40.4	42.1
Malaysia	% of imports from ASEAN	15.4	14.9	21.0	28.6	16.5	22.6	19.1	21.9	19.8
SAARC	% of total imports	20.1	21.4	23.7	21.0	19.9	22.3	24.4	22.1	24.2
India	% of imports from SAARC	88.6	89.3	92.1	90.2	88.4	92.7	92.3	90.0	89.0
NAFTA	% of total imports	5.3	3.3	3.2	3.0	3.6	4.2	4.1	4.2	3.5
USA	% of imports from NAFTA	48.2	37.4	41.1	41.2	64.0	60.8	60.8	67.1	66.4
Canada	% of imports from NAFTA	51.3	62.2	58.4	58.1	35.2	38.3	37.8	31.4	30.6
APEC	% of total imports	45.4	45.9	45.0	43.6	52.7	53.5	54.8	56.2	54.3
USA	% of imports from APEC	5.6	2.7	2.9	2.8	4.4	4.7	4.5	5.0	4.3
Japan	% of imports from APEC	4.8	9.5	11.2	6.6	7.0	9.1	13.4	8.8	9.1
Singapore	% of imports from APEC	23.0	25.4	23.3	20.1	17.7	12.1	10.2	10.9	11.9

Note: (a): Provisional.

Sources: International Monetary Fund, *Direction of Trade Statistics*, various issues; Central Bank of Sri Lanka, *Annual Report*, various issues and Trade Map -http://www.trademap.org/.

Table A15: Structure of Commodity Imports, 1999-2017

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1. Consumer goods										
Value (US$ mn.)	1,131.0	1,261.0	1,126.0	1,189.0	1,344.0	1,440.0	1,503.0	1,782.0	1,665.0	2,006.0
Growth	0.3	11.5	-10.7	5.6	13.0	7.1	4.4	18.6	-6.6	20.5
% of total imports	18.9	17.2	18.8	19.5	20.1	18.0	17.0	17.4	14.7	14.2
1.1 Food										
Value (US$ mn.)	551.0	566.0	545.0	566.0	564.0	596.0	611.0	757.0	803.0	1,089.0
Growth	-7.6	2.7	-3.7	3.9	-0.4	5.7	2.5	23.9	6.1	35.6
% of total imports	9.2	7.7	9.1	9.3	8.5	7.5	6.9	7.4	7.1	7.7
1.2 Other										
Value (US$ mn.)	581.0	696.0	581.0	623.0	780.0	844.0	891.0	1,024.0	862.0	918.0
Growth	9.2	19.8	-16.5	7.2	25.2	8.2	5.6	14.9	-15.8	6.5
% of total imports	9.7	9.5	9.7	10.2	11.7	10.6	10.1	10.0	7.6	6.5
2. Intermediate goods										
Value (US$ mn.)	3,168.0	3,916.0	3,430.0	3,622.0	3,948.0	4,828.0	5,458.0	6,161.0	6,983.0	9,019.0
Growth	1.9	23.6	-12.4	5.6	9.0	22.3	13.0	12.9	13.3	29.2
% of total imports	53.0	53.5	57.4	59.3	59.2	60.4	61.6	60.1	61.8	64.0
2.1 Petroleum										
Value (US$ mn.)	500.0	901.0	731.0	789.0	838.0	1,209.0	1,655.0	2,070.0	2,516.0	3,392.0
Growth	44.9	80.2	-18.9	7.9	6.2	44.3	36.9	25.1	21.5	34.8
% of total imports	8.4	12.3	12.2	12.9	12.6	15.1	18.7	20.2	22.3	24.1
2.2 Textiles										
Value (US$ mn.)	1,320.0	1,471.0	1,320.0	1,321.0	1,372.0	1,514.0	1,531.0	1,546.0	1,724.0	1,788.0
Growth	-5.5	11.4	-10.3	0.1	3.9	10.3	1.1	1.0	11.5	3.7
% of total imports	22.1	20.1	22.1	21.6	20.6	18.9	17.3	15.1	15.3	12.7
3. Investment goods										
Value (US$ mn.)	1,565.0	1,737.0	1,081.0	1,169.0	1,320.0	1,670.0	1,869.0	2,246.0	2,597.0	2,852.0
Growth	6.0	11.0	-37.8	8.1	12.9	26.5	11.9	20.2	15.6	9.8
% of total imports	26.2	23.7	18.1	19.1	19.8	20.9	21.1	21.9	23.0	20.2
4. Total imports										
Value (US$ mn.)	5,979.0	7,320.0	5,974.0	6,105.0	6,672.0	8,000.0	8,863.0	10,254.0	11,296.0	14,091.0
Growth	1.5	22.4	-18.4	2.2	9.3	19.9	10.8	15.7	10.2	24.7

