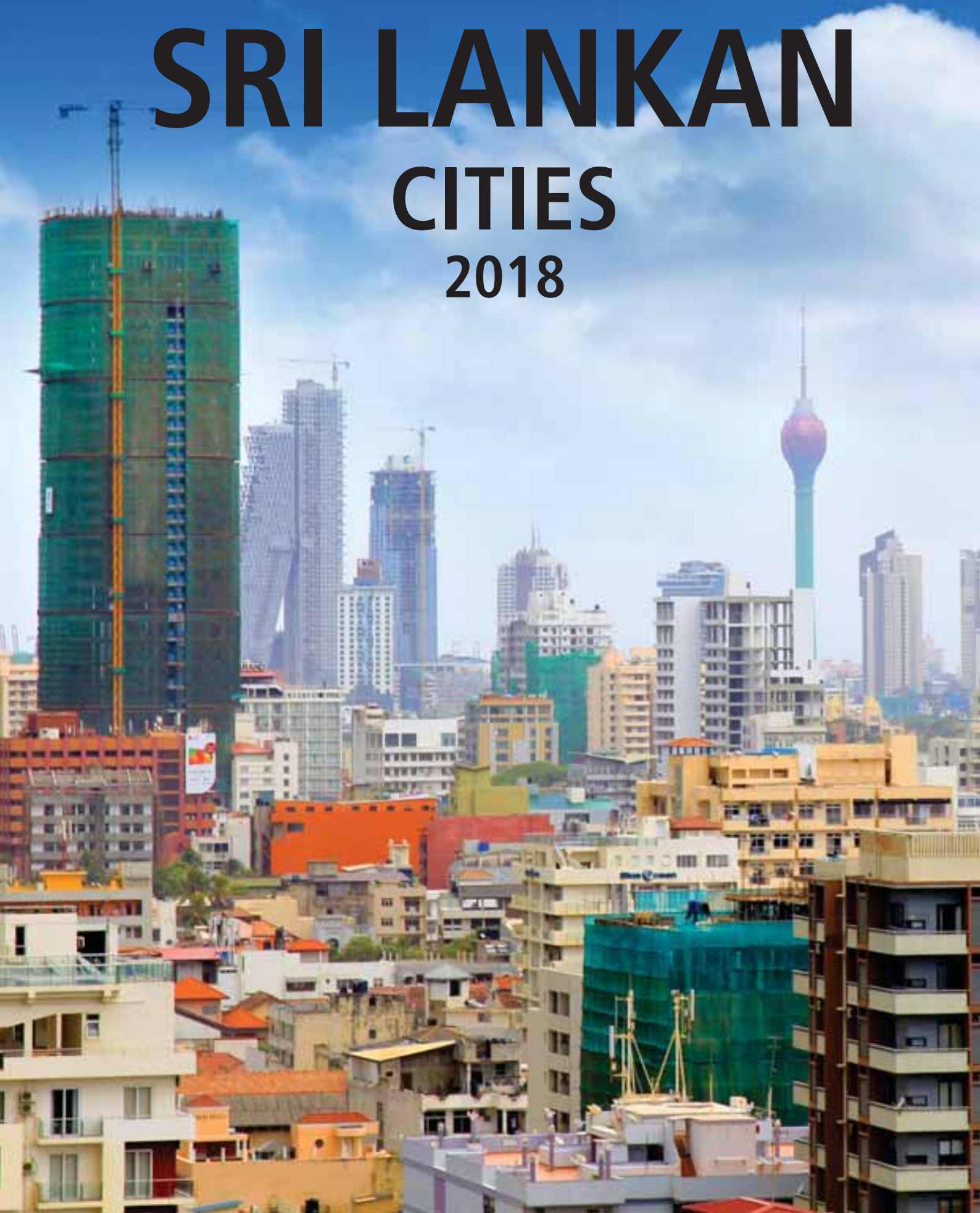




STATE OF SRI LANKAN CITIES 2018





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CITIES
2018**

State of Sri Lankan Cities Report Team:

Supervisors: Atsushi Koresawa, Srinivasa Popuri and Chanaka Talpahewa

Project Coordinator: Ramona Miranda

Coordinating Editor: Ben Flower

Editorial Board: Jan Turkstra, Brian Roberts, Chanaka Talpahewa

Contributing authors: Indralal de Silva, Veranjan Kurukulasuriya, Athula Senaratne, Nihal Samarappuli, Gopa Thampi, Prasad Ranjan Attygalle, Pradeepa Jayaratne, Shanaka Kariyawasam, Indu Weerasoori, Iromi Perera, Charlene Liau

GIS team: Jan Turkstra, Malith Senevirathne, Maheshika Karunathna, Isuru Prabha Erandathi, Nayomi Kankanamge, Chathurika Jayasekara

Contributors: Tim McNair, Jeni Liell-Cock, Ramona Miranda, Madushika Iroshini, Chathura Paliskara, Piyal Ganepola, Thushan Perera, Bosco Rajah, Shashikumar Nagarajah, R. Kayathry, Thanuja Dharmasena, Charmalee Jayasinghe, Nayana Mawilmada, Gregor Herda, A. Subakaran, Jayani Fernando, Wathsala N. Gunarathne, Ravi Jayaweera, Susitha Thilakaratne

Peer Reviewers: Laxman Perera, Matthew Fortnam, Matthew French, Parul Agarwala, Athula Senaratne, Srinivasa Popuri, Lalith Lankatilleke, Jaime Royo-Olid, Nelun Gunasekera

Logistical Support: Salem Karimzada, Nisansala Bandara, Naoko Goto, Chandima Jayasundera, Pubudini Perera, Thowfeek Mohamed-Ismail, Ifthikar Alam, K. Sudarshani, Mohamed Aleem

Production team:

Layout Coordination: Charlene Liau and Charmalee Jayasinghe

Design & Layout: Jay and Jay Advertising (Pvt) Ltd

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FOREWORD

Ministry of Provincial Councils, Local Government and Sports



Current comprehensive data and information relevant to major cities in Sri Lanka is not readily available. This collaborative effort by the Sri Lanka Institute of Local Governance in partnership with the United Nations Human Settlements Programme (UN-Habitat) with the financial assistance of the Government of Australia, under the guidance of my Ministry is commendable. Hence, it is with great pleasure that I am introducing the *State of Sri Lankan Cities 2018* report.

Although similar reports are available in other countries, Sri Lanka has not had such a compilation of wide ranging city specific analysis and data available. This is the first ever effort made to fill up the data and policy gap for our cities with accurate information and data, highlighting eight major relevant areas and assembling this gamut of information into a single publication.

As evident in this report, it has been compiled initially for eleven municipality areas covering all the 9 Provincial Capitals of the country. However, Colombo being the district with the most number of municipalities in the Western Province, and the most densely populated, information relevant to three Municipal Councils are included.

I wish to avail this opportunity to acknowledge the effort made by UN-Habitat in encouraging my Ministry to undertake this initiative to facilitate development oriented decision making at the Local Government level and with the assistance of the Sri Lanka Institute of Local Governance to produce a good reference handbook. With the success of this report, it is intended to expand this exercise to other municipal areas of the country as well.

It is equally important to stress here that the data and information given in this report needs to be updated periodically, so that any interested party would be able to utilize this as a reliable source of information for decision making now and into the future.

It is my belief that this report with crucial and multi-sectoral data and information on the selected cities will address the significant lack of data on our cities and help us move towards an integrated policy approach into the future.

Finally, I would like to thank the UN-Habitat and the Government of Australia for their generous assistance and active support to make this collaborative effort a reality.

Faiszer Musthapha (M.P.)

Hon. Minister of Provincial Councils,
Local Government and Sports
President's Counsel

FOREWORD

UN-Habitat



It gives me great pleasure to introduce this Report, the *State of Sri Lankan Cities 2018*, which takes an in depth look at the nation's provincial capitals. The '*State of Sri Lankan Cities*' project was conceptualized by UN-Habitat based on its global and regional experience in developing status reports of cities for over a decade. At the national launch of the *State of Asian and Pacific Cities 2015 Report* in February 2016 in Sri Lanka, it emerged that a national report of the same nature would be very useful. This was reinforced by recent experiences in Afghanistan, Bangladesh and Pakistan where UN-Habitat worked in partnership with the respective governments to produce State of Cities reports, and a decision to work towards *State of Sri Lankan Cities* report was begun.

Rapid urban growth is witnessed across many countries, and with it come significant challenges in the areas of urban planning and design and city management. These include land scarcity for habitable space; spiralling land values; overloading of physical infrastructure; urban poverty and underserved settlements; degradation of the urban environment and environment pollution; improper disposal of waste; encroachment of sensitive areas; increased exposure to disaster risk and impact of climate change on settlements; lack of institutional capacity; and uneven distribution. Rapid growth, if not managed properly can threaten the health and well-being of the city's population. In short, the economic, social and environment cost of unstructured urban growth can outweigh the benefits of urbanization.

This analytical report provides an update of the nine provincial capital cities in Sri Lanka and presents a way forward for all stakeholders providing a rigorous evidence base for better social, environmental and economic planning and programming for the cities. UN-Habitat is grateful to our funding partner — the Government of Australia, who has also supported similar reports in the region; as well as to our lead partners in the Government of Sri Lanka — the Ministry of Provincial Councils, Local Government and Sports through the Sri Lanka Institute of Local Governance who has taken leadership in this process; the Ministry of Megapolis and Western Development, together with all Ministries associated with cities, who extended their support to the project.

I hope this report is useful to the local authorities, the national government and other stakeholders in Sri Lanka interested in achieving both the New Urban Agenda and the Sustainable Development Goals, particularly SDG 11 on making cities and human settlements inclusive, safe, resilient and sustainable.

Ms. Maimunah Mohd Sharif

United Nations Under-Secretary-General and
Executive Director, UN-Habitat

EXECUTIVE SUMMARY



View of central Colombo across the Beira lake

Source: UN-Habitat/Charmalee Jayasinghe

The *State of Sri Lankan Cities 2018* (SoSLC) report includes 10 chapters of data and analysis, to provide detailed sectoral assessments of Sri Lanka's cities and present an integrated policy analysis. In doing so, it aims to support evidence-based urban policy and planning to drive the social and economic development of the country's urban centres. Drawing on the United Nation's New Urban Agenda, the report presents a Roadmap for Sri Lankan Cities, which promotes cross-sectoral and holistic interventions that recognise Sri Lanka's cities as interrelated urban systems. This approach yields **5 key policy recommendations** that work across sectors to achieve *a better urban future for all Sri Lankans*:

1. Redefine 'urban' in terms of spatial characteristics, and revise municipal boundaries to incorporate fringe urban areas.
2. Develop a national and sub-national sustainable urban strategy and investment plan for Sri Lankan cities.
3. Establish and fund national collaborative hubs and networked Research and Development Institutes located in universities and linked to government agencies and institutions, business and civil society.
4. Reform the dual governance structures that exist in urban areas to enhance local enabling environments, inclusiveness and gender mainstreaming; streamline, integrate and optimise the delivery of essential urban services to support the development of competitive urban and rural economies.
5. Initiate programmes to improve connectedness between cities, and their hinterlands, through building hard and soft infrastructure, logistics, knowledge networks, enhanced access to supply and value-chains, alliances, and inter-government arrangements.

This report presents the first comprehensive assessment of Sri Lanka's recent urban development. It is a key output of the ambitious 21 month *State of Sri Lankan Cities Project*, which includes both a report and an urban database to support sustainable urban development in Sri Lanka. The project has been developed and implemented by a number of partners: the Ministry of Provincial Councils, Local Government and Sports, through the Sri Lanka Institute of Local Governance; Local Authorities in the country's Provincial Capitals; the United Nations Human Settlements Programme (UN-Habitat), which has provided technical assistance; and with the Government of Australia as funding partner. The Ministry of Megapolis and Western Development extended its support with information and inputs, as did other ministries associated with urban development in the country.

The report draws on methodologies developed by UN-Habitat in other State of Cities Reports to examine the 'state' of Sri Lanka's major cities and highlight overall trends in the country's urban development. It uses recent satellite images to establish land use and urban expansion patterns, and also draws on statistical data, field interviews and city workshops to engage local stakeholders. The assessment centres on a detailed analysis of the country's 9 Provincial Capitals, including Anuradhapura (North Central Province), Badulla (Uva Province), Jaffna (Northern Province), Kandy (Central Province), Kurunegala (North Western Province), Ratnapura (Sabaragamuwa Province), Trincomalee (Eastern Province), and Colombo, the capital of the Western Province and of the country.

The **introduction** to the report outlines a vision of **a better urban future for all Sri Lankans** drawing on the United Nations Sustainable Development Goals and New Urban Agenda, as well the key Government of Sri Lanka strategic documents, *Vision 2025* and the *Public Investment Programme 2017-2020*. This future vision of Sri Lankan cities includes **5 key tenets, competitiveness, inclusivity, resilience, safety and sustainability**, which frame the analysis in the following chapters.

Following the introduction, **Chapter 2** examines the spatial attributes of the country's urbanisation. It shows the scale of Sri Lanka's urbanisation is far greater than official statistics suggest. Analysis of satellite imagery reveal that the country's 9 Provincial Capitals expanded at an average rate of 6.42 per cent per year in the period 1995-2017, and accounted for an estimated population of 7.39 million in 2017. Urban expansion has occurred as low density urban sprawl outside official municipal boundaries, and is therefore hidden from official urban population statistics. Correspondingly, the population of the 9 Provincial Capitals residing within official municipal boundaries is estimated at just 1.47 million in 2017. This large and 'hidden' urban fringe calls for a review of the definition of what constitutes 'urban' and revisions to municipal boundaries. In addition, low density sprawl expansion has resulted in a range of urban planning challenges that run across sectors and are explored throughout the report, ranging from the provision of utilities, urban mobility and resilience to climate change.

Chapter 3 examines the people and functions of Sri Lanka's cities. It provides detailed land use mapping from very-high resolution satellite imagery of the 9 Provincial Capitals in 2017. It finds that the capitals perform a range of functions that are crucial to the country's social and economic development, although a greater range of urban services are located in cities in western areas and/or in cities well-connected to the capital, Colombo. In contrast, the

populations of cities in the east and north, and more remote central areas, have less access to urban services. Across Sri Lanka, the functions and services of urban centres support ethnically diverse, vibrant and youthful populations that can be harnessed to promote development across the country, especially in less developed cities. A key future challenge is related to population ageing. According to UNDESA, nearly 30 per cent of the population will be over 60 by 2050, compared to just 12.4 per cent at the time of the last census. This ageing trend is found to be more pronounced in cities than in rural areas, with the majority of the elderly being women, presenting social and economic policy challenges.

An urban economy assessment, included in **Chapter 4**, shows cities are integral to Sri Lanka's economic development. The Western Region Megapolis (which includes Colombo and surrounding areas), and the 8 other Provincial Capital districts, account for 71 per cent of Sri Lanka's GDP; the Western Region Megapolis alone accounts for around 40 per cent of GDP. The SoSLC assessment of urban economies draws on a Location Quotient (LQ) analysis and labour productivity assessment to identify a number of emerging sectors that can drive future growth and spread economic development to less developed regional cities. In addition, a City Competitive Index (CCI) analysis reveals disparities in urban competitiveness, with more remote and less developed cities facing the greatest constraints to attracting increased trade and investment. The LQ and CCI are important tools to monitor the economic performance of cities, and guide future economic policies and investment. A key constraint to inclusive urban economies is gender inequality, particularly in less developed cities: in Trincomalee, for example, 77 per cent of men participate in the labour market compared to just 22 per cent of women.

Access to housing for Sri Lanka's urban population is a pressing policy issue, and is addressed in **Chapter 5**. The

analysis identifies a range of housing policy challenges related to tenure systems, the supply of affordable, high-quality housing, and difficulties accessing housing finance. The analysis also explores Sri Lanka's long tradition of people-centred approaches to housing, including the globally replicated *People's Process*, that have incorporated the diverse and changing needs of urban residents in urban housing policy. In addition, a qualitative study of housing experiences and aspirations among urban residents reveal the importance of positioning housing policy as part of integrated settlement planning. A key issue relating to urban housing policy is the lack of systematic data on urban housing markets available for the 9 Provincial Capitals, particularly for sprawling fringe areas located outside municipal boundaries, and in more remote and less developed cities.

Linked to the issue of housing is access to municipal services and utilities, which is assessed in **Chapter 6**. A key issue is related to rapid sprawl expansion in many cities, which means much of the demand for municipal services comes from the population living outside the municipal boundary. Kandy's municipal area, for example, has an estimated 2017 population of 113,000 but also serves an additional urban fringe population of 117,000. This trend is common across the 9 Provincial Capitals, and creates financing and coordination challenges to the provision and maintenance of a range of public services, from public space to sidewalks to health and education. There are particular challenges in all cities related to WASH coverage, especially waste water and solid waste management. Another important challenge is extending key social development services to more remote cities to support social and economic development: in Badulla, for example, just 3.1 per cent of built-up area is allocated to health and education compared to 9.1 per cent in Kurunegala.

In **Chapter 7**, intercity and rural-urban connectivity is highlighted as key to driving and rebalancing development across Sri Lanka's cities and the entire country. In particular, while there has been much progress on upgrading roads and rail infrastructure, challenges remain in logistics and emerging technologies. Internet connectivity is low and needs to be upgraded. Download speeds to public agencies in the 9 Provincial Capitals are just 2 Mbps, compared to a global average of 9 Mbps. Within individual cities, municipal connectivity has been characterised by rapid increases in private vehicle usage, especially in larger cities experiencing urban sprawl, which has resulted in long commutes and negatively impacted the liveability of cities in a variety of ways. Public and green transport infrastructure improvements are needed to stem this trend. A particular constraint to increased public transport usage is related to the safety of women: a survey of public transport users conducted for the SoSLC project found 70 per cent had experienced harassment.

Sri Lankan cities, like many in the Asian region, are increasingly vulnerable to climate change and associated risks. In this regard, **Chapter 8** finds that the 9 Provincial Capitals are exposed to a variety of climate risks, with landslides, floods and associated disease outbreaks being the most severe. Spatial analysis of climate risk in Kandy, for example, reveals that 14 per cent of built-up area is located on areas of moderate landslide risk, and 0.4 per cent (or 6 ha) is located in high-risk areas. Climate change will exacerbate existing risks, and bring new threats such as extreme temperatures and sea level rise. Urban areas, and in particular sprawling cities, are found to be especially vulnerable because of their land use and population distribution characteristics. In the Western Region Megapolis, for example, flood-related deaths have increased markedly during the period of rapid urban expansion, as greater numbers of people reside in flood-prone areas. In response to these threats, land use mapping shows Sri Lanka's 9 Provincial Capitals include important ecosystems, which provide a range of ecosystem services that can be leveraged to increase urban resilience.

The report's last sectoral analysis in **Chapter 9** focuses on urban governance. The chapter develops a City Governance Index (CGI) to measure the performance of local authorities in Sri Lanka's 9 Provincial Capitals. It finds that municipal authorities face significant financial pressures to raise revenue to fund the development of infrastructure and deliver basic urban services: only 1.6-2.6 per cent of total government revenues are allocated to local authorities. Moreover, providing services to large fringe populations outside municipal boundaries compound these resource constraints. In addition, a confusing dual governance structure means the roles, responsibilities and financing of services is uncoordinated, resulting in weak governance outcomes. Like the CCI, the CGI reveals that less developed cities in more remote areas perform worse than those located in Western areas and/or cities well-connected to the capital, Colombo.

Finally, **Chapter 10** provides a Roadmap for Sri Lankan Cities. In doing so, it aims to provide a guide to achieve the vision of *a better urban future for all Sri Lankans* outlined in the report's introduction, and achieve the **5 key tenets, competitiveness, inclusivity, resilience, safety and sustainability**, which have framed the analysis of the report.

මූලික සාරාංශය



Kandy Central Market

Source: UN-Habitat/Charlene Liu

“ශ්‍රී ලංකාවේ නගර පිළිබඳ විමර්ශනය 2018” විමර්ශන වාර්තාව මෙරට නගර වල අංශ කීපයක් ආවරණය වන පරිදි සිදු කළ විස්තරාත්මක විශ්ලේෂණයක් සහ සමෝධානිත ප්‍රතිපත්ති විශ්ලේෂණයක් අන්තර්ගත වන පරිච්ඡේද දහයකින් සමන්විත වේ. එම විශ්ලේෂණයන් මගින් ශ්‍රී ලංකාවේ නාගරික මධ්‍යස්ථාන වල සමාජය හා ආර්ථික උන්නතිය සඳහා අවශ්‍ය නාගරික ප්‍රතිපත්ති සම්පාදනයට සහ සැලසුම්කරණයට අභිනාලමක් හා මාර්ගෝපදේශණයක් සපයයි. එකී දැක්මට ළගාවීම සඳහා උපයෝගී කර ගත හැකි ප්‍රතිපත්ති/ ක්‍රියාමාර්ග පහක් මෙහි දක්වා ඇත.

1. “නාගරික” යන්නට නව අර්ථයක් ලබා දිය යුතු අතර නගර සහ සීමාවන් නිර්ණය කිරීමේදී ඒ සඳහා තදාසන්න නාගරික ප්‍රදේශයන්ද එක් කළ යුතුය.
2. ශ්‍රී ලංකාවේ නගර සඳහා ජාතික නිරසාර නාගරික උපායමාර්ග සහ ආයෝජන සැලැස්මක් සකස් කල යුතුය.
3. විශ්වවිද්‍යාල වල නව පර්යේෂණ හා සංවර්ධන ආයතන, ජාතික සහයෝගිතා මධ්‍යස්ථාන ඉදි කිරීම, මුද්‍රාධාර සැපයීම සහ ඒවා රාජ්‍ය ආයතන, ව්‍යාපාරික ආයතන, සිවිල් සමාජය සමග සම්බන්ධ කරවීම.
4. දැනට පළාත් පාලන ආයතන වල පවතින ද්විත්ව පාලන ව්‍යුහය වෙනස් කරමින් ප්‍රශස්ත මට්ටමින් ජනතාවට නාගරික සේවාවන් ලබා දෙමින් නාගරික හා ග්‍රාමීය ආර්ථික සම්බන්ධ කිරීම.
5. නගරාන්තර සම්බන්ධතාවය වර්ධනය කිරීම සඳහා යටිතලපහසුකම්, දැනුම් සම්බන්ධතා ආදිය ප්‍රවර්ධනය කිරීමට නව වැඩසටහන් දියත් කිරීම.

ශ්‍රී ලංකාවේ ප්‍රථම වතාවට වර්තමාන නාගරික සංවර්ධනය පිළිබඳ වන පුළුල් විශ්ලේෂණයක් මෙම වාර්තාව තුළින් ඉදිරිපත් කෙරේ. මාස 21ක් තුළදී ක්‍රියාත්මක කරන ලද ශ්‍රී ලංකාවේ නගර වල තත්ත්වය නිරීක්ෂණය කිරීමේ ව්‍යාපෘතියෙහි ප්‍රධාන නිමැවුම වන මෙය මෙරට තිරසාර නාගරික සංවර්ධනය උදෙසා වැදගත් වන විශ්ලේෂණ වාර්තාවකින් සහ දත්ත පද්ධතියකින් සමන්විත වේ. මෙම ව්‍යාපෘතිය ක්‍රියාත්මක කිරීමේදී පළාත් සභා, පළාත් පාලන හා ක්‍රීඩා අමාත්‍යාංශය සහ පළාත් පාලනය පිළිබඳ ශ්‍රී ලංකා ආයතනය මග පෙන්වූ අතර ශ්‍රී ලංකාවේ පළාත් අග නගර වල පළාත් පාලන ආයතන හා එක්ව එක්සත් ජාතීන්ගේ මානව ජනවාර්ෂ වැඩසටහන විසින් තාක්ෂණ සහයෝගය සැපයූ අතර ඕස්ට්‍රේලියානු රජය විසින් මූල්‍ය සහයෝගය සපයන ලදී. තවද මෙම කර්තව්‍යය සාර්ථක කර ගැනීම සඳහා බස්නාහිර හා මහා නගර සංවර්ධන අමාත්‍යාංශය ඇතුළු නාගරික සංවර්ධනය සඳහා වන අනෙකුත් අමාත්‍යාංශ වලින්ද සහයෝගය ලැබිණි.

එක්සත් ජාතීන්ගේ මානව ජනවාර්ෂ වැඩසටහනෙහි මූලිකත්වයෙන් නිමැවුණු වෙනත් කලාපීය නගර වල තත්ත්වය නිරීක්ෂණය කිරීමේ වාර්තා වලදී උපයෝගී කරගත් ක්‍රමවේදයන් අනුසාරයෙන් ශ්‍රී ලංකාවේ ප්‍රධාන නගර වල තත්ත්වය සහ නාගරික සංවර්ධනයෙහි සමස්ත රටාවන් විශ්ලේෂණය කරන ලදී. එහිදී නාගරික ව්‍යාප්තියේ සහ භූමි පරිභෝග රටාවන් අධ්‍යයනය කිරීම සඳහා ආසන්නතම වන්දිකා ජායාරූපත් අනෙක් විශ්ලේෂණයන් සඳහා සංඛ්‍යාත්මක දත්ත, ක්ෂේත්‍ර වාර්තා, අධ්‍යයන වලින් හා ප්‍රාදේශීය වැඩිමුළු වලින් ලබා ගත් දත්ත භාවිතා කරන ලදී. මෙම ව්‍යාපෘතියේ අධ්‍යයන ස්ථාන ලෙස තෝරා ගන්නා ලද්දේ ශ්‍රී ලංකාවේ පළාත් නවයෙහි අග නගර නවයයි. එනම් අනුරාධපුරය (උතුරුමැද පළාත), බදුල්ල (ඌව පළාත), යාපනය (උතුරු පළාත), මහනුවර (මධ්‍යම පළාත), කුරුමාගල (වයඹ පළාත), රත්නපුරය (සබරගමුව පළාත), ත්‍රිකුණාමලය (නැගෙනහිර පළාත) සහ කොළඹ (බස්නාහිර පළාත) යනාදියයි.

මෙහි **හැඳින්වීම පරිච්ඡේදයෙන්** සියළුම ශ්‍රී ලාංකිකයන් සඳහා නාගරික අනාගතයක් සඳහා වූ දැක්මක් ඉදිරිපත් කරයි. එය 'එක්සත් ජාතීන්ගේ තිරසාර සංවර්ධන අරමුණු', 'නව නාගරික සැලැස්ම' මෙන්ම 'දැක්ම 2025', 'ආයෝජන වැඩසටහන 2017-2020' වැනි රජයේ වාර්තා පදනම් කර ගනිමින් රචනා කරන ලදී. එකී අනාගත දැක්ම තුළ තරගකාරී බව, අන්තර්ගතභාවය, ප්‍රත්‍යස්ථිතිය, සුරක්ෂිතභාවය, තිරසාරත්වය යන අංශ පහ අන්තර්ගත වන අතර අනෙකුත් පරිච්ඡේද විශ්ලේෂණය කර ඇත්තේ එම අංශ වලට අනුකූල වන පරිදිය.

දෙවන පරිච්ඡේදය තුළින් ශ්‍රී ලංකාවේ නාගරිකරණයට ඉවහල් වූ අවකාශය දත්ත පිළිබඳ විශ්ලේෂණයක් ඉදිරිපත් කරයි. එම විශ්ලේෂණයට අනුව ශ්‍රී ලංකාවේ නාගරිකරණය වීමේ සීඝ්‍රතාවයේ සැබෑ අගය ආයතනික දත්ත වලින් පිළිබිඹු වන අගයට වඩා ඉහල ගොස් ඇත. වන්දිකා ජායාරූප ඇසුරෙන් කරන ලද විශ්ලේෂණයන්ට අනුව 1995-2017 කාල සීමාව තුළ පළාත් අග නගර නවයෙහි ව්‍යාප්තියේ සාමාන්‍යය ප්‍රතිශතය වසරකට 6.42 ක් වන අතර 2017 වසරේදී ඇස්තමේන්තුගත ජනගහනය මිලියන 7.39ක් වේ. පරිපාලන මහා නගර සභා මායිම් වලට පිටතින් වැඩි ඝනත්ව නාගරික ව්‍යාප්තියක් සිදුවීමේ ප්‍රවණතාවයක් දක්නට ඇති අතර, එම ව්‍යාප්තිය රජයේ නිල නාගරික ජනගහන දත්ත වාර්තා වලට එක් වී නොමැත. ඒ අනුව රජයේ නිල දත්ත වලට අනුව 2017 වර්ෂයේදී පළාත් අග නගර නවයෙහි පරිපාලන මහා නගර සභා මායිම් තුළ වාසය කරන මුළු ජනගහනය මිලියන 1.47ක් ලෙස සඳහන් වී ඇත. ඒ අනුව එම 'අනාවරණය නොවූ' ජනගහනයෙහි විශාලත්වයෙන් ගමන් වනුයේ 'නාගරික' යන්නෙහි දැනට පවතින අර්ථයන් දැනට පවතින මහා නගර සභා පරිපාලන මායිම් වලින් ප්‍රතිසංස්කරණයක් කල යුතු බවයි. මීට අමතරව අඩු ඝනත්ව ජනගහන ව්‍යාප්තිය නිසා නාගරික සේවා සැපයීම, නාගරික ප්‍රවාහනය, දේශගුණික විපර්යාස වලට මුහුණ දීම වැනි අංශ උදෙසා සැලසුම් සකස් කිරීමේදී විවිධ අභියෝග වලට මුහුණ දීමට සිදුවී ඇත.

ශ්‍රී ලංකාවේ නගර වල ජනගහනය සහ ඔවුන්ගේ ක්‍රියාකාරකම් පිළිබඳව අධ්‍යයනයක් **තුන්වන පරිච්ඡේදයෙන්** ඉදිරිපත් කරයි. එහි අධි නිව වන්දිකා ජායාරූප ඇසුරින් 2017 වර්ෂයේදී පළාත් අග නගර නවය සඳහා සකස් කල භූමි භාවිතය පිළිබඳ විස්තරාත්මක සිතියම් අන්තර්ගත වේ. සෑම අග නගරයක්ම රටෙහි සමාජය හා ආර්ථික සංවර්ධනය සඳහා වැදගත් වන

විවිධ ක්‍රියාකාරකම් වල නිරත වේ. නාගරික සේවාවන් බොහෝමයක් කොළඹ සහ තදාසන්න ප්‍රදේශ වලට සීමා වී ඇති නමුත් උතුරු, නැගෙනහිර සහ ඇතැම් දුෂ්කර මධ්‍යම ප්‍රදේශ වල ජනතාවට නාගරික සේවාවන් වලට ළගා වීමට ඇති හැකියාව ඉතා අවමය. එබැවින් ශ්‍රී ලංකාව පුරා පිහිටි නාගරික මධ්‍යස්ථාන වල කාර්යභාරය සහ සේවාව තුළින් සියළුම ජනතාවගේ, විශේෂයෙන්ම වැඩි දියුණු නොවූ නගර වල ජනතාවගේ උන්නතිය සඳහා කටයුතු සැලසෙනු ඇත. එමෙන්ම වයස්ගත ජනගහනය දැනට පවතින තවත් ප්‍රධාන අභියෝගයක් ලෙස හඳුනා ගෙන ඇත. එක්සත් ජාතීන්ගේ ආර්ථික සහ සමාජය සංවර්ධන දෙපාර්තමේන්තුවට අනුව 2050 වන විට වයස අවුරුදු 60ට වැඩි ජනගහනයෙහි ප්‍රතිශතය 30 ක් පමණ වන අතර දැනට පවතින ආසන්නතම සංගණන දත්ත වලට අනුව එම අගය 12.4ක් වේ. මෙම තත්වය ග්‍රාමීය ප්‍රදේශ වලට වඩා නාගරික ප්‍රදේශ වලට දැඩි බලපෑමක් එල්ල කරයි. එමෙන්ම එම වයස්ගත ජනගහනයෙන් වැඩි ප්‍රමාණයක් ස්ත්‍රීන් වීම, සමාජය සහ ආර්ථික ප්‍රතිපත්ති සකස් කිරීමේදී අභියෝගයක් වේ.