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	2009	2010	2011	2012	2013	2014	2015	2016	2017(a)
1. Consumer goods									
Value (US$ mn.)	1,565.0	2,476.0	3,654.0	2,995.0	3,182.0	3,853.0	4,713.0	4,319.0	4,503.0
Growth	-22.0	58.2	47.6	-18.0	6.2	21.1	22.3	-8.4	4.3
% of total imports	15.3	18.4	18.0	15.6	17.7	19.8	24.9	22.5	21.5
1.1 Food									
Value (US$ mn.)	933.0	1,322.0	1,567.0	1,304.0	1,368.0	1,634.0	1,628.0	1,627.4	1,841.1
Growth	-14.3	41.7	18.5	-16.8	4.9	19.4	-0.4	0.0	13.1
% of total imports	9.1	9.8	7.7	6.8	7.6	8.4	8.6	8.5	8.8
1.2 Other									
Value (US$ mn.)	632.0	1,155.0	2,087.0	1,691.0	1,814.0	2,219.0	3,086.0	2,691.5	2,661.5
Growth	-31.2	82.8	80.7	-19.0	7.3	22.3	39.1	-12.8	-1.1
% of total imports	6.2	8.6	10.3	8.8	10.1	11.4	16.3	14.0	12.7
2. Intermediate goods									
Value (US$ mn.)	6,158.0	8,054.0	12,275.0	11,578.0	10,554.0	11,398.0	9,638.0	9,870.0	11,436.0
Growth	-31.7	30.8	52.4	-5.7	-8.8	8.0	-15.4	2.4	15.9
% of total imports	60.3	59.9	60.6	60.3	58.6	58.7	50.9	51.5	54.5
2.1 Petroleum									
Value (US$ mn.)	2,184.0	3,041.0	4,795.0	5,045.0	4,308.0	4,597.0	2,700.0	2,481.0	3,428.0
Growth	-35.6	39.2	57.7	5.2	-14.6	6.7	-41.3	-8.1	38.2
% of total imports	21.4	22.6	23.7	26.3	23.9	23.7	14.3	12.9	16.3
2.2 Textiles									
Value (US$ mn.)	1,529.0	1,812.0	2,321.0	2,266.0	2,046.0	2,328.0	2,296.2	2,705.0	2,724.0
Growth	-14.5	18.5	28.1	-2.4	-9.7	13.8	-1.4	17.8	0.7
% of total imports	15.0	13.5	11.5	11.8	11.4	12.0	12.1	14.1	13.0
3. Investment goods									
Value (US$ mn.)	2,093.0	2,758.0	4,286.0	4,590.0	4,253.0	4,152.0	4,567.0	4,981.0	4,895.0
Growth	-26.6	31.8	55.4	7.1	-7.3	-2.4	10.0	9.1	-1.7
% of total imports	20.5	20.5	21.1	23.9	23.6	21.4	24.1	26.0	23.3
4. Total imports									
Value (US$ mn.)	10,207.0	13,451.0	20,269.0	19,190.0	18,003.0	19,417.0	18,935.0	19,183.0	20,980.0
Growth	-27.6	31.8	50.7	-5.3	-6.2	7.9	-2.5	1.3	9.4

Notes : (a): Provisional.
Categories are reclassified from 2007 based on National Import Tariff Guide - 2010

Sources: Central Bank of Sri Lanka, *Annual Report*, various issues; IPS database.