නාගරික ආර්ථිකය පිළිබඳව **හතරවන පරිච්ඡේදයේ** දැක්වෙන පරිදි ශ්‍රී ලංකාවේ ආර්ථික සංවර්ධනය කෙරෙහි නගර ඉතා වැදගත් මෙහෙයක් ඉටු කරයි. බස්නාහිර මහා නගර කලාපය (කොළඹ හා තදාසන්න ප්‍රදේශ) සහ අනෙකුත් පළාත් වල ප්‍රධාන දිස්ත්‍රික්ක අට ශ්‍රී ලංකාවේ දළ දේශීය නිෂ්පාදිතයට 71% ක දායකත්වයක් ලබා දෙන අතර බස්නාහිර මහා නගර කලාපය පමණක් ශ්‍රී ලංකාවේ දළ දේශීය නිෂ්පාදිතයට 40% ක දායකත්වයක් ලබා දෙයි. මෙම පරිච්ඡේදයේදී ස්ථානීය ලක්ෂ්‍යය විශ්ලේෂණයක් සහ ශ්‍රම ඵලදායිතා විශ්ලේෂණයක් භාවිතා කරමින් අඩු සංවර්ධිත ග්‍රාමීය නගර වලට අනාගත ආර්ථික සංවර්ධනයක් ව්‍යාප්ත කිරීමෙහි ලා උපකාරී වන දියුණු වෙමින් පවතින ශක්‍යතා කර්මාන්ත අංශ හඳුනා ගන්නා ලදී. එමෙන්ම නාගරික තරගකාරී දර්ශක විශ්ලේෂණය මගින් නාගරික තරගකාරීත්වයේ විෂමතා හඳුනා ගන්නා ලදී. එහිදී අනාවරණය වූයේ වෙළඳ හා ආයෝජන අවස්ථාවන්ට ළගා වීමේදී දුෂ්කර, ග්‍රාමීය, නොදියුණු නගර බොහෝ බාධක වලට මුහුණ දෙන බවයි. ස්ථානීය ලක්ෂ්‍යය විශ්ලේෂණය සහ නාගරික තරගකාරී දර්ශක විශ්ලේෂණය මගින් නගර වල ආර්ථික කටයුතු පිළිබඳ අධ්‍යයනයට හා අනාගත ආර්ථික ප්‍රතිපත්ති, ආයෝජන පිළිබඳ මූලික අවබෝධයක් ලබා ගැනීමට අවශ්‍ය අභිතාලම සපයයි. ආර්ථික සංවර්ධනයේදී නොදියුණු නගර වලට බලපාන තවත් ප්‍රධාන බාධකයක් වනුයේ ස්ත්‍රී පුරුෂ

අසමානතාවයයි. උදාහරණයක් ලෙස ත්‍රිකුණාමලය නගරයේ ශ්‍රී වෙළඳපොළ සඳහා පුරුෂ දායකත්වය 77% ක් වන අතර ස්ත්‍රී දායකත්වය 22%ක් වේ.

පස්වන පරිච්ඡේදය මගින් ශ්‍රී ලංකාවේ නාගරික ජනතාවගේ මූලික අවශ්‍යතාවයක් වන නිවාස කරා ප්‍රගා විමේදී බලපාන ගැටළු පිළිබඳ සාකච්ඡා කෙරේ. මෙහිදී නිවාස ප්‍රතිපත්ති සකස් කිරීමේදී අවධානය යොමු කළ යුතු අභියෝග වන කුලී නිවාස ක්‍රමය, ජනතාවට දැරිය හැකි මට්ටමින් උසස් තත්වයෙන් යුතු නිවාස ලබා දීම, නිවාස ණය ලබා ගැනීමට ඇති හැකියාව හඳුනා ගෙන ඇත. නේවාසික නාගරික ජනතාවගේ නිවාස අත්දැකීම් සහ අපේක්ෂාවන් සම්බන්ධයෙන් සිදු කෙරුණු ගුණාත්මක විශ්ලේෂණයන්ගෙන් අනාවරණය වූයේ නිවාස ප්‍රතිපත්තිය, සමෝධානික ස්ථාපිත සැලැස්මෙහි අංශයක් ලෙස පැවතීම වැදගත් වන බවයි. නාගරික නිවාස ප්‍රතිපත්තියට අදාළ මූලික ගැටළුවක් වනුයේ පළාත් අගනගර නවයෙහි නාගරික සීමා වලින් පිටත සහ ග්‍රාමීය, නොදියුණු ප්‍රදේශ වල නිවාස වෙළඳපොළ පිළිබඳ පවතින විධිමත් තොරතුරු වල හිඟතාවයයි.

ශ්‍රී ලංකාවේ නාගරික සේවාවන් සහ උපයෝගීතාවයන් පිළිබඳව හයවන පරිච්ඡේදයේදී අවධානය යොමු කෙරේ. සිඝ්‍ර නාගරික ව්‍යාප්තිය නිසා මතු වී ඇති ප්‍රධාන ගැටළුවක් වනුයේ මහා නගර සභා මායිම් වලින් පිටත පිවත්වන ජනතාවගෙන් නාගරික සේවාවන් සඳහා ඇති ඉල්ලුම ඉහල යාමයි. උදාහරණයක් ලෙස මහනුවර මහ නගර සභා සීමාව තුළ පිවත් වන 2017 ඇස්තමේන්තුගත ජනගහනය 113,000 ක් වුවද මහා නගර සභා සීමාවෙන් පිටත පිවත් වන 117,000 වූ ජනගහනය සඳහාද අවශ්‍ය වන නාගරික පහසුකම් සහ සේවාවන් සපයයි. මෙය සියලුම නගර වලට පොදුවේ බලපාන ප්‍රධාන ගැටළුවක් වන අතර ඒ නිසා පොදු සේවාවන් (අධ්‍යාපනය, සෞඛ්‍ය) ලබාදීමේදී සහ පවත්වාගෙන යාමේදී මූල්‍ය, සම්බන්ධීකරණ අභියෝග වලට මුහුණ දීමට සිදු වී ඇත. එසේම අප පලය සහ ඝන අපද්‍රව්‍ය කළමනාකරණයද ප්‍රධාන අභියෝගයක් වී ඇත. දුෂ්කර, ග්‍රාමීය නගර වල ආර්ථික සහ සමාජයීය සංවර්ධනය උදෙසා උපකාරී වන මූලික නාගරික සේවාවන් එකී නගර වලට ව්‍යාප්ත කරවීම ප්‍රධාන ගැටළුවක් වී ඇත. උදාහරණයක් ලෙස අධ්‍යාපනය සහ සෞඛ්‍යය අංශ සඳහා බදුල්ල නගරයේ වෙන් කර ඇති වපසරිය 3.1%ක් වන අතර කුරුණෑගල නගරයේ එම අගය 9.1%ක් වේ.

ශ්‍රී ලංකාවේ සංවර්ධනය සඳහා අන්තර් නගර සහ ග්‍රාමීය-නාගරික සම්බන්ධීකරණයේ ඇති වැදගත්මක **හත්වන පරිච්ඡේදයෙන්** පැහැදිලි කෙරේ. මහා මාර්ග සහ දුම්රිය මාර්ග යටිතල පහසුකම් වල යම්තාක් දුරකට වර්ධනයක් දක්නට හැකි වුවත් තාක්ෂණික යටිතල පහසුකම් වල වර්ධනයෙහි ලා අභියෝග පවතී. අන්තර්ජාල සම්බන්ධතාවයන් ඉතා පහත් මට්ටමක පවතින අතර එය ප්‍රවර්ධනය කිරීම අත්‍යවශ්‍ය වේ. පළාත් අගනගර නවයෙහි පිහිටි පොදු ආයතන වල භාගත කිරීමේ වේගය තත්පරයට මෙගාබයිට් 2ක් වන අතර ගෝලීය වශයෙන් එහි සාමාන්‍යය අගය තත්පරයට මෙගාබයිට් 9ක් වේ. පෞද්ගලික වාහන භාවිතයේ සිඝ්‍ර වර්ධනය මගින් නගරයක් තුළ සිදු වී ඇති සම්බන්ධීකරණය පිළිබඳ අවබෝධයක් ලබා ගත හැක. මේ නිසා විශේෂයෙන්ම විශාල නගර වල දීර්ඝ ගමනාගමන රටාවන් බිහි වී ඇති අතර එය නගර වල සජීවීභාවය කෙරෙහි විවිධාකාරයෙන් අහිතකර බලපෑම් ඇති කරයි. මෙම තත්වය යටතේ පොදු, පරිසර හිතකාමී ප්‍රවාහන යටිතල පහසුකම් ප්‍රවර්ධනයෙහි අවශ්‍යතාවය ඉතා හොඳින් ඉස්මතු වේ. පොදු ප්‍රවාහන මාධ්‍ය භාවිතය සඳහා ඇති ප්‍රධාන බාධාවක් ලෙස කාන්තාවන්ට ඇති සුරක්ෂිතභාවයේ මදකම හඳුනා ගෙන ඇත. මෙම ව්‍යාපෘතියට අදාළව පොදු ප්‍රවාහන ක්‍රම භාවිතා කරන්නන් ඉලක්ක කර ගනිමින් සිදු කළ සම්බන්ධයෙන්

අනාවරණය වූයේ කාන්තාවන්ගෙන් 70% ක් අතවරයට ලක්ව ඇති බවයි.

අටවන පරිච්ඡේදයෙන් පිළිබිඹු වන පරිදි ශ්‍රී ලංකාවේ පළාත් අගනගර නවය විවිධ දේශගුණික විපර්යාස වලට ලක්වන අතර, නායයැම්, ගංවතුර, රෝගකාරක ව්‍යාප්තිය ඒවා අතරින් ප්‍රධාන වේ. උදාහරණයක් ලෙස සිතියම් වල සඳහන් වන දත්ත වලට අනුව මහනුවර නගර සභා සීමාව තුළ පිහිටි ඉදි කිරීම් වලින් 14%ක් සාමාන්‍ය නායයැම් අවදානම් සහිත ප්‍රදේශ වලත් 0.4%ක් (හෙක්ටයාර් 6) දැඩි නායයැම් අවදානම් සහිත ප්‍රදේශ වලත් පිහිටා ඇත. දේශගුණික විපර්යාස මගින් දැනට එල්ල වී ඇති තර්ජන උද්දීපනය කරන අතර අධික උෂ්ණත්වය, සාගර පලමට්ටම ඉහළ යාම වැනි නව තර්ජන නිර්මාණය කරයි. ජනගහන ව්‍යාප්තියේ සහ ඉඩම් භාවිතයේ ස්වභාවය නිසා නාගරික ප්‍රදේශ වල ජනතාව දේශගුණික විපර්යාස වලින් නිතර පීඩා විඳිති. උදාහරණයක් ලෙස බස්නාහිර මහා නගර කලාපයේ වාර්තා වූ ගංවතුර මරණ සංඛ්‍යාව පසුගිය කාලය තුළදී සැලකිය යුතු ප්‍රමාණයකින් ඉහල ගොස් ඇත. එයට හේතුව වන්නේ පසුගිය කාල සීමාව තුළ සිදු වූ සිඝ්‍ර නාගරික ව්‍යාප්තිය නිසා ඇති වූ ඉඩම් අර්බුදය හේතුවෙන් බොහෝ පිරිසක් ගංවතුර අවදානම් ප්‍රදේශ තම වාසස්ථානය ලෙස තෝරා ගැනීමයි. පළාත් අග නගර නවයෙහි සිතියම්ගත කිරීම් වලට අනුව දේශගුණික තර්ජන වලට පිළියමක් ලෙස පරිසර පද්ධති වලින් සැපයෙන සේවාවන් උපයෝගී කර ගනිමින් නාගරික ප්‍රත්‍යස්ථිතිය වර්ධනය කර ගත හැක.

නවවන පරිච්ඡේදයෙන් අවධානය යොමු කෙරෙනුයේ නාගරික පාලනය පිළිබඳවයි. මෙමගින් පළාත් අගනගර නවයෙහි පළාත් පාලන ආයතනවල ක්‍රියාකාරීත්වය පිරික්සීම සඳහා නගර පාලන දර්ශකයක් ඉදිරිපත් කර ඇත. එයින් අනාවරණය වන පරිදි මූලික නාගරික සේවාවන් සහ යටිතල පහසුකම් සංවර්ධනයට අවශ්‍ය ප්‍රතිපාදන ලබා ගැනීමේදී පළාත් පාලන ආයතන සැලකිය යුතු මූල්‍ය අර්බුදයකට මුහුණ දෙති. රජය විසින් පළාත් පාලන ආයතන සඳහා වෙන් කර ඇත්තේ 1.6%-2.6%ක් තරම් වන සුළු ප්‍රතිපාදන ප්‍රමාණයකි. තවද මහා නගර සීමාවෙන් පිටත වාසය කරන ජනතාවට අවශ්‍ය සේවාවන් ලබාදීමට සිදු වීම නිසා නගර සභා සීමාව තුළ ඇති සම්පත් වල හිඟතාවයක් හට ගෙන ඇත. දැනට පවතින ව්‍යාකූල ද්විත්ව පාලන ව්‍යුහය නිසා සේවාවන් වල වගකීම, මූල්‍යකරණය නිසි පරිදි සම්බන්ධීකරණය නොවීම නිසා පළාත් පාලනය දුර්වල වී ඇත. නාගරික තරගකාරී දර්ශකය මෙන්ම, නගර පාලන දර්ශකයෙන්ද අනාවරණය වන්නේ දියුණු නොවූ ග්‍රාමීය නගර වල ක්‍රියාකාරීත්වය, කොළඹ සහ තදාසන්න ප්‍රදේශ වල ක්‍රියාකාරීත්වයට වඩා ඉතා පහල මට්ටමක පවතින බවයි.

අවසානයේ දසවන පරිච්ඡේදයෙන් ශ්‍රී ලංකාවේ නගර සඳහා වන අනාගත සැලැස්මක් ඉදිරිපත් කරයි. මෙහි අරමුණ වන්නේ හැඳින්වීමෙහි සඳහන් වන පරිදි 'සියලුම ශ්‍රී ලාංකිකයන් සඳහා යහපත් නාගරික අනාගතයක්' යන දැක්මට ප්‍රගාපිත සඳහා අවශ්‍ය මාර්ගෝපදේශණය සැපයීමයි. මේ සඳහා උපයෝගී කරගත් තරගකාරී බව, අන්තර්ගතභාවය, ප්‍රත්‍යස්ථිතිය, සුරක්ෂිතභාවය, තිරසාරත්වය යන අංශ වලට අනුකූල වන පරිදි වාර්තාවේ දත්ත විග්‍රහ කෙරේ.

அறிக்கையின் சாரம்சம்

இலங்கை நகரங்களின் நிலை 2018 (SoSLC) தொடர்பான அறிக்கையானது தரவுகள் மற்றும் பகுப்பாய்வுகளுடனான 10 அத்தியாயங்களை உள்ளடக்கியது. இது இலங்கையின் நகரங்களின் விரிவான துறைசார் மதிப்பீடுகளை வழங்கவும், ஒருங்கிணைக்கப்பட்ட கொள்கை பகுப்பாய்வுகளை முன்வைக்கவும் உதவுகிறது. இதனூடாக இவ்வறிக்கையானது தனது பிரதான இலக்காக ஆதாரபூர்வமான நகர்ப்புற கொள்கை மற்றும் நாட்டின் நகர்ப்புற மையங்களின் சமூக பொருளாதார அபிவிருத்தியை திட்டமிடுதலில் ஆதரவு செலுத்துவதை இலக்காகக் கொண்டுள்ளது. இவை இலங்கை நகரங்களுக்கான வீதி வரைபடத்தினை வழங்குகின்றன, ஒருங்கிணைந்த கொள்கை பகுப்பாய்வு, புதிய நகர்ப்புற நிகழ்ச்சி நிரல் அணுகுமுறைக்கான வரைதல் ஆகியவற்றை உள்ளடக்கியதாக இது காணப்படுகிறது. இது பல துறைசார் இடங்களில் முழுமையான தலையீடுகளுடன் ஈடுபடுதலை ஊக்குவிப்பதோடு இலங்கையின் நகரங்களை ஒன்றுடனொன்று தொடர்புபட்ட நகர அமைப்பாக அங்கீகரிக்கின்றது. இந்த அணுகுமுறையானது சகல இலங்கையர்களும் ஒரு சிறந்த நகர்ப்புற எதிர்காலத்தை அடைய **05 முக்கிய கொள்கைகள் / செயல்களை** சகல மட்டங்களிலும் செயற்படுத்த பரிந்துரைக்கின்றது:

1. இடநிலைப் பண்புகள் தொடர்பில் “நகர்ப்புறம்” என்ற பதத்தினை மீள வரையறை செய்தலும், நகர்ப்புற விளிம்புப்பகுதிகளை இணைத்துக் கொள்ளும் பொருட்டு மாநகர எல்லைகளை திருத்தியமைத்தலும்.
2. இலங்கை நகரங்களுக்கான நீடித்து நிலைத்து நிற்கக்கூடிய நகர்ப்புற மூலோபாய மற்றும் முதலீட்டு திட்டத்தை தேசிய, உப-தேசிய மட்டங்களில் உருவாக்குதல்.
3. தேசிய கூட்டு மையங்களை நிறுவுதலும், நிதியுதவியளித்தலும். அவை பல்கலைக்கழகங்களில் அமைந்துள்ள ஆராய்ச்சி, அபிவிருத்தி நிலையங்களின் வலைப்பின்னலுடன் இணைக்கப்பட்டிருப்பதுடன் அரசு முகவர் நிலையங்கள், வணிக நிறுவனங்கள் மற்றும் சாதாரண சமூகங்கள் என்பவற்றுடனும் தொடர்புபட்டிருக்கும்.
4. உள்ளூர் சூழலை, பால்நிலை உள்ளடங்கலாக சகல பிரிவுகளையும் தரமாக மேம்படுத்துவதற்காக நகர்ப்புற பகுதிகளிலுள்ள இரட்டை நிர்வாக கட்டமைப்புக்களை சீர்திருத்துதல்: போட்டித்திறன் மிக்க நகர்ப்புற மற்றும் கிராமிய பொருளாதார அபிவிருத்திக்கு அத்தியாவசிய நகர்ப்புற சேவை வழங்கலை ஒழுங்குபடுத்தல், ஒன்றுபடுத்தல் மற்றும் மேம்படுத்தல்.
5. நகரங்களுக்கும் வசதி, வாய்ப்புகளில் மிக பின்தங்கிய பிரதேசங்களுக்கும் இடையிலுள்ள இணைப்பை மேம்படுத்துவதற்காக வன்மையான மற்றும் மிருதுவான உட்கட்டமைப்பு வசதிகள், அறிவுசார் பரிமாற்றல்களுக்கான வலையமைப்பு போன்ற விடயங்களுடன் பொருளாதார உற்பத்திசார் தொடர் படிநிலைகள், கூட்டணிகள் மற்றும் அரசாங்கத்தின் இடையேயான ஒழுங்கமைப்புகள் கொண்ட நிகழ்ச்சித் திட்டங்களை முன்னெடுத்தல்.

அனைத்து இலங்கையருக்குமான சிறந்த நகர்ப்புற எதிர்காலத்தை குறிக்கோளாக கொண்டு இந்த அறிக்கை அறிமுகப்படுத்தப்பட்டிருக்கிறது. ஐக்கிய நாடுகள் சபையின் நிலையான அபிவிருத்தி இலக்குகளை நடைமுறைப்படுத்தல், புதிய நகரங்களுக்கான நிகழ்ச்சித்திட்ட நிரல், அதேபோல, இலங்கை அரசின் முக்கிய மூலோபாய ஆவணங்களான 2025th ஆண்டின் குறிக்கோள்கள் மற்றும் பொது முதலீட்டு திட்டம் 2017-2020 ஆகியவற்றையும் இவ்வறிக்கை உள்ளடக்கியதாக காணப்படுகிறது. இலங்கை நகரங்களின் எதிர்கால குறிக்கோளானது **போட்டித்தன்மை (Competitiveness), உள்ளூர்வு (Inclusivity), மீள்திறன் (Resilience), பாதுகாப்பு (Safety)** மற்றும் **நிலைத்திருக்கும் தன்மை (Sustainability)** ஆகிய **05 பிரதான அம்சங்களை** கொண்டுள்ளது. இந்த பிரதான அம்சங்களே பின்வரும் அத்தியாயங்களில் பகுப்பாய்வு செய்யப்பட்டிருக்கின்றன.

அறிமுகத்தைத் தொடர்ந்து, **அத்தியாயம்-02** நகர்ப்புறத்தின் வெளிப்புற பண்புகளை ஆராய்கிறது. உத்தியோகபூர்வமாக பரிந்துரைக்கப்பட்ட புள்ளி விபரங்களை விட உண்மையான நகரமயமாக்கலின் அளவு இலங்கையில் மிக அதிகமாக உள்ளது என்பதை இது காட்டுகிறது. 1995th ஆண்டு தொடக்கம் 2017th ஆண்டு வரையான காலப்பகுதியில் நாட்டின் 09 மாகாணங்களின் தலைநகரங்கள் வருடாந்தம் சராசரியாக 6.42 சதவீதத்தால் விரிவாக்கப்பட்டுள்ளன என்பதை செயற்கைக்கோள்கள் மூலம் எடுக்கப்பட்ட படங்கள் வெளிப்படுத்துகின்றன. அத்துடன் 2017th ஆண்டின் சனத்தொகை 7.39 மில்லியன்களாக கணக்கிடப்பட்டுள்ளது. உத்தியோகபூர்வ நகராட்சி எல்லைக்கு அப்பால் நகர விரிவாக்கமானது குறைந்தளவு அடர்த்தியுடனேயே காணப்படுகிறது. அத்துடன் இவை உத்தியோகபூர்வ நகர்ப்புற சனத்தொகை புள்ளிவிபரத்தில் காட்டப்படுவதில்லை. அத்துடன் உத்தியோகபூர்வ நகராட்சி எல்லைகளிலுள்ள 09 மாகாண தலைநகரங்களின் சனத்தொகை 2017th ஆண்டு 1.47 மில்லியன்களாக மதிப்பி-

இலங்கையின் சமீபத்திய நகர்ப்புற அபிவிருத்தி தொடர்பான முதற்கட்ட விரிவான மதிப்பீட்டை இந்த அறிக்கை வழங்குகின்றது. 21 மாதகால கடின உழைப்பின் ஒரு முக்கிய வெளியீடாக இலங்கை நகரங்களின் நிலை தொடர்பான திட்டம் அமைந்துள்ளது. இது இலங்கையில் நீடித்து நிலைத்து நிற்கக்கூடிய நகர்ப்புற அபிவிருத்திக்கு உதவும் நகர்ப்புறம் தொடர்பான தரவுத்தளம் மற்றும் அறிக்கை ஆகிய இரு அம்சங்களை உள்ளடக்கியதாக காணப்படுகின்றது. இத்திட்டமானது பல பங்காளர்களினால் உருவாக்கப்பட்டு நடைமுறைப்படுத்தப்பட்டுள்ளது: மாகாணசபைகள், உள்ளூராட்சி மற்றும் விளையாட்டு துறை அமைச்சு, இலங்கை உள்ளூராட்சி நிறுவகம் ஊடாக; நாட்டின் மாகாண தலைநகரங்களில் உள்ள உள்ளூர் அதிகார சபைகள்; ஐக்கிய நாடுகள் வதிவிடம் (UN-Habitat), இது தொழில்நுட்ப உதவிகளை வழங்கியுள்ளது; மற்றும் நிதிப் பங்காளர்களாக அவுஸ்ரேலிய அரசாங்கமும். தகவல் மற்றும் உள்ளீட்டு அனுசரணை - மாநகர மற்றும் மேல்மாகாண அபிவிருத்தி அமைச்சு, நாட்டின் நகர்ப்புற மேம்பாட்டுடன் தொடர்புடைய ஏனைய அமைச்சுக்கள் என்பன காணப்படுகின்றன.

இவ் அறிக்கை ஐ.நா வதிவிடத்தினால் (UN-Habitat) உருவாக்கப்பட்ட செயல்முறை மூலம் இலங்கையின் பிரதான நகரங்களின் நிலவரங்களை ஆராய்தல் மற்றும் நாட்டின் நகர்ப்புற வளர்ச்சியில் ஓட்டுமொத்த போக்குகளை முன்னிலைப்படுத்தல் ஆகியவற்றை வரைகின்றது. மேலும் இந்த அறிக்கை, நிலப்பயன்பாடு மற்றும் நகர்ப்புற விரிவாக்க முறைமைகள் பற்றி விளக்குவதற்கு அண்மைய செயற்கைக் கோள் படங்களை பயன்படுத்தியுள்ளது. அத்துடன் புள்ளிவிபரவியல் தரவுகள், கள-நேர்காணல்கள், உள்ளூர் பங்குதாரர்களிடமிருந்து நகர பயிற்சிப்பட்டறைகள் என்பனவும் தகவல்களை திரட்டும் ஊடகங்களாக இவ் அறிக்கையில் பயன்படுத்தப்பட்டுள்ளன. நாட்டின் ஒன்பது மாகாணங்களின் தலைநகரங்களின் விரிவான இந்த பகுப்பாய்வுகளில் அனுராதபுரம் (வடமத்திய மாகாணம்), பதுளை (ஊவா மாகாணம்) யாழ்ப்பாணம் (வட மாகாணம்), கண்டி (மத்திய மாகாணம்), குருநாகல் (வடமேல் மாகாணம்), இரத்தினபுரி (சப்ரகமுவா மாகாணம்), திருகோணமலை (கிழக்கு மாகாணம்) அத்துடன் மேல் மாகாணம் மற்றும் நாட்டின் தலைநகரமாகிய கொழும்பு ஆகியன விரிவாக பகுப்பாயப்பட்டுள்ளன.

டப்பட்டுள்ளது. நகராட்சி எல்லைகளின் திருத்தங்களுக்கு இந்த பெரிய மற்றும் “மறைக்கப்பட்ட” நகர்ப்புற விலிம்பு எவ்வாறு உட்படுத்தப்பட வேண்டும் என்ற மீள்பார்வைக்கு அழைப்பு விடுக்கிறது. அத்துடன் குறைந்த அடர்த்தியுடைய நகராட்சி விரிவு எவ்வகையான சவால்களை உள்ளடக்கியது என்பதை இந்த அத்தியாயங்கள் தெளிவுபடுத்துகின்றன. மேலும் பயன்பாட்டு வழங்கலிலிருந்து நகர்ப்புற இயக்கம், மீள்திறன் மற்றும் காலநிலை மாற்றம் வரைக்கும் வேறுபட்டவையாக காணப்படுகின்றன.

அத்தியாயம்-03 நகர்ப்புற மக்கள் மற்றும் அவர்களின் செயற்பாடுகள் பற்றி ஆராய்கிறது. இது 2017th ஆண்டில் செயற்கைகோள்கள் மூலம் எடுக்கப்பட்ட உயர் தரத்திலான (தெளிவான) 09 மாகாண தலைநகரங்களின் விரிவான நிலப்பயன்பாட்டு வரைபடத்தை வழங்குகிறது. அத்துடன் தலைநகரங்கள் பல்வேறுபட்ட சமூக மற்றும் பொருளாதார அபிவிருத்திக்கு அவசியமான செயற்பாடுகளில் ஈடுபடுவதனை அடையாளம் கண்டுள்ளது எனினும், அதிகளவான நகர்ப்புற சேவைகள் மேல்மாகாணப் பகுதிகளில் அல்லது தலைநகர் கொழும்புடன் நன்கு இணைக்கப்பட்ட நகரங்களில் அதிகளவாக காணப்படுகின்றன. இதற்கு மாறாக வடக்கு மற்றும் கிழக்குப் பகுதி நகரங்கள், மிகவும் பின்தங்கிய மத்திய பகுதிகள் ஆகக்குறைந்தளவு நகர்ப்புற சேவைகளையே பெற்றுக்கொள்கின்றன. இலங்கை பூராகவும் நகர்ப்புற மையங்களின் செயற்பாடுகள் மற்றும் சேவைகள் இனத்துவ ரீதியான, துடிப்பான இளைஞர் சமுதாயத்தினர் நாட்டின் வளர்ச்சிக்கு பெரும்பங்காற்றுகின்றனர். குறிப்பாக குறைந்தளவில் வளர்ச்சியடைந்த நகரங்களில் மிகமுக்கியமான எதிர்கால சவாலாக காணப்படுவது சனத்தொகை வயது ஆகும். UNDESA-இன் அறிக்கையின்படி 2050th ஆண்டளவில் மொத்த சனத்தொகையில் 30 சதவீதமானோர், 60 வயதிற்கு மேற்பட்டோராக காணப்படுவர் ஆனால் இறுதி சனத்தொகை கணக்கெடுப்பின் போது 60 வயதிற்கு

மேற்பட்டோர் 12.4 சதவீதமாகவே காணப்பட்டனர். இத்தகைய 60 வயதிற்கு மேற்பட்ட வயதான சனத்தொகை போக்கு கிராமப்புறங்களை விட நகர்ப்புறங்களிலேயே மிக அதிகளவாக காணப்படுகிறது, அதிலும் குறிப்பாக பெண்களே பெரும்பான்மையானோராக காணப்படுகின்றனர். இது சமூக மற்றும் பொருளாதார கொள்கைகளுக்கு பெரும் சவாலாக காணப்படுகிறது.

அத்தியாயம்-04 இல் விபரிக்கப்பட்டது போல் ஒன்றிணைந்த நகரங்களின் அபிவிருத்தியே இலங்கையின் பொருளாதார அபிவிருத்தியாக காணப்படுகிறது. மேல்மாகாண பிராந்தியத்தின் மாநகரமும் (கொழும்பு மற்றும் அதனை சுற்றியுள்ள பகுதிகளை உள்ளடக்கியது) ஏனைய 08 மாகாணங்களின் தலைநகரங்களும் சேர்ந்து இலங்கையின் மொத்த உள்நாட்டு உற்பத்தியில் 71 சதவீதப் பங்கினை வகிக்கின்றன. அதில் மேல்மாகாண பிராந்தியம் மட்டும் மொத்த உள்நாட்டு உற்பத்தியில் 40 சதவீதம் செல்வாக்கு செலுத்துகின்றது. நகர்ப்புற பொருளாதாரத்திற்கான இலங்கை நகரங்களின் நிலை தொடர்பான மதிப்பீட்டு பகுப்பாய்வானது எவ்வாறு உற்பத்தி நிறுவனங்களின் செறிவு (Location Quotient) மற்றும் தொழிலாளர் உற்பத்தி திறன் மதிப்பீடு (Labour productivity assessment), வளர்ந்துவரும் நிறுவனங்களை அடையாளம் கண்டு அபிவிருத்தியில் பின்தங்கிய நகரங்களின் எதிர்கால வளர்ச்சிக்கு உதவும் என்பதனை விவரிக்கின்றது. நகர போட்டிச் சுட்டெண் (City Competitive Index) பகுப்பாய்வானது நகர்ப்புற போட்டித்தன்மையில் பின்தங்கிய மற்றும் குறைந்தளவு அபிவிருத்தியடைந்த நகரங்கள் எதிர்கொள்ளும் பிரச்சினைகளையும் தடைகளையும் இனங்கண்டு அவற்றின் வியாபார மற்றும் முதலீட்டை ஊக்குவிக்கும். இடம்சார் தொழிற்துறைகளின் செறிவின் அளவீடு (Location Quotient) மற்றும் நகர போட்டிச் சுட்டெண் (City Competitive Index) ஆகியன நகரங்களின் பொருளாதார நடவடிக்கையை கண்காணிப்பதற்கான முக்கிய கருவிகளாகும். அத்துடன் அவை எதிர்கால

பொருளாதார கொள்கைகளுக்கும் முதலீட்டிற்கும் வழிகாட்டியாக அமைகின்றன. நகர்ப்புற பொருளாதாரங்களில், குறிப்பாக அபிவிருத்தியில் பின்னிற்கும் நகரங்களில் பால்நிலை சமத்துவமின்மை ஒரு முதன்மை தடையாக உள்ளடக்கப்பட்டிருக்கின்றது. உதாரணமாக, திருகோணமலையில் 77 சதவீதமான ஆண்களும் வெறும் 22 சதவீதமான பெண்களுமே தொழிற்சந்தையில் பங்கேற்கின்றனர்.