Table A16: Structure of Commodity Exports, 1998-2017

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
1. Agricultural exports										
Value (US$ mn.)	1,088.0	947.0	1,005.0	932.0	938.0	965.0	1,065.2	1,153.8	1,292.7	1,507.2
Growth	2.6	-13.0	6.1	-7.3	0.6	2.9	10.4	8.3	12.0	16.6
% of total exports	22.7	20.5	18.2	19.3	20.0	18.8	18.5	18.2	18.8	19.7
1.1 Plantation crops										
Value (US$ mn.)	918.0	783.0	850.0	796.0	771.0	815.0	903.3	970.4	1,098.2	1,275.8
Growth	0.2	-14.7	8.6	-6.4	-3.1	5.7	10.8	7.4	13.2	16.2
% of total exports	19.1	17.0	15.4	16.5	16.4	15.9	15.7	15.3	16.0	16.7
1.1.1 Tea										
Value (US$ mn.)	780.0	621.0	700.0	690.0	660.0	683.0	738.9	810.2	881.2	1,025.2
Growth	8.5	-20.4	12.7	-1.4	-4.3	3.5	8.2	9.6	8.8	16.3
% of total exports	16.3	13.5	12.7	14.3	14.0	13.3	12.8	12.8	12.8	13.4
1.1.2 Rubber										
Value (US$ mn.)	44.0	33.0	29.0	24.0	27.0	39.0	51.3	46.9	93.1	109.4
Growth	-44.3	-25.0	-12.1	-17.2	12.5	44.4	31.5	-8.6	98.5	17.5
% of total exports	0.9	0.7	0.5	0.5	0.6	0.8	0.9	0.7	1.4	1.4
1.1.3 Coconut kernel products										
Value (US$ mn.)	56.0	84.0	77.0	41.0	41.0	48.0	58.6	48.8	52.8	60.3
Growth	-31.7	50.0	-8.3	-46.8	0.0	17.1	22.1	-16.7	8.2	14.2
% of total exports	1.2	1.8	1.4	0.9	0.9	0.9	1.0	0.8	0.8	0.8
1.2. Minor agricultural crops										
Value (US$ mn.)	170.0	165.0	155.0	136.0	168.0	150.0	161.9	183.4	194.6	231.5
Growth	17.2	-2.9	-6.1	-12.3	23.5	-10.7	7.9	13.3	6.1	19.0
% of total exports	3.5	3.6	2.8	2.8	3.6	2.9	2.8	2.9	2.8	3.0
2. Mineral exports										
Value (US$ mn.)	60.0	64.0	97.0	86.0	90.0	84.0	120.0	143.3	119.9	127.8
Growth	-33.3	6.7	51.6	-11.3	4.7	-6.7	42.9	19.4	-16.3	6.6
% of total exports	1.3	1.4	1.8	1.8	1.9	1.6	2.1	2.3	1.7	1.7
3. Industrial exports										
Value (US$ mn.)	3,607.0	3,551.0	4,283.0	3,710.0	3,631.0	3,977.0	4,506.1	4,948.4	5,401.1	5,967.3
Growth	5.0	-1.6	20.6	-13.4	-2.1	9.5	13.3	9.8	9.1	10.5
% of total exports	75.2	77.0	77.6	77.0	77.3	77.5	78.3	78.0	78.5	78.1
3.1 Textile & garments										
Value (US$ mn.)	2,460.0	2,425.0	2,982.0	2,543.0	2,424.0	2,575.0	2,808.9	2,894.5	3,080.4	3,339.6
Growth	8.2	-1.4	23.0	-14.7	-4.7	6.2	9.1	3.0	6.4	8.4
% of total exports	51.3	52.6	54.0	52.8	51.6	50.2	48.8	45.6	44.8	43.7
3.2 Petroleum products										
Value (US$ mn.)	73.0	74.0	98.0	68.0	73.0	65.0	99.6	130.9	188.4	168.9
Growth	-24.7	1.4	32.4	-30.6	7.4	-11.0	53.2	31.4	43.9	-10.4
% of total exports	1.5	1.6	1.8	1.4	1.6	1.3	1.7	2.1	2.7	2.2
4. Total commodity exports inc. petroleum										
Value (US$ mn.)	4,798.0	4,610.0	5,522.0	4,817.0	4,699.0	5,133.0	5,757.2	6,346.7	6,882.7	7,640.0
Growth	3.4	-3.9	19.8	-12.8	-2.4	9.2	12.2	10.2	8.4	11.0
5. Total commodity exports excl. petroleum										
Value (US$ mn.)	4,725.0	4,536.0	5,424.0	4,749.0	4,626.0	5,068.0	5657.6	6,215.8	6,694.3	7,471.1
Growth	4.0	-4.0	19.6	-12.4	-2.6	9.6	11.6	9.9	7.7	11.6