இலங்கையின் நகர்ப்புற மக்களுக்கான வீட்டுத்திட்டவசதிக்கொள்கைகள் சிக்கந்தன்மை வாய்ந்தவையாக காணப்படுவதனை **அத்தியாயம்-05** எடுத்துரைக்கின்றது. பல்வேறுபட்ட காணி உரித்துடன் தொடர்புபட்ட வீட்டுக்கொள்கைச் சவால்கள், ஏற்றுக்கொள்ளத்தக்க விலையில் விநியோகம், உயர் தரத்திலான வீட்டுத்திட்டம், வீட்டு நிதி நிலைமைகளை அணுகுவதில் உள்ள சிக்கல்கள் ஆகியவற்றை இந்த பகுப்பாய்வு அடையாளம் காண்கிறது. மேலும் இப்பகுப்பாய்வு, இலங்கை மக்களினுடைய வீட்டுத்திட்டம் சார்ந்த நீண்டகால பாரம்பரியத்தையும், உலகளாவிய ரீதியிலான மக்கள் செயல்முறைகளையும் வீட்டுக்கொள்கைகளுக்கான மாறுபட்ட மக்கள் தேவைகளையும் ஆராய்கிறது. நகர்ப்புற குடியிருப்பாளர்களின் வீட்டு அனுபவங்கள் மற்றும் அபிப்பிராயங்கள் பற்றிய ஆய்வுகளும் ஒருங்கிணைந்த குடியேற்ற திட்டமிடலின் ஒரு பகுதியாக காணப்படுகிறது. வீட்டுத்திட்டக் கொள்கைகளில் காணப்படும் முக்கிய பிரச்சினை 09 மாகாண தலைநகரங்களினதும், குறிப்பாக, மாநகர எல்லைக்கு வெளியே அமைந்துள்ள பரந்த பகுதி, பின்தங்கிய பிரதேசங்களின் மற்றும் குறைந்த அபிவிருத்தியடைந்த நகரங்களின் முறையான தரவுகளின் பற்றாக்குறையே ஆகும்.

மாநகர சேவைகள் மற்றும் பயன்பாடுகளுடன் சம்பந்தப்பட்ட வீடுகள் தொடர்பான பிரச்சினை **அத்தியாயம்-06** இல் அலசப்படுகின்றது. பல நகரங்களில், விரிவான பரந்த விஸ்தீரணம் ஒரு முக்கிய பிரச்சினையாக காணப்படுகிறது. அதாவது நகராட்சி சேவைகளுக்கான பெரும்பாலான கேள்விகள் அல்லது தேவைகள் நகராட்சி எல்லைக்கு அப்பால் வதியும் மக்களிடமிருந்தே வருகின்றது. உதாரணமாக, 2017ⁱⁱ ஆண்டின் கண்டி நகராட்சி பகுதியின் மதிப்பீட்டு சனத்தொகை 113,000 ஆக காணப்படுகின்ற போதிலும், நகர விளிம்புகளில் வாழும் சனத்தொகை 117,000 ஆகும். இந்த போக்கு 09 மாகாண தலைநகரங்களிற்கும் பொதுவானதாகவே காணப்படுகிறது. இந்நிலைப்பாடு கல்வி மற்றும் சுகாதாரம் சார்ந்த பொதுச்சேவைகளை வழங்குவதிலும் பராமரித்தலிலும் ஒருங்கிணைப்பு, நிதி தொடர்பான சவால்களை உருவாக்குகின்றது. அனைத்து நகரங்களிலும் குறிப்பாக கழிவு நீர் மற்றும் திண்மக் கழிவு முகாமைத்துவம் சம்பந்தப்பட்ட நீர்-சுகாதார சவால்கள் காணப்படுகின்றன. அடுத்த முக்கிய சவாலாக காணப்படுவது சமூக பொருளாதார வளர்ச்சியை அதிகரிப்பதற்காக சமூக அபிவிருத்தி சேவைகளை அதிக பின்தங்கிய நகரங்களுக்கு விரிவாக்குதல் : உதாரணமாக, பதுளையில் வெறும் 3.1 சதவீதமான கட்டிடப்பகுதியே சுகாதாரம் மற்றும் கல்விக்கு ஒதுக்கப்பட்டுள்ளது அதேவேளை குருநாகலையில் 9.1 சதவீதமான கட்டிடப்பகுதி சுகாதாரம் மற்றும் கல்விக்கு ஒதுக்கப்பட்டுள்ளது என்பது குறிப்பிடத்தக்கது.

நாடளாவிய ரீதியிலும், இலங்கையின் நகரங்கள் மத்தியிலும் மேம்பாட்டிற்கான மறுசீரமைப்பை முன்னெடு-

த்துச்செல்ல நகரங்களுக்கு இடையிலும், கிராம-நகரங்களுக்கு இடையிலுமான இணைப்பு முக்கிய அம்சமாக **அத்தியாயம்-07** இல் கோடிட்டுக் காட்டப்படுகின்றது. குறிப்பாக சாலைகள் மற்றும் புகையிரத உட்கட்டுமானங்களில் அதிக முன்னேற்றம் ஏற்பட்ட போதிலும் அவற்றை நெறிப்படுத்துவதிலும், வளர்ந்துவரும் தொழிநுட்பங்களிலும் இன்னும் சவால்கள் இருக்கவே செய்கின்றன. இணைய இணைப்பு குறைந்தளவிலும், அதே வேளை மேம்படுத்தப்பட வேண்டிய ஒன்றாகவும் காணப்படுகின்றது. உலகளாவிய ரீதியில் இணைய பதிவிறக்க வேகம் சராசரியாக 09 Mbps ஆக காணப்படும் அதே வேளை, 09 மாகாண தலைநகரங்களில் உள்ள பொது நிறுவனங்களின் பதிவிறக்க வேகம் வெறும் 02 Mbps ஆகும். தனி நகரங்களுக்கிடையில் தனியார் வாகன பயன்பாட்டின் விரைவான அதிகரிப்பு காரணமாக மாநகர இணைப்பு வகைப்படுத்தப்பட்டுள்ளது. விசேடமாக பெரிய நகரங்கள் நகர்ப்புற வசதிகளை அனுபவிக்கின்றன. இதன் விளைவாக நீண்ட தூர பயணங்கள் சாத்தியமான போதிலும், நகர வாழ்க்கையில் இவை பல்வேறு வழிகளில் எதிர்மறையான தாக்கத்தை ஏற்படுத்தின. இந்த போக்கினை தடுக்க பொது மற்றும் பசுமையான போக்குவரத்து உட்கட்டமைப்பு மேம்பாடுகள் நவீன காலத்திற்கு ஏற்றவகையில் மேம்படுத்தப்பட வேண்டும். பெண்களின் பாதுகாப்புடன் தொடர்புடைய பொது போக்குவரத்து பயன்பாட்டை அதிகரிப்பதற்கான குறிப்பிடப்பட்ட கட்டுப்பாடு அவசியமானதாகும். இலங்கை நகரங்களின் நிலை தொடர்பான திட்டத்திற்காக நாடாத்தப்பட்ட பொது போக்குவரத்து பயனாளர்கள் கணக்கெடுப்பில் 70 சதவீதமான பெண்கள் பல்வேறு போக்குவரத்து தொல்லைகளை சந்தித்துள்ளார்கள் என தெரியவந்துள்ளது.

ஆசிய பிராந்தியத்தில் இலங்கை போன்ற பல நாடுகள் காலநிலை மாற்றம் மற்றும் அதனுடன் தொடர்புடைய அபாயங்களால் அதிகம் பாதிப்படைகின்றன. அதற்கிணங்க 09 மாகாணங்களின் தலைநகரங்களும் நிலச்சரிவுகள், வெள்ளம் மற்றும் அதனால் ஏற்படும் நோய்தாக்கங்களுக்கு கடுமையாக பாதிக்கப்படுவதால் எத்தகைய காலநிலை அபாயங்களை இவை சந்திக்கின்றன என்பது பற்றி **அத்தியாயம்-08** விளக்குகின்றது. கண்டியில் காலநிலை அபாய இடர்பகுப்பாய்வின்படி உதாரணமாக, 14 சதவீதமான கட்டிடப்பரப்பு மிதமான நிலச்சரிவு ஆபத்திற்குட்பட்ட பகுதிகளிலும், 0.4 சதவீதம் (06 ஹெக்டேயர்) மிகவும் ஆபத்தான பகுதியிலும் அமைந்துள்ளன. காலநிலை மாற்றம் ஏற்கனவே உள்ள அபாயங்களை மேலும் அதிகரிக்கும் நிலையைத் தோற்றுவிப்பதோடு அதிகரித்த வெப்பநிலை, கடல்மட்ட உயர்வு போன்ற புதிய அச்சுறுத்தல்களையும் கொண்டு வரும். நகர்ப்புற பகுதிகள், குறிப்பாக பரந்திருக்கும் நகரங்கள் சனத்தொகைப் பரம்பலின் பண்புகளினாலும், அவர்களின் நிலப்பயன்பாட்டினாலும் நலிவடைந்து காணப்படுகின்றன. மேல்மாகாண பிராந்திய மாநகரத்தில் உதாரணமாக, விரைவான நகர்ப்புற விரிவாக்கம் காரணமாக வெள்ளத்தால் பாதிக்கப்பட்ட பகுதிகளில் அதிக எண்ணிக்கையிலான மக்கள் வசித்ததனால் வெள்ளம் தொடர்பான இறப்புகள் குறிப்பிடத்தக்க அளவு அதிகரித்துள்ளது. இந்த அச்சுறுத்தலுக்கு பதிலளிக்கும் முகமாக, இலங்கையின் 09 மாகாணங்களின் தலைநகரம், முக்கிய சுற்றுச்சூழல் அம்சங்களை உள்ளடக்கியதாக நிலப்பயன்பாட்டு வரைபடம் காணப்படுகிறது.



Aerial view of Jaffna

Source: UN-Habitat/Charlene Liao

இந்த அறிக்கையின் இறுதி அத்தியாயம் நகர்ப்புற நிர்வாகம் மீது கவனம் செலுத்துகிறது. இந்த **அத்தியாயம்-09** மாகாண தலைநகரங்களில் உள்ள உள்ளூர் அதிகார சபைகளின் செயல்திறனை அளவிடுவதற்கு நகர நிர்வாக சுட்டெண்ணை (City Governance Index) முன்னிறுத்துகின்றது. மாநகர சபைகள் உட்கட்டமைப்பை மேம்படுத்தி வருவாயை உயர்த்துவதிலும், அடிப்படை நகர்ப்புற சேவைகளை வழங்குவதிலும் கணிசமான நிதி அழுத்தங்களுக்கு முகங்கொடுக்கின்றன. மொத்த அரசு வருவாயில் 1.6 தொடக்கம் 2.6 சதவீதம் மட்டுமே உள்ளூர் அதிகார சபைகளுக்கு ஒதுக்கப்பட்டுள்ளது. மேலும் நகராட்சி எல்லைக்கு வெளியே விளிம்பிலே வசிக்கும் அதிகளவான சனத்தொகைக்கு சேவைகள் வழங்குவதில் தடைகள் காணப்படுகின்றன. இதற்கு மேலதிகமாக குழப்பகரமான இரட்டை ஆட்சியமைப்பின் கட்டமைகள், பொறுப்புக்கள் மற்றும் நிதிச்சேவைகள் என்பன ஒருங்கிணைக்கப்படாதவையாக காணப்படுகின்றன: இவை பலவீனமான ஆட்சி விளைவுகளை உண்டுபண்ணும்.

அபிவிருத்தியில் குறைந்த, பின்தங்கிய பகுதிகளிலுள்ள நகரங்கள், மேல்மாகாணப் பகுதிகளிலும் அல்லது கொழும்பு தலைநகருடன் நன்கு இணைக்கப்பட்ட நகரங்களைக் காட்டிலும் குறைவாகவே செயலாற்றுகின்றன என்பதை நகர நிர்வாகச் சுட்டெண் வெளிப்படுத்துகின்றது.

இறுதியாக, **அத்தியாயம்-10** இலங்கை நகரங்களுக்கான வீதி வரைபடங்களை வழங்குகிறது. இது அனைத்து இலங்கையர்களுக்கும் சிறந்த நகர்ப்புற எதிர்காலம் என்ற குறிக்கோளை அடைய சிறந்த வழிகாட்டியாக அமைகிறது. அறிக்கையின் அறிமுகத்தில் கோடிட்டு காட்டிய 05 முக்கிய அம்சங்களான **போட்டித்திறன்** (Competitiveness), **உள்ளூர்வு** (Inclusivity), **மீள்திறன்** (Resilience), **பாதுகாப்பு** (Safety) மற்றும் **நிலைத்திருக்கும் தன்மை** (Sustainability) என்பன இந்த அறிக்கையின் ஆய்வினைக் கட்டமைத்துள்ளன.