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017(a)
1. Agriculture exports										
Value (US$ mn.)	1,854.8	1,690.3	2,306.4	2,527.8	2,331.5	2,581.1	2,793.9	2,481.5	2,326.10	2,767.2
Growth	23.1	-8.9	36.4	9.6	-7.8	10.7	8.2	-11.2	-6.3	19.0
% of total exports	22.9	23.9	26.7	23.9	23.9	24.8	25.1	23.5	22.6	24.4
1.1 Plantation crops										
Value (US$ mn.)	1,567.6	1,449.9	1,779.6	1,963.3	1,745.9	1,818.1	2,030.0	1,718.3	1,653.5	1,916.6
Growth	22.9	-7.5	22.7	10.3	-11.1	4.1	11.7	-15.4	-3.8	15.9
% of total exports	19.3	20.5	20.6	18.6	17.9	17.5	18.2	16.3	16.0	16.9
1.1.1 Tea										
Value (US$ mn.)	1,271.5	1,185.1	1,440.6	1,490.9	1,411.9	1,542.2	1,628.3	1,340.5	1,269.10	1,529.8
Growth	24.0	-6.8	21.6	3.5	-5.3	9.2	5.6	-17.7	-5.3	20.5
% of total exports	15.7	16.7	16.7	14.1	14.4	14.8	14.6	12.7	12.3	13.5
1.1.2 Rubber										
Value (US$ mn.)	125.1	98.6	173.2	206.4	125.1	71.3	45.3	26.1	32.7	38.9
Growth	14.4	-21.2	75.7	19.2	-39.4	-43.0	-36.5	-42.4	25.3	19.0
% of total exports	1.5	1.4	2.0	2.0	1.3	0.7	0.4	0.2	0.3	0.3
1.1.3 Coconut kernel products										
Value (US$ mn.)	82.4	58.2	55.4	-	-	-	-	-	-	-
Growth	36.7	-29.4	-4.8	-	-	-	-	-	-	-
% of total exports	1.0	0.8	0.6	-	-	-	-	-	-	-
1.2. Minor agricultural crops										
Value (US$ mn.)	287.3	240.4	71.6	88.7	76.0	101.3	165.2	160.4	114.1	138.7
Growth	24.1	-16.3	-70.2	23.9	-14.3	33.3	63.1	-2.9	-28.9	21.6
% of total exports	3.5	3.4	0.8	0.8	0.8	1.0	1.5	1.5	1.1	1.2
2. Mineral exports										
Value (US$ mn.)	97.8	88.7	24.2	32.9	61.3	51.6	59.5	28.4	29	34.5
Growth	-23.5	-9.3	-72.7	36.0	86.3	-15.8	15.3	-52.3	2.1	19.0
% of total exports	1.2	1.3	0.3	0.3	0.6	0.5	0.5	0.3	0.3	0.3
3. Industrial exports										
Value (US$ mn.)	6,158.0	5,305.4	6,096.1	7,991.7	7,371.2	7,749.4	8,262.0	8,017.1	7,940.10	8,542.0
Growth	3.2	-13.8	14.9	31.1	-7.8	5.1	6.6	-3.0	-1.0	7.6
% of total exports	75.9	74.9	70.7	75.7	75.4	74.6	74.2	76.0	77.0	75.2
3.1 Textile & garments										
Value (US$ mn.)	3,468.7	3,274.2	3,356.0	4,191.2	3,991.1	4,508.3	4,929.9	4,820.2	4,884.10	5,032.0
Growth	3.9	-5.6	2.5	24.9	-4.8	13.0	9.4	-2.2	1.3	3.0
% of total exports	42.8	46.2	38.9	39.7	40.8	43.4	44.3	45.7	47.4	44.3
3.2 Petrolium products										
Value (US$ mn.)	254.9	134.7	263.4	552.7	463.0	427.7	338.0	373.9	286.9	434.3
Growth	50.9	-47.2	95.5	109.8	-16.2	-7.6	-21.0	10.6	-23.3	51.4
% of total exports	3.1	1.9	3.1	5.2	4.7	4.1	3.0	3.5	2.8	3.8
4. Total commodity exports inc. petroleum										
Value (US$ mn.)	8,110.6	7,084.5	8,625.8	10,558.8	9,773.5	10,394.3	11,130.1	10,546.5	10,309.70	11,360.4
Growth	6.2	-12.7	21.8	22.4	-7.4	6.4	7.1	-5.2	-2.2	10.2
5. Total commodity exports excl. petroleum										
Value (US$ mn.)	7,855.7	6,949.8	8,362.4	10,006.1	9,310.5	9,966.6	10,792.1	10,172.6	10,022.8	10,926.1
Growth	5.1	-11.5	20.3	19.7	-7.0	7.0	8.3	-5.7	-1.5	9.0

Note: (a): Provisional.

Sources: Central Bank of Sri Lanka, *Annual Report*, various issue; IPS database.

Table A17: Tourism, 1998-2017

	Unit	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Tourist arrivals	No.	381,063	436,440	400,414	336,794	393,171	500,642	566,202	549,308	559,603	494,008
Excursionist arrivals	No.	27,629	28,335	44,518	60,084	63,560	82,066	110,000	119,618	128,719	98,432
Tourist nights	000	3,944	4,479	4,056	3,342	3,989	5,093	5,742	4,754	5,793	4,940
Earnings	Rs. mn.	14,868.0	19,297.3	19,162.2	18,863.3	24,202.0	32,810.0	42,666.3	36,377	42,586	42,519
	US$ mn.	230.5	274.9	252.8	211.1	253	340	416.8	362.3	410	384.4
Receipts per tourist per day	US$	59.5	61.4	62.3	63.1	63.4	66.8	72.2	74.6	83.4	79.1
Average duration	Nights	10.4	10.3	10.1	9.9	10.1	10.2	10.1	8.7	10.4	10.0
Accommodation											
Rooms	No.	12,770	12,918	13,311	13,626	13,818	14,137	14,322	13,162	14,218	14,604
Beds	No.	23,373	24,216	24,953	25,595	25,956	26,511	26,854	24,740	27,117	27,500
Occupancy rate, graded	%	52.8	57.6	52.3	42.1	43.1	53.2	59.3	45.4	47.8	46.2
Sri Lanka nationals											
Arrivals	No.	481,793	521,073	514,448	487,356	493,947	560,602	646,990	683,169	734,421	817,524
Departures	No.	518,050	496,963	524,212	505,341	533,565	561,126	680,248	727,301	756,735	862,011
Employment											
Direct	No.	34,780	36,560	37,943	33,710	38,821	46,761	53,766	52,085	55,649	60,516
Indirect	No.	48,692	51,184	53,120	47,194	54,349	65,465	75,272	72,919	77,909	84,722

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	Unit	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017(a)
Tourist arrivals	No.	438,475	447,890	654,476	855,975	1,005,605	1,274,593	1,527,153	1,798,380	2,050,832	2,116,407
Excursionist arrivals	No.	87,695	89,526	112,497	119,875	126,523	140,009	138,097	195,134	116,244	131,409
Tourist nights	000	4,166	4,075	6,548	8,560	10,056	10,909	15,119	18,163	20,918	23,068
Earnings	Rs. mn.	37,094	40,133	65,018	91,926	132,427	221,147	317,479	405,492	512,594	598,356
	US$ mn.	319.5	349.3	575.9	838.9	1038.3	1715.5	2431.1	2980.6	3,518.50	3,924.90
Receipts per tourist per day	US$	76.7	81.8	88	98	103	156.5	160.8	164.1	168.2	170.1
Average duration	Nights	9.5	9.1	10.0	10.0	10.0	8.6	9.9	10.1	10.2	10.9
Accommodation											
Rooms	No.	14,793	14,461	14,714	14,653	15,510	16,223	18,078	18,954	21,126	23,477
Beds	No.	28,698	28,344	28,978	28,844	30,880	32,284	35,976	37720	46,114	48,008
Occupancy rate	%	43.9	48.4	70.1	77.1	71.2	71.7	74.3	74.5	74.8	73.3
Sri Lanka nationals											
Arrivals	No.	900,815	914,584	1,081,417	1,210,951	1,210,914	1,200,778	1,263,494	1,361,877	1,485,004	1,481,239
Departures	No.	966,337	962,786	1,122,212	1,239,290	1,268,792	1,261,711	1,311,063	1,356,411	1,447,786	1,439,429
Employment											
Direct	No.	51,306	52,071	55,023	57,786	67,862	112,550	129,790	135,930	146,115	156,369
Indirect	No.	71,828	72,899	77,032	80,899	95,007	157,600	170,100	183,506	189,544	202,846

Notes: (a): Provisional.

Source: Ceylon Tourist Board, *Annual Statistical Report*, various issues; Central Bank of Sri Lanka, *Annual Report*, various issues.

Table A18: Monthly Tourist Arrivals, 2006-2017

	2006		2007		2008		2009		2010		2011	
	No.	Growth	No.	Growth	No.	Growth	No.	Growth	No.	Growth	No.	Growth
January	52,103	36.4	56,553	8.5	56,916	0.6	38,468	-32.4	50,757	31.9	74,197	46.2
February	52,687	43.8	43,051	-18.3	40,551	-5.8	34,169	-15.7	57,300	67.7	65,797	14.8
March	54,746	8.6	35,031	-36.0	38,049	8.6	34,065	-10.5	52,352	53.7	75,130	43.5
April	49,776	17.8	33,039	-33.6	29,747	-10.0	26,054	-12.4	38,300	47.0	63,835	66.7
May	43,825	7.2	26,307	-40.0	31,140	18.4	24,739	-20.6	35,213	42.3	48,943	39.0
June	44,066	-3.6	30,810	-30.1	27,960	-9.3	30,234	8.1	44,730	47.9	53,636	19.9
July	55,354	-2.5	44,142	-20.3	32,982	-25.3	42,223	28.0	63,339	50.0	83,786	32.3
August	52,931	3.3	44,742	-15.5	30,672	-31.4	41,207	34.3	55,898	35.7	72,463	29.6
September	38,485	-11.6	37,104	-3.6	29,529	-20.4	37,983	28.6	47,339	24.6	60,219	27.2
October	38,815	-12.0	37,011	-4.6	35,103	-5.2	37,575	7.0	52,370	39.4	69,563	32.8
November	37,591	-22.4	45,102	20.0	36,901	-18.2	44,311	20.1	72,251	63.1	90,889	25.8
December	39,224	-23.3	61,116	55.8	48,925	-19.9	56,862	16.2	84,627	48.8	97,517	15.2
Total	559,603	1.9	494,008	-11.7	438,475	-11.2	447,890	2.1	654,476	46.1	855,975	30.8