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The **SoSLC Steering Committee**, was chaired by Kamal Pathmasiri, Secretary, Ministry of Provincial Councils and Local Government, and included the following members:

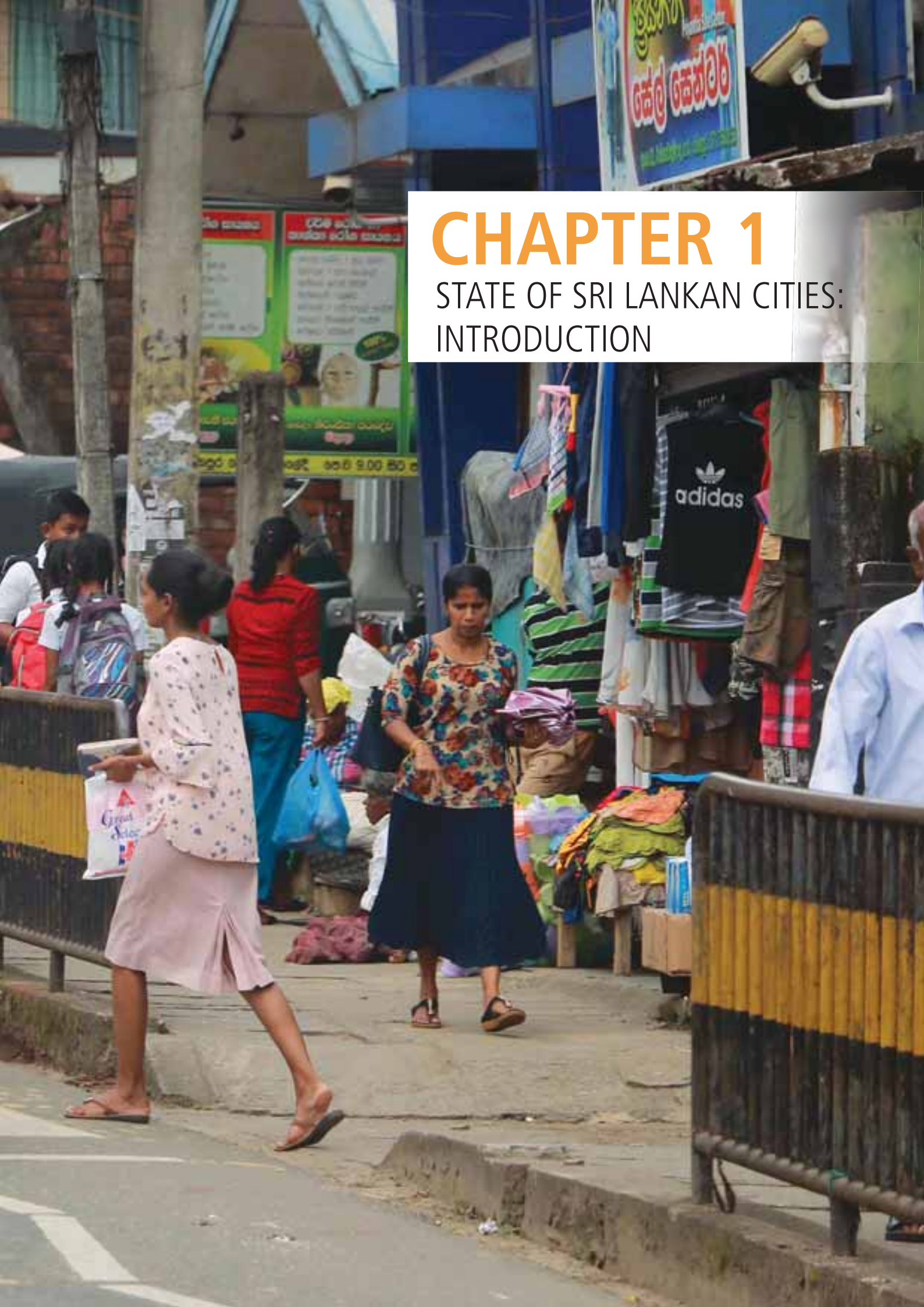
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Chamila Karunathilake, Director (Planning), Ministry of National Policies and Economic Affairs;
Apsara Weerasekera, Director (Housing), Ministry of Housing and Construction;
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Sujeeve Samaraweera, Director/ CEO, Sri Lanka Institute of Local Governance;
Chanaka Talpahewa, Country Programme Manager, UN-Habitat.

ACRONYMS

ADB	Asian Development Bank	NPDD	National Physical Planning Department
Aol	Area of Interest	NUA	New Urban Agenda
CBD	Central Business District	OECD	Organisation for Economic Co-operation and Development
CCI	Cities Competiveness Index	PC	Provincial Councils
CEA	Central Environment Authority	PIP	Public Investment Programme
CGI	City Governance Index	PS	Pradeshiya Sabha
CMC	Colombo Municipal Council	RTA	Registration of Title Act
COPA	Committee on Public Accounts	SCDP	Strategic Cities Development Programme
CRIP	Climate Resilience Improvement Project	SDG	United Nations Sustainable Development Goals
DCS	Department of Census and Statistics	SL	Sea level
DFLD	Durham Fatal Landslide Database	SoSLC	State of Sri Lankan Cities
DMC	Disaster Management Centre	TC	Town Councils
ECRC	Electronic Citizen Report Card	TVET	Technical and Vocational Education and Training
FDI	Foreign Direct Investment	UC	Urban Councils
GDP	Gross Domestic Product	UDA	Urban Development Authority
GIS	Geographic Information System	UN	United Nations
GN	Grama Niladhari	UNDESA	United Nations Department of Economic and Social Affairs
GoSL	Government of Sri Lanka	UNDP	United Nations Development Programme
HCI	Poverty Head Count Index	UNESCO	United Nations Educational, Scientific and Cultural Organization
ICT	Information and Communication Technology	UNFCCC	United Nations Framework Convention on Climate Change
IHP	Institute for Health Policy	UNFPA	United Nations Population Fund
IIED	International Institute for Environment and Development	UN-Habitat	United Nations Human Settlements Programme
IPCC	Intergovernmental Panel on Climate Change	UNICEF	United Nations International Children's Emergency Fund
JICA	Japan International Cooperation Agency	US	United States
LA	Local Authority	USD	United States Dollar
LKR	Sri Lankan Rupee	WASH	Water, Sanitation and Hygiene
LQ	Location Quotient	WEF	World Economic Forum
MASHAV	Israel's Agency for International Development Cooperation	WHO	World Health Organization
MC	Municipal Council	WRM	Western Region Megapolis
MCUDP	Metro Colombo Urban Development Project		
MHP	Million Houses Programme		
NAP	National Adaptation Plan		
NBRO	National Building Research Organization		
NGO	Non-Governmental Organization		
NHDA	National Housing Development Authority		

CHAPTER 1

STATE OF SRI LANKAN CITIES: INTRODUCTION



1.1 Sri Lanka's urban paradox

Sri Lanka currently stands at an urban paradox. According to the last census (2012), the island was populated by 20.359 million people, including 3.704 million urban residents (or 18.2 per cent of the population), living in 64 municipal areas, including 9 Provincial Capitals (Table 1.1; Fig 1.1). This small urban population meant Sri Lanka ranked as the 11th least urbanized country on earth in the 2018 United Nations World Urbanization Prospects (UNDESA, 2018). There is

considerable evidence, however, that official urban population data masks the true extent of the country's urbanization. According to the agglomeration index, an alternative measure of urbanization that uses multiple indicators, Sri Lanka's urban population is between 35 and 45 per cent of total (Uchida & Nelson, 2010), while recent Government of Sri Lanka (GoSL) policy documents estimate a 50 per cent urban population (GoSL, 2017a). There is also evidence of significant urban growth from night-time light analysis (Ellis & Roberts, 2015).

Table 1.1: Sri Lanka's urban areas in 2012

	No. of Municipalities	Urban Population	Provincial Capital	Population of Capital
Western	21	2,272,194	Colombo	561,314
Eastern	8	389,687	Trincomalee*	48,351
Central	10	270,971	Kandy	98,828
Southern	7	261,677	Galle	86,333
Northern	6	176,808	Jaffna	80,829
Sabaragamuwa	4	115,444	Ratnapura	47,105
North Western	4	97,294	Kurunegala**	24,833
Uva	3	69,800	Badulla	42,237
North central	1	50,595	Anuradhapura	50,595
Sri Lanka	64	3,704,470		

Notes: In the following cases the Provincial Capital is not the largest town in its Province: *The largest town in the Eastern Province is Kalmunai (pop. 99,893), followed by Batticaloa (pop. 80,227); ** the largest town in the North Western Province is Puttalam (pop. 45, 511).

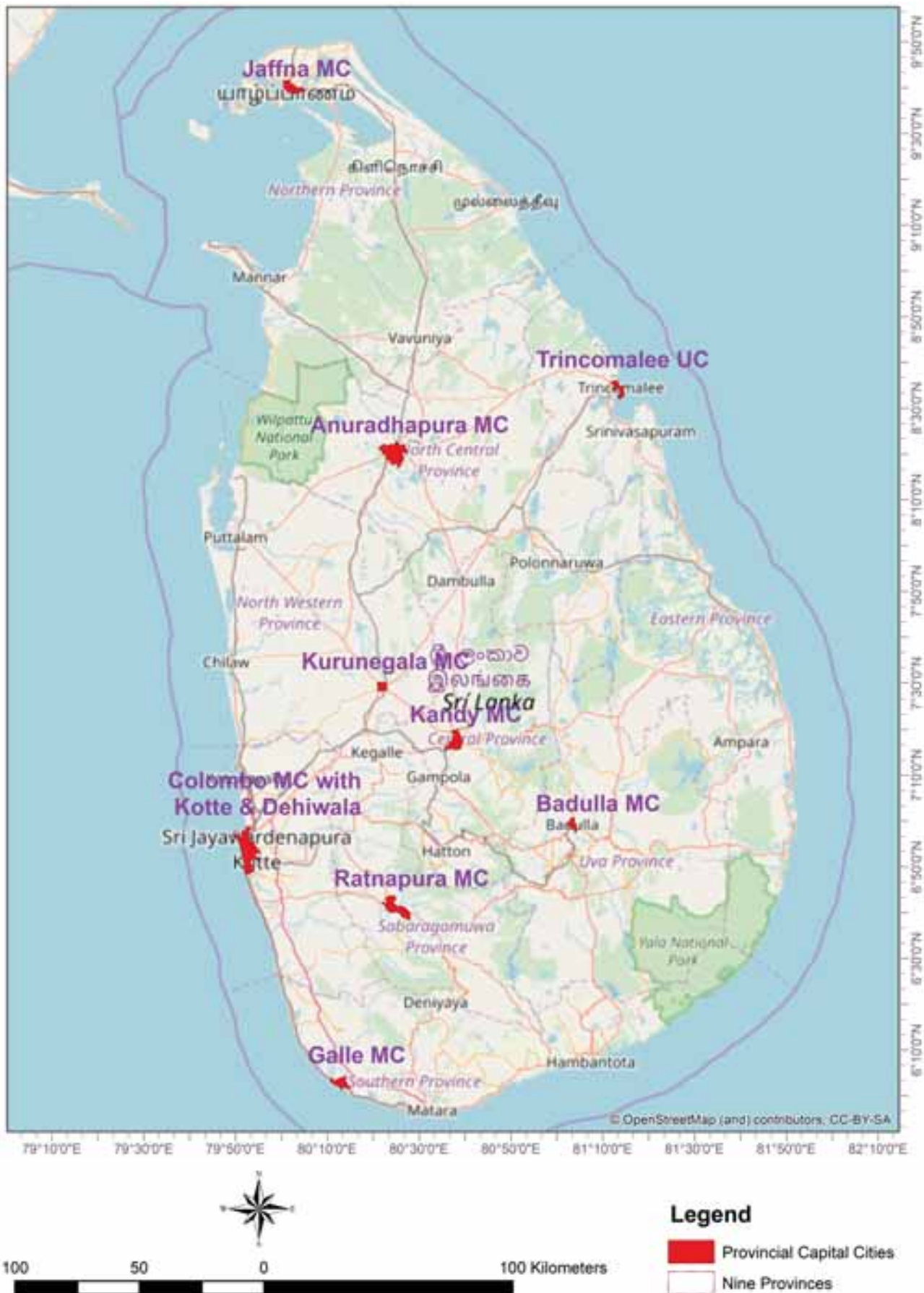
Source: Data from DCS

Busy main street in Kurunegala



Source: UN-Habitat/Charmalee Jayasinghe

Fig 1.1: Sri Lanka's Provincial Capitals



Sri Lanka's urban paradox is most readily apparent in the capital, Colombo: the primate city and economic centre of the country. Colombo's official population at the last census was 561,314. However, within the boundaries of the 'Western Region Megapolis' (WRM), the conurbation associated with the city and covering the entire Western Province, there resided a population of around 5.8 million in 2012 – ten times that of the official Colombo population, and larger than the country's total official urban population (GoSL, 2016).

This report provides evidence that Colombo and the WRM is a large urban conurbation, which has experienced rapid spatial growth over the past decade (Fig 1.2). The report also shows large conurbations and rapid urban growth in cities across the country .

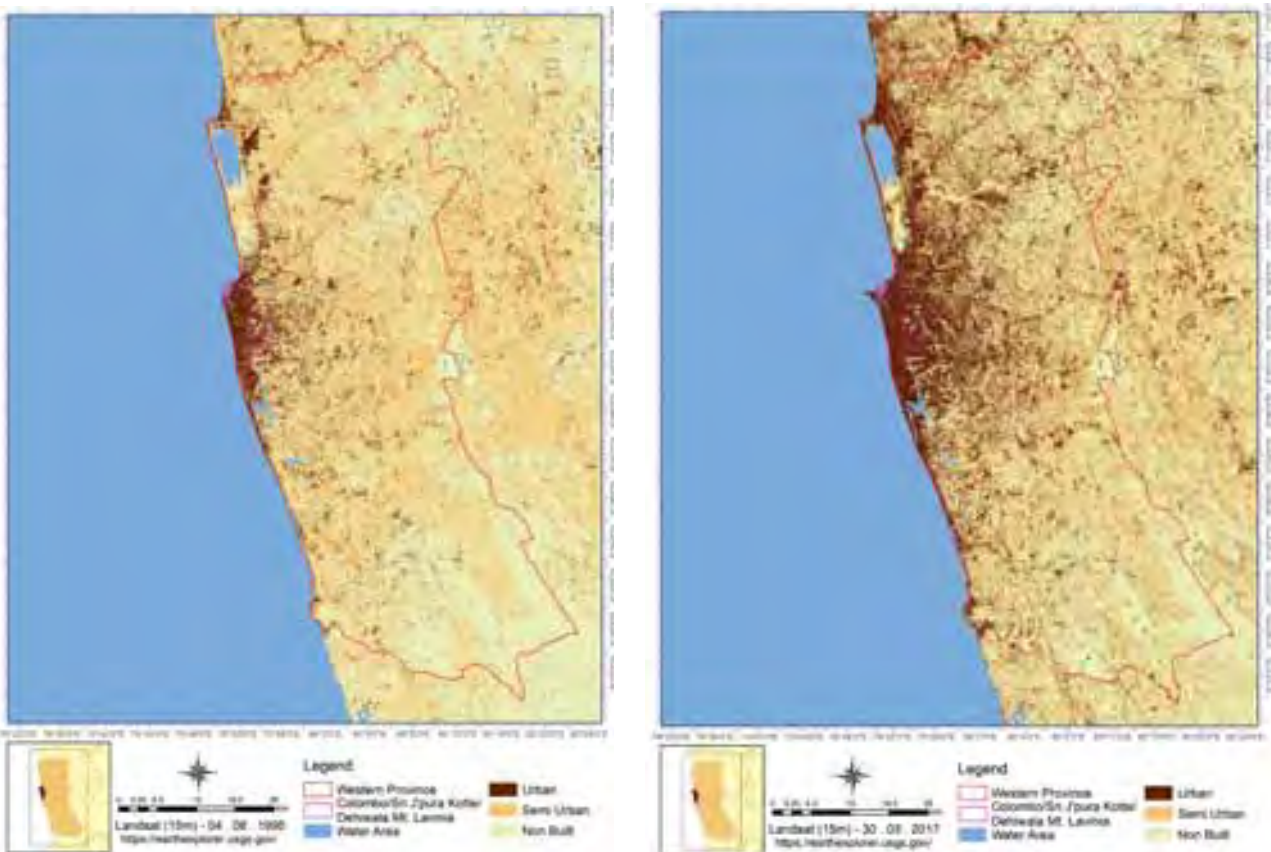
Resolving Sri Lanka's urban paradox and developing a better understanding of the country's cities is an important and timely issue as policy makers are increasingly focused on urban development. Indicative of this trend, the Ministry of Megapolis and Western Development was established in 2015 to promote the WRM as a sustainable urban conurbation and regional hub of trade and investment, and also develop the country's regional cities. In addition, key strategic documents, including *Vision 2025* and the *Public Investment Programme 2017-2020*, have positioned cities at the heart of the country's development, and

urbanization as a powerful tool to rebalance economic opportunities to the conflict-afflicted Northern and Eastern Provinces, and remote central areas (GoSL, 2017a, 2017b; see Box 1.2).

Planning for a better urban future requires evidence-based policies that address challenges and harness the opportunities of urbanization. The most obvious indicator of the urban data deficit is the widely ranging figures of the size and rate of growth of the urban population. The difference between an urban population of 18 per cent and 50 per cent suggests the absence of an appropriate, accepted definition of what constitutes an urban area. Such ambiguity presents significant barriers to understanding urban systems and so constrains effective urban policy making.