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	2012		2013		2014		2015		2016		2017(a)	
	No.	Growth	No.	Growth	No.	Growth	No.	Growth	No.	Growth	No.	Growth
January	85,874	15.7	110,543	28.7	146,575	32.6	156,246	6.6	194,280	24.3	219,360	12.9
February	83,549	27.0	113,968	36.4	141,878	24.5	165,541	16.7	197,697	19.4	197,517	-0.1
March	91,102	21.3	113,208	24.3	133,048	17.5	157,051	18.0	192,841	22.8	188,076	-2.5
April	69,591	9.0	80,737	16.0	112,631	39.5	122,217	8.5	136,367	11.6	160,249	17.5
May	57,506	17.5	74,838	30.1	90,046	20.3	113,529	26.1	125,044	10.1	121,891	-2.5
June	65,245	21.6	90,279	38.4	103,175	14.3	115,467	11.9	118,038	2.2	123,351	4.5
July	90,338	7.8	107,016	18.5	133,971	25.2	175,804	31.2	209,351	19.1	205,482	-1.8
August	79,456	9.7	123,269	55.1	140,319	13.8	166,610	18.7	186,288	11.8	190,928	2.5
September	71,111	18.1	90,339	27.0	105,535	16.8	143,374	35.9	148,499	3.6	145,077	-2.3
October	80,379	15.5	107,058	33.2	121,576	13.6	132,280	8.8	150,419	13.7	152,429	1.3
November	109,202	20.1	109,420	0.2	119,727	9.4	144,147	20.4	167,217	16.0	167,511	0.2
December	122,252	25.4	153,918	25.9	178,672	16.1	206,114	15.4	224,791	9.1	244,536	8.8
Total	1,005,605	17.5	1,274,593	26.7	1,527,153	19.8	1,798,380	17.8	2,050,832	14.0	2,116,407	3.2

Note: Monthly growth figures reflect percentage changes compared to the same month in the previous year.
(a): Provisional.

Source: Ceylon Tourist Board, *Annual Statistical Report*, various issues and Monthly Statistical Bulletin, 2012.
Ceylon Tourist Board, Monthly Statistical Bulletion, 2012.

Table A19: Tourist Arrivals by Country of Residence, 2006-2017

	2006		2007		2008		2009		2010		2011	
	No.	Growth	No.	Growth	No.	Growth	No.	Growth	No.	Growth	No.	Growth
North America	35,323	-24.0	28,355	-19.7	24,311	-14.3	24,948	2.6	40,216	61.2	49,057	22.0
Canada	14,623	-31.0	11,869	-18.8	10,258	-13.6	10,707	4.4	21,123	97.3	24,671	16.8
U.S.A.	20,700	-18.1	16,486	-20.4	14,053	-14.8	14,241	1.3	19,093	34.1	24,386	27.7
Western Europe	228,445	0.6	194,448	-14.9	167,187	-14.0	170,123	1.8	256,861	51.0	315,210	22.7
Germany	47,402	2.3	35,042	-26.1	30,625	-12.6	29,654	-3.2	45,727	54.2	55,882	22.2
United Kingdom	88,306	-4.7	94,060	6.5	81,331	-13.5	81,594	0.3	105,496	29.3	106,082	0.6
France	22,693	-14.9	8,091	-64.3	10,594	30.9	15,886	50.0	31,285	96.9	48,695	55.6
Italy	12,424	21.9	11,451	-7.8	9,126	-20.3	7,514	-17.7	11,423	52.0	13,527	18.4
Netherlands	19,360	27.7	17,526	-9.5	13,030	-25.7	11,291	-13.3	17,861	58.2	23,966	34.2
Asia	242,132	8.4	202,480	-16.4	173,039	-14.5	174,534	0.9	244,124	39.9	333,841	36.8
Japan	16,189	-5.6	14,274	-11.8	10,075	-29.4	10,926	8.4	14,352	31.4	20,586	43.4
India	128,370	13.3	106,067	-17.4	85,238	-19.6	83,634	-1.9	126,882	51.7	171,374	35.1
Pakistan	11,145	1.1	10,204	-8.4	7,885	-22.7	7,373	-6.5	9,148	24.1	14,724	61.0
Australasia	25,127	-15.5	22,924	-8.8	21,839	-4.7	26,068	19.4	37,290	43.0	46,467	24.6
Australia	21,849	-15.9	20,241	-7.4	19,536	-3.5	23,239	19.0	33,456	44.0	41,728	24.7
Other(a)	28,576	26.6	45,801	60.3	52,099	13.8	52,217	0.2	75,985	45.5	111,400	46.6
Total	559,603	1.9	494,008	-11.7	438,475	-11.2	447,890	2.1	654,476	46.1	855,975	30.8