The *State of Sri Lankan Cities* (SoSLC) report is a response to the lack of information about urban processes, which have constrained the efficacy of urban policy interventions to date. The report contributes to evidence-based policy making by providing data and analysis on which future development interventions can be based. Its key contribution is providing a definition of urban in Sri Lanka as the foundation for future development interventions. From this base, the report explores a range of opportunities and challenges associated with the country's urbanization and is intended as a policy making aid to inform future programming decisions.

Fig 1.2: Urban area 1995 (L) and 2017 (R) in Colombo and Western Region Megapolis



Source: SoSLC Project

1.2 Sri Lanka's cities in the context of an urbanizing world: implications for policy makers

Urbanization – the shift from a rural to an urban society – is frequently referred to as a defining process of the modern age. UN-Habitat's *World Cities Report 2016*, states that 54 per cent of the world's population lives in urban areas; this proportion is expected to increase to 58 per cent by 2025 (UN-Habitat, 2016).

Sri Lanka fits into an emerging pattern of global urbanization, which is characterised by rapid growth in the cities of developing countries. In this context, the South Asian region to which Sri Lanka belongs ranked as the world's second most rapidly urbanising region in 2016, with only Sub-Saharan Africa's urban population increasing at a faster rate (Fig 1.3). Rapid rates of urban growth are particularly significant in South Asia because it is the globe's most populous region: increasingly, the world's urban future is being forged in its cities.

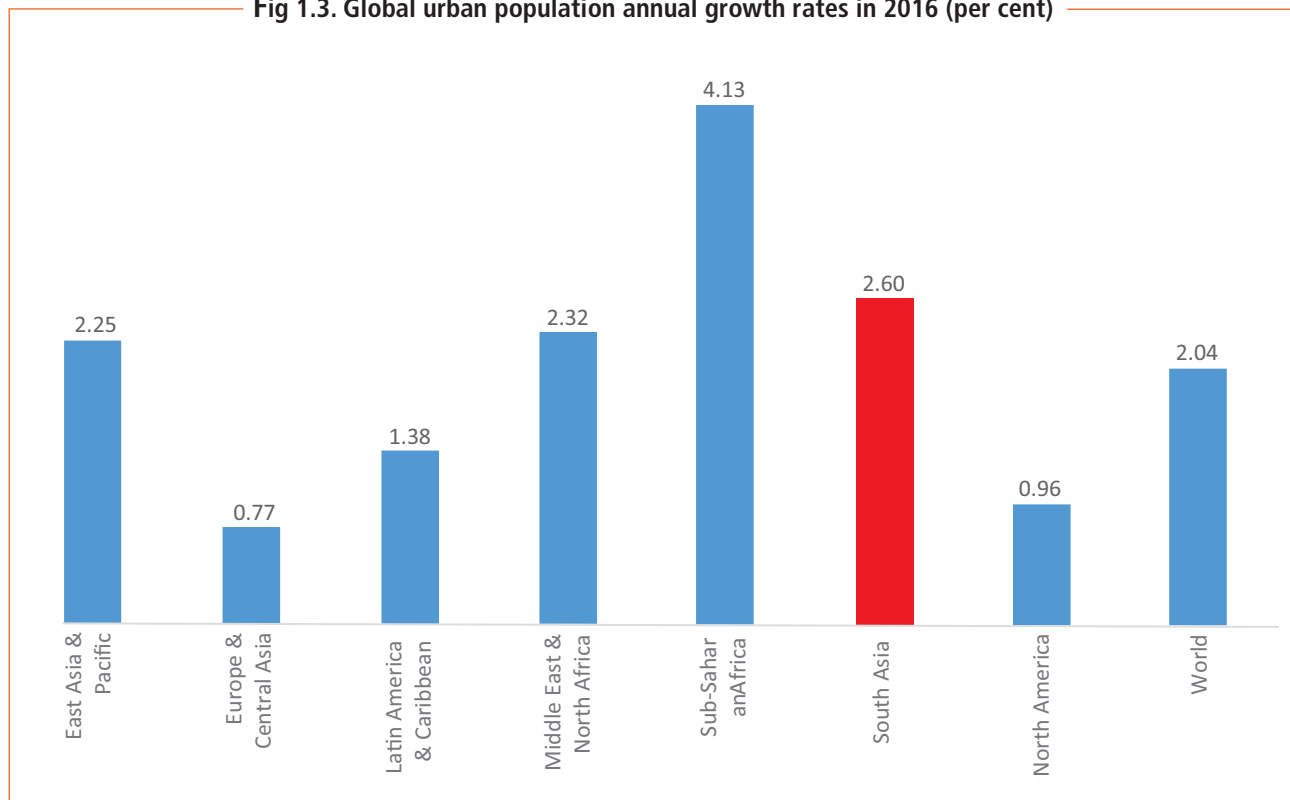
The global dynamics of urbanization, and particularly the rapid urban growth in South Asia, present unprecedented opportunities for Sri Lankan policy makers. Integrating with South Asian city networks can position Sri Lanka as a regional hub of trade and investment, leveraging its cities as drivers of GDP growth. The GoSL is cognisant of these opportunities and plans to transform Colombo and the WRM into 'the hub of the southern part of the Indian sub-

continent' to effect a 'structural transformation of the national economy' (GoSL, 2017a: 103). Thriving urban centres will provide benefits beyond economic growth, including access to improved health and education services, and other opportunities associated with urban life.

As well as opportunities, Sri Lanka's urban policy makers face challenges. A particular challenge is that urban growth and associated opportunities are concentrated in the Colombo and the WRM and cities well connected to it. In contrast, there is far less urbanization in the conflict-afflicted Northern and Eastern provinces, and remote central areas, where communities remain relatively isolated and there are limited economic opportunities. In this regard, city connectivity has been highlighted as a key issue in research on Sri Lanka's economic development. The World Bank's (2004) *Sri Lanka: Reshaping Economic Geography Connecting People to Prosperity* report drew attention to the low level of connectivity and accessibility of regional towns and cities to well-developed transport services and supply chain logistics systems, and highlighted the need for fundamental spatial transformation because the economic landscapes had become increasingly uneven.

Another major challenge is related to climate change, which is projected to impact rainfall patterns in Sri Lanka (IPCC, 2014). Long-term changes in interannual rainfall distribution has already started to synergise with unplanned urban development to increase the risk of urban flooding

Fig 1.3. Global urban population annual growth rates in 2016 (per cent)



Source: World Bank (2018)

and associated disease outbreaks. This was evidenced in 2017, when the WRM experienced severe urban flooding and an unprecedented outbreak of dengue fever, resulting in hundreds of fatalities (see Chapter 8).

Sri Lanka is not alone in facing challenges to sustainable urbanization. There have been several major international initiatives that have responded to the opportunities and challenges of global urbanization, and have influenced urban policies adopted by countries across the globe.

An important guide for sustainable cities in Sri Lanka is provided by the United Nations Sustainable Development Goals (SDGs) and the 2030 Agenda for Sustainable Development. Ratified by the General Assembly in 2015, the 17 goals represent the agreement of world leaders on a shared vision of a sustainable future. In this context, Goal 11 details attributes of sustainable cities, ranging from equitable access to public spaces to resilience to climate change (Box 1.1). The GoSL has demonstrated a strong commitment to achieving a future society that embodies the SDGs, including its vision for sustainable cities.

Box 1.1: Sustainable Development Goal 11

Goal 11: Make cities inclusive, safe, resilient and sustainable

By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.

By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.

By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.

Strengthen efforts to protect and safeguard the world's cultural and natural heritage.

By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.

By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.

Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning.

By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.

Source: United Nations (2018)

Box 1.2: GoSL urban policy priorities

Policy priorities for Sri Lanka's urban development: *Vision 2025* and *Public Investment Programme 2017-2020*

Promote the western region as the economic hub of the southern part of the Indian sub-continent, improving connectivity to global markets by sea and air, and promoting reforms to encourage trade and investment.

Promote strategic city development to secondary urban spaces as provincial economic hubs and to address national imbalance of economic growth.

Increase interurban and rural-urban connectivity by infrastructure and logistics upgrading.

Improve urban planning to avoid 'messy' urban development, characterised by low-density urban sprawl and ribbon development.

Improve municipal transport by promoting pedestrian and non-motorized transport, a modern traffic management system and the provision of improved public transport.

Provide additional housing stock to meet increasing demand from low- and middle-income urban residents.

Assuring environmentally sustainable urban development.

Protecting culture and heritage of urban areas.

Conservation of urban wetlands through appropriate upgrading and management of drainage, solid waste, sewerage, including providing piped sewerage to all households.

Provision of piped water and sewerage to all urban residents.

Increase capacity of local authorities for good governance, including revenue collection and service provision.

Source: Adapted from GoSL (2017a, 2017b)

While SDG 11 provides a vision of sustainable cities, the New Urban Agenda (NUA), ratified by the United Nations member states at the Habitat III Conference in 2016, provides a framework for achieving transformative urban change (United Nations, 2016). The NUA advocates for integrated urban policies that work across sectors and engage a range of urban stakeholders. The NUA promotes integrated urban planning that lessens urban sprawl, increases mobility, secures sustainable use of natural resources and fosters economies of agglomeration. In achieving such aims, it promotes partnerships and cooperation between national, sub-national and local governments, the private sector and other urban stakeholders. This agenda for action will guide United Nations member states' urban policy until 2036 and will be instrumental in shaping the future of the world's cities.

The vision of a sustainable urban future is also included in flagship GoSL national strategic documents, *Vision 2025* and the *Public Investment Programme 2017-2020* (GoSL, 2017a, 2017b). These documents position urban development as central to Sri Lanka's future development: as a driver of economic growth, to widen access to economic and social opportunities and services, and to promote national reconciliation through extending opportunities and services to less developed provinces. To achieve this, there are several policy priorities identified by the government, ranging from increasing the competitiveness of the urban economy to managing environmental sustainability, and much more in-between (Box 1.2).

The international agreements and GoSL policy documents cited above provide important directions on which Sri Lanka's urban future will be based. However, there is currently no clear definition of what a better urban future for Sri Lanka would look like. In response to this gap, the SoSLC report provides a working definition of *a better urban future for all Sri Lankans*, drawing on key GoSL priorities and international agreements, which will frame the analysis contained in this report. In this regard, *a better urban future for all Sri Lankans* embodies five core principles:

Competitive cities attract flows of trade and investment, which in turn drives growth, creates job opportunities, raises incomes and enables cities to move up the value chain into higher-value goods and services.

Inclusive cities extend the opportunities of urban life across population sub-groups, particularly the vulnerable.

Resilient cities adapt, recover and overcome shocks and stresses, including those associated with climate change, economic crisis and other disruptive events.

Safe cities secure the personal safety and the health of their residents, particularly the vulnerable.

Sustainable cities sustain and/or develop over time without causing adverse effects to other urban processes and systems, such as ecological habitats.

1.3 Approach of the report: enabling a better urban future for all Sri Lankans

To enable *a better urban future for all Sri Lankans*, the SoSLC report provides a detailed, evidence-based assessment of the state of Sri Lanka's 9 Provincial Capitals (see Fig 1.1). In doing so, it provides specific data and analysis pertaining to the 9 Provincial Capitals, and also highlights overall trends in the country's urban development on which future urban policy can be based. The Provincial Capitals include Anuradhapura, capital of the North Central Province; Badulla, capital of Uva Province; Jaffna, capital of the Northern Province; Kandy, capital of the Central Province; Kurunegala, capital of the North Western Province; Ratnapura, capital of Sabaragamuwa Province; Trincomalee, capital of the Eastern Province; Colombo, the capital of the Western Province.

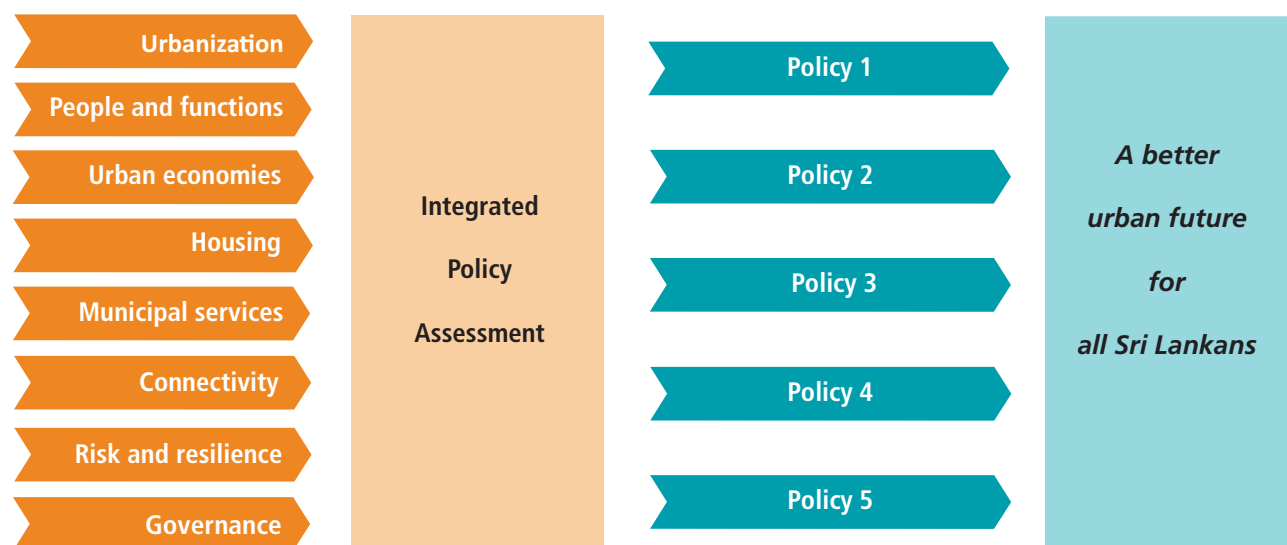
The report is centred on 8 chapters, each presenting an assessment of an urban sector or process where policy action is needed to secure *a better urban future for all Sri Lankans*. The chapter topics were identified through analysis of government policy documents, and discussions with government and other urban stakeholders. They are authored by Sri Lankan urban experts with a wealth of experience of urbanization in the Sri Lankan context, including contributors from academia, government and the

View of Kiri Muhuda (Kandy Lake)



Source: UN-Habitat/Charlene Liau

Fig 1.4: Conceptual framework of the report



private sector. The chapters provide the following assessments:

Spatial attributes of urbanization provides an assessment of the spatial characteristics of Sri Lanka's urbanization (1995-2017). It highlights different modes of urban growth, including sprawl and ribbon development covering the municipal and surrounding areas.

People and functions assesses the demographic characteristics of the urban population in relation to education, age, gender and other disaggregating features. It also includes a land use (2017) assessment, highlighting the distribution of land use types and their related urban functions within and across cities.

Urban economies provides an assessment of the productivity and competitiveness of Sri Lanka's cities in relation to their key economic sectors. It also assesses the inclusiveness of urban economies.

Housing explores the dynamics of urban housing markets and provides an assessment of key policy initiatives. It also presents a qualitative analysis of the housing experiences and aspirations of urban residents.

Municipal services provides an overview of the state of urban infrastructure, focusing on Water, Sanitation and Hygiene (WASH) coverage. It also provides an assessment of urban public space.

Intercity connectivity and municipal transport analyses the hard and soft infrastructure linking cities, focusing on interurban, municipal and rural-urban transport and logistics connectivity. The chapter also highlights the emerging issue of digital connectivity.

Climate risk and resilience addresses the climate and disaster resilience of Sri Lanka's cities, and assesses the state of urban ecosystems.

Urban governance explores the institutional structures, policies and finances of municipal authorities. It also provides an assessment of the performance of local government across cities.

Following the sectoral analysis, the report ends with an integrated policy analysis to provide a **Roadmap for Sri Lankan Cities**. This section proposes 5 integrated, cross-sectoral policy and programmatic actions, which respond to the key messages identified in Chapters 2-9, and, work towards the to the principles of *a better urban future for all Sri Lankans*. The conceptual framework for the integrated policy generation model is detailed in Fig 1.4, and is elaborated in the Roadmap.