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	2012		2013		2014		2015		2016		(2017b)	
	No.	Growth	No.	Growth	No.	Growth	No.	Growth	No.	Growth	No.	Growth
North America	59,236	20.7	65,616	10.8	72,653	10.7	84,943	16.9	98,376	15.8	104,375	6.1
Canada	29,329	18.9	30,926	5.4	33,282	7.6	37,732	13.4	44,122	16.9	46,896	6.3
U.S.A.	29,907	22.6	34,690	16.0	39,371	13.5	47,211	19.9	54,254	14.9	57,479	5.9
Western Europe	373,063	18.4	421,037	12.9	479,007	13.8	552,442	15.3	643,333	16.5	680,901	5.8
Germany	71,642	28.2	85,470	19.3	102,977	20.5	115,868	12.5	133,275	15.0	130,227	-2.3
United Kingdom	114,218	7.7	137,416	20.3	144,168	4.9	161,845	12.3	188,159	16.3	201,879	7.3
France	56,863	16.8	64,388	13.2	78,883	22.5	86,126	9.2	96,440	12.0	97,282	0.9
Italy	15,871	17.3	17,982	13.3	21,116	17.4	24,293	15.0	29,791	22.6	31,428	5.5
Netherlands	26,754	11.6	22,281	-16.7	24,196	8.6	32,742	35.3	41,373	26.4	51,148	23.6
Asia	380,289	13.9	509,653	34.0	650,810	27.7	822,272	26.3	938,697	14.2	962,395	2.5
Japan	26,085	26.7	29,923	14.7	39,136	30.8	39,358	0.6	43,110	9.5	44,988	4.4
India	176,340	2.9	208,795	18.4	242,734	16.3	316,247	30.3	356,729	12.8	384,628	7.8
Pakistan	16,056	9.0	25,336	57.8	25,424	0.3	32,300	27.0	29,965	-7.2	31,815	6.2
Australasia	57,776	24.3	60,836	5.3	65,252	7.3	71,672	9.8	83,851	17.0	92,003	9.7
Australia	51,614	23.7	54,252	5.1	57,940	6.8	63,554	9.7	74,496	17.2	81,281	9.1
Other(a)	135,241	21.4	217,451	60.8	259,431	19.3	267,051	2.9	286,575	7.3	276,733	-3.4
Total	1,005,605	17.5	1,274,593	26.7	1,527,153	19.8	1,798,380	17.8	2,050,832	14.0	2,116,407	3.2

Notes: (a): Latin America & the Caribbean, East Europe, Africa, and Middle East.
(b): Provisional.

Source: Ceylon Tourist Board, *Annual Statistical Report,* various issues and Monthly Statistical Bulletin, 2012.

Table A20: Balance of Payments, 2006-2017

	Unit	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017(a)
1. Trade balance	US$ mn.	-3,370	-3,657	-5,981	-3,122	-4,825	-9,710	-9,417	-7,609	-8,287	-8,388	-8,873	-9,619
	% of GDP	-11.9	-11.3	-14.7	-7.4	-8.5	-14.9	-13.8	-10.2	-10.4	-10.4	-10.9	-11.0
2. Services balance	US$ mn.	257	302	401	391	707	1,099	1,262	1,180	1,880	2,325	2,879	3,338
	% of GDP	0.9	0.9	1.0	0.9	1.2	1.7	1.8	1.6	2.4	2.9	3.5	3.8
3. Income, net	US$ mn.-	-389	-358	-972	-488	-617	-647	-1,219	-1,751	-1,808	-2,013	-2,202	-2,355
	% of GDP	-1.4	-1.1	-2.4	-1.2	-1.1	-1.0	-1.8	-2.4	-2.3	-2.5	-2.7	-2.7
4. Net private transfers	US$ mn.	1,904	2,214	2,565	2,927	3,608	4,583	5,339	5,619	6,199	6,167	6,434	6,316
	% of GDP	6.7	6.8	6.3	7.0	6.4	7.0	7.8	7.6	7.8	7.7	7.9	7.2
5. Net official transfers	US$ mn.	101	97	101	77	52	60	53	21	28	27	19	11
	% of GDP	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
6. Current account balance	US$ mn.	-1,499	-1,402	-3,886	-214	-1,075	-4,615	-3,982	-2,541	-1,988	-1,883	-1,742	-2,309
	% of GDP	-5.3	-4.3	-9.5	-0.5	-1.9	-7.1	-5.8	-3.4	-2.5	-2.3	-2.1	-2.6
7. Capital and financial a/c	US$ mn.	1,808	2,097	1,774	2,594	2,877	4,263	-4,133	-2,993	-1,478	-2,266	-2,157	-2,173
	% of GDP	6.4	6.5	4.4	6.2	5.1	6.5	-6.0	-4.0	-1.9	-2.8	-2.6	-2.5
Capital account	US$ mn.	291	269	291	233	164	164	130	71	58	46	25	11
8. Financial account	US$ mn.	1,517	1,828	1,483	2,361	2,713	4,098	-4,263	-3,064	-1,536	-2,312	-2,182	-2,184
Long-term	US$ mn.	907	1,251	1,016	1,304	2,379	3,308	-2,593	-2,314	-1,901	-1,105	-2,084	-2,688
Foreign direct investment	US$ mn.	451	548	691	384	435	896	-877	-868	-827	-627	-660	-1,303
Private long-term (net)	US$ mn.	-35	31	74	79	149	175	-724	-605	-429	-9	-136	-170
Government long-term	US$ mn.	491	672	252	840	1,796	2,237	-992	-841	-646	-470	-1,287	-1,215
9. Short-term	US$ mn.	610	577	466	1,058	334	790	-1,670	-750	365	-1,207	-98	504
Foreign portfolio investment	US$ mn.	51	101	60	-6	-230	-171	272	226	178	-60	24	359
10 Other (b)	US$ mn.	-105	-165	728	346	-881	-708	-412	-594	393	-476	-465	114
11. Overall balance	US$ mn.	204	531	-1,385	2,725	921	-1,059	151	985	1,369	-1,489	-500	2,069
	% of GDP	0.7	1.6	-3.4	6.5	1.6	-1.6	0.2	1.3	1.7	-1.8	-0.6	2.4

Notes: (a): Provisional.
(b): Valuation adjustments, errors, and omissions.
(c): From 2003, data are based on GDP estimates compiled by the Department of Census and Statistics.
(d): From 2010 ,data are based on the base year 2010 GDP estimates of the Department of Census and Statistics.

Source: Central Bank of Sri Lanka, *Annual Report,* various issues.

Table A21: Exchange Rate Behaviour, 2006-2017

Currency	Unit	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nominal exchange rates													
U.S.A.	S.L. Rs. per US$	107.71	108.72	113.14	114.38	110.95	113.90	127.16	130.75	131.05	144.06	149.80	152.85
Japan	S.L. Rs. per Yen	0.91	0.97	1.25	1.24	1.36	1.47	1.48	1.25	1.10	1.20	1.29	1.36
U. K.	S.L. Rs. per Pound	211.29	217.15	163.28	181.75	171.41	175.45	205.47	215.58	204.04	213.57	184.04	205.54
Europeon Union	S.L. Rs. per Euro	141.58	160.27	159.45	163.72	147.56	147.42	168.13	180.45	159.42	157.37	157.87	182.49
India	S.L. Rs. per Ind. Rs.	2.44	2.77	2.36	2.46	2.48	2.15	2.33	2.11	2.07	2.17	2.21	2.39
24 currency													
Nominal effective exchange rates (NEER)	NEER 2006 = 100 (a)	110.94	98.96	100.07	99.85	100.00	99.84	90.44	91.39	91.99	96.61	92.46	88.07
Real effective exchange rate (REER)	REER 2006 = 100 (a)	81.02	78.07	95.19	97.36	100.00	102.00	95.63	101.13	103.77	109.50	106.94	106.10

Notes: (a): From 2006 onwards, NEER (2010 = 100) and REER (2010 = 100).

Sources: Central Bank of Sri Lanka, *Annual Report,* various issues.

Themes of the "Sri Lanka: State of the Economy Reports"

1992	Macroeconomic Policy
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1995	Poverty Alleviation
1996	Workers' Charter
1997	Private Sector Expansion
1998	Demographic Change and Social Safety Nets
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2000	Plantation Sector
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Sri Lanka: State of the Economy 2018
Climate Change, Food Security and Disaster Risk Management

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ISBN 978-955-7397-11-5