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CHAPTER 2

SPATIAL ATTRIBUTES OF SRI LANKA'S URBANIZATION



This chapter assesses the spatial attributes of Sri Lanka's urbanization, drawing on research conducted in the 9 Provincial Capitals. First, the chapter gives a brief historic perspective of urbanization. Second, it provides an account of urban growth over time and compares approaches for monitoring urban growth and urban form. Third, it provides an assessment of the morphology of Sri Lanka's cities, highlighting the challenge of urban sprawl and opportunities offered by compact cities.

KEY MESSAGES

1. Satellite image analysis conducted for the SoSLC Project shows Sri Lanka's 9 Provincial Capitals expanded at an average rate of 6.42 per cent per year 1995-2017, and account for a population of around 7.39 million in 2017.
2. Official data underestimates the level of urbanization in Sri Lanka. Projections based on official boundaries show a population of just 1.47 million in the 9 Provincial Capital in 2017. The reason for this low figure is that the majority of urban growth in the Provincial Capitals has occurred outside of the official Municipal Council boundaries and is not captured in official statistics. This calls for a review of the definition of what constitute urban and revisions to municipal boundaries.
3. Urban sprawl is identified as a key planning challenge for the GoSL in the *Public Investment Programme 2017-2020*; spatial analysis included in this chapter reaffirms this policy priority. Urban sprawl has a range of negative impacts from the cost of public services to environmental sustainability. In response, the compact cities model provides an urban planning approach that promotes sustainable cities.
4. Spatial analysis is a valuable tool to analyse, plan and monitor the spatial expansion of cities.

2.1 Sri Lanka's urban development

Sri Lanka has a long and rich urban history. The island's earliest settlements can be traced to the 8th Century BC; their spatial structure and evolution have been mapped out from ancient chronicles and archaeological evidence, showing their distribution along rivers (Deraniyagala, 1992). From the 4th Century BC the ancient capitals of Anuradhapura and Polonnaruwa began forming: incorporating complex urban systems to sustain large populations, they are considered among the most sophisticated urban centres of the ancient world (Seneviratna, 1994). Anuradhapura is now a UNESCO World Heritage site, and an important tourism destination,

forming part of Sri Lanka's 'cultural triangle' with the cities of Kandy and Dambulla. From the 16th Century, colonial expeditions began to influence the spatial character of urban development, resulting in a parallel pattern of growth. Coastal cities, such as Galle, Jaffna, Trincomalee and Colombo, developed as centres for trade and commerce, with colonial fort towns emerging as nodes of transnational trade. The Sri Lankan population administered cities in the central areas, most notably the Kingdom of Kandy. Cities from this period, including Kandy and Galle, have also become UNESCO World Heritage Sites, and a great tourism draw for the country.

Night time Colombo skyline



Source: UN-Habitat/Ben Flower

Galle Fort UNESCO World Heritage site



Source: UN-Habitat/ Charmalee Jayasinghe

During the British colonial period, Colombo emerged as the largest city and main trading port. It grew rapidly during the colonial period, from 110,502 in 1881, reaching 362,074 by the end of British rule in 1946 (GoSL, 2012). During this period, the government began installing the institutional architecture for urban planning and management, enacting the Housing and Town Improvement Act in 1915 and establishing of the Department of Town and Country Planning; the city's first urban master plan was developed in 1921 by the British town planner Patrick Geddes (GoSL, 2016). The city continued to grow during the independence period, and during the civil conflict became a safe haven for investment, as the cities of the north and east suffered war and insecurity. Colombo and the Western Region Megapolis (WRM) has turned into the powerhouse of the country's economy, accounting for around 40 per cent of national GDP and spawning a range of high-growth industries (See Chapter 4).

As rapid expansion has resulted in Colombo merging with surrounding municipalities, including Kotte and Dehiwala, the GoSL has shifted its urban planning lens to a city region outlook. In 1998, the Colombo Metropolitan Region Spatial Plan was published, and more recently, the Western Region Megapolis Plan (2016) was developed to be implemented by

the dedicated Ministry of Megapolis and Western Development. This more recent initiative aims to manage urban expansion in the Western Province as a 3,684 km² megapolis, incorporating many municipalities.

There have also been a number of initiatives to promote regional development through urban planning, particularly in cities of the north and east that have been adversely affected by the conflict, and in remote central areas. The National Physical Planning Department (NPDD) is mandated to deliver regional planning, producing the National Physical Plan (2007) and the regional plans for the Eastern and Western Provinces (2005), Uva and Sabaragamuwa Provinces (both 2009). The Ministry of Megapolis and Western Development also promotes development in regional cities through the Strategic Cities Development Programme (SCDP). A recent strategy has been to increase the connectivity of secondary cities, both with one another and to the capital, Colombo, through the development of urban corridors. Currently, the GoSL is developing the Central Corridor, linking Colombo to the eastern port city of Trincomalee via Kurunegala, Kandy and Anuradhapura (intercity connectivity and corridor development are explored in depth in Chapter 7).

2.2 The size and growth of Sri Lanka's cities

A key urban planning constraint to achieving sustainable cities in Sri Lanka is uncertainty about the fundamental attributes of Sri Lanka's urban areas: their size and how they have changed over time. This section addresses this uncertainty, assessing the size and growth of the 9 Provincial Capitals during the period 1995-2017. The SoSLC data show that Sri Lanka's capitals are larger and have grown at a faster rate than official data suggest. On average, they have expanded at a rate of 6.42 per cent per year from 1995-2017, adding around 981 km² of urban built-up area. In contrast, UNDESA data, which relies on census data, indicate that on average Sri Lanka's urban population increased at less than 1 per cent per annum during the same period (UNDESA, 2018). SoSLC data also show that the 9 Provincial Capitals are far larger than official data suggest, indicating a total population of 7.39 million in 2017 (see Table 2.1). In contrast, 1.47 million people are estimated to live within official MC boundaries in 2017. This section looks at the reasons why official data underestimates Sri Lanka's urbanization, proposes alternative methods for analysing the growth of Sri Lanka's cities and presents a spatial analysis of the extent and growth of the 9 Provincial Capitals.

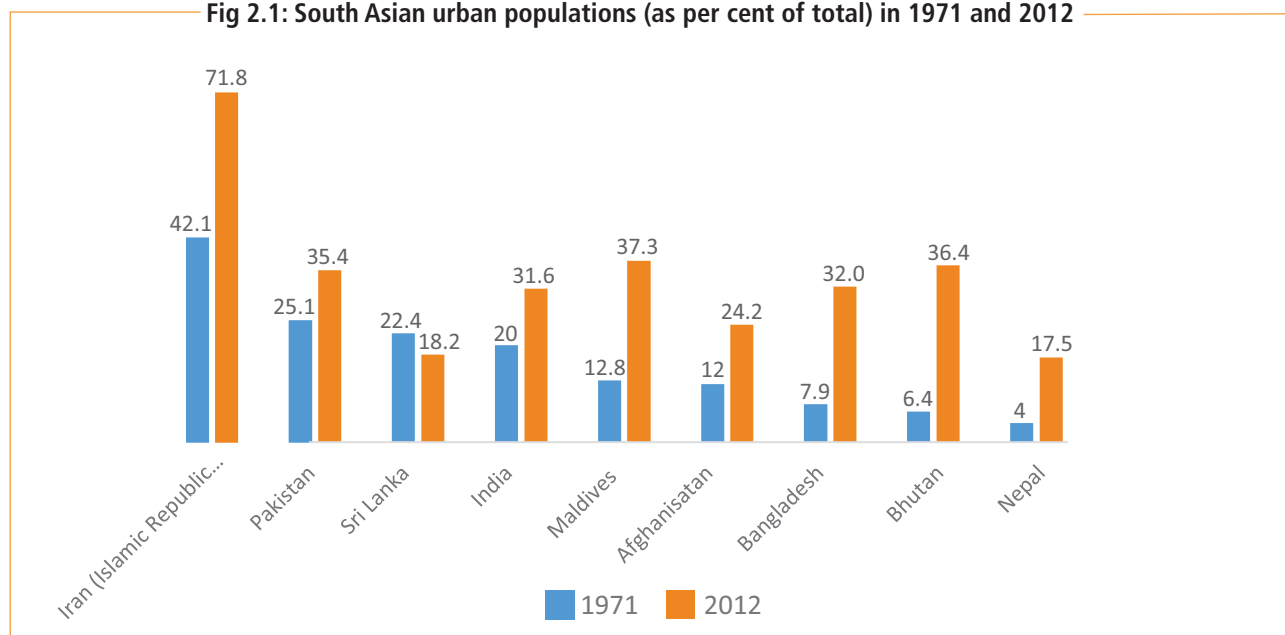
Why does official data underestimate the size and growth of Sri Lanka's cities?

Policy makers face challenges in understanding the dynamics of Sri Lanka's urbanization because official representations rely on population-based measurements of 'urban'. These measures count the urban population as

those living in 'urban' administrative areas, including Municipal Councils (MC), Urban Councils (UC) and Town Councils (TC). Using these definitions, from the 1881 census until the census of 1971, Sri Lanka exhibited a growing urban population: in 1971 the urban population was recorded as 22.4 per cent of total, and Sri Lanka was rated as the 3rd most urbanized country in UNDESA's South Asian region (Fig 2.1). Between 1971 and 1981, however, the urban-rural ratio declined due to reclassification of some 'urban' areas to 'rural' (De Silva, 2009). More changes were made in 1981, when the unit of TC was removed, and populations residing in these areas became de facto rural, resulting in an instant drop of urban population from 21.5 per cent of total, to 14.4 per cent of total (Fig 2.2). This narrow definition of urban was applied in the 2001 and 2012 census, resulting in a small and static representation of Sri Lanka's cities. Crucially, urban expansion occurring outside these unchanging MC and UC boundaries was not considered, and thus the true scale of Sri Lanka's cities was underestimated. By the time of the 2012 census, Sri Lanka was ranked as the 2nd least urbanised country in the South Asian region, with an urban population totalling 3.7 million (Fig 2.1; see also Chapter 1, Table 1.1).

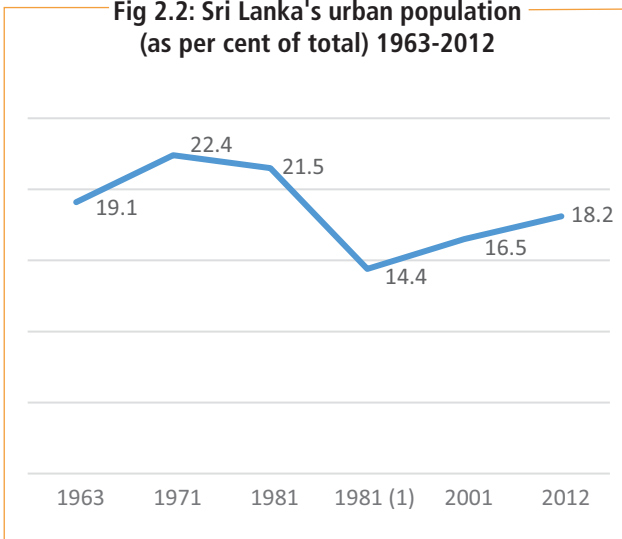
The low official urban population means Sri Lanka is still considered (mistakenly, as this chapter shows) one of the least urbanized country's on earth. According to the UN's *World Urbanization Prospects: The 2018 Revision*, Sri Lanka's urban population is currently 18.5 per cent of total (placing it as the 11th least urbanized country on earth) and expanding at rate of 0.85 per cent per year – far slower than the South Asia average of 2.41 per cent (UNDESA, 2018).

Fig 2.1: South Asian urban populations (as per cent of total) in 1971 and 2012



Source: Sri Lanka: GoSL (2012); Others: UNDESA (2018)

Fig 2.2: Sri Lanka's urban population (as per cent of total) 1963-2012



Source: Data provided by DCS

Towards a spatial representation of urban growth in Sri Lanka

In the global policy literature, population-based measurements of urban growth are acknowledged to have several limitations, including – as is the case in Sri Lanka – missing urban populations living in peripheral areas administratively classed as 'rural', and thus underestimating the extent and growth rate of cities (Angel et al., 2005; McGranahan & Satterthwaite, 2014; Uchida & Nelson, 2010).

Given these limitations, a key aim of the SoSLC report is to provide appropriate methodological tools to monitor the size and form of the Sri Lanka's cities. In this regard, the SoSLC report proposes applying spatial analysis tools to determine the extent of urban built-up area and assess

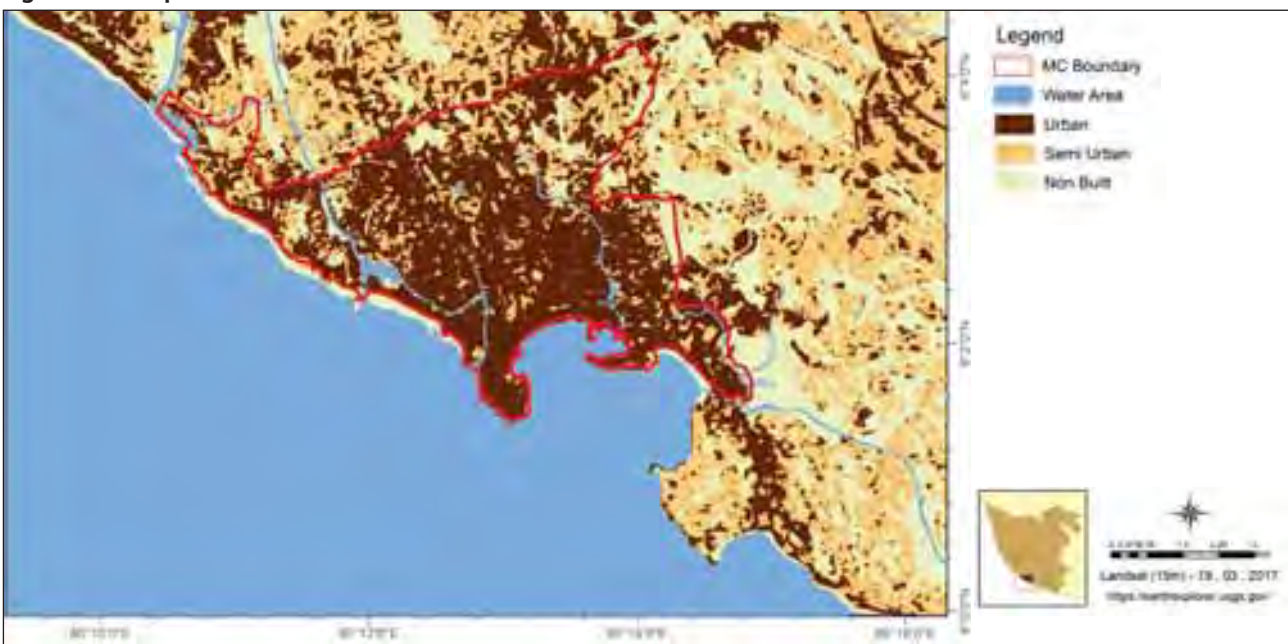
changes over time. Globally, spatial methods are widely considered appropriate to capture and analyse the dynamics of urban expansion (Angel et al., 2005; Seto, Fragkias, Güneralp, & Reilly, 2011).

The SoSLC project used spatial analysis to assess the extent and growth of the 9 Provincial Capitals during the period 1995-2017 (see Annex 1 and 2 for details). Temporal changes in 4 land use categories were assessed: **urban**, **semi-urban**, **non-built-up** and **water**. Preliminary analysis found that in all cases the urban and semi-urban area extended beyond the official MC boundary. Hence, to capture urban expansion outside the MC boundary, an **Area of Interest (Aoi)** was demarcated to represent the land area that exhibits contiguous urban land use characteristics (see Annex 2 for details). In Galle, for example, the Aoi captures the built-up areas in 'rural' areas outside the MC boundary, which is 'hidden' from urban population statistics (Fig 2.3). In this way, the spatial analysis highlights built-up area, and is therefore not limited by MC boundaries.

What does spatial analysis reveal about extent and growth of Sri Lanka's cities?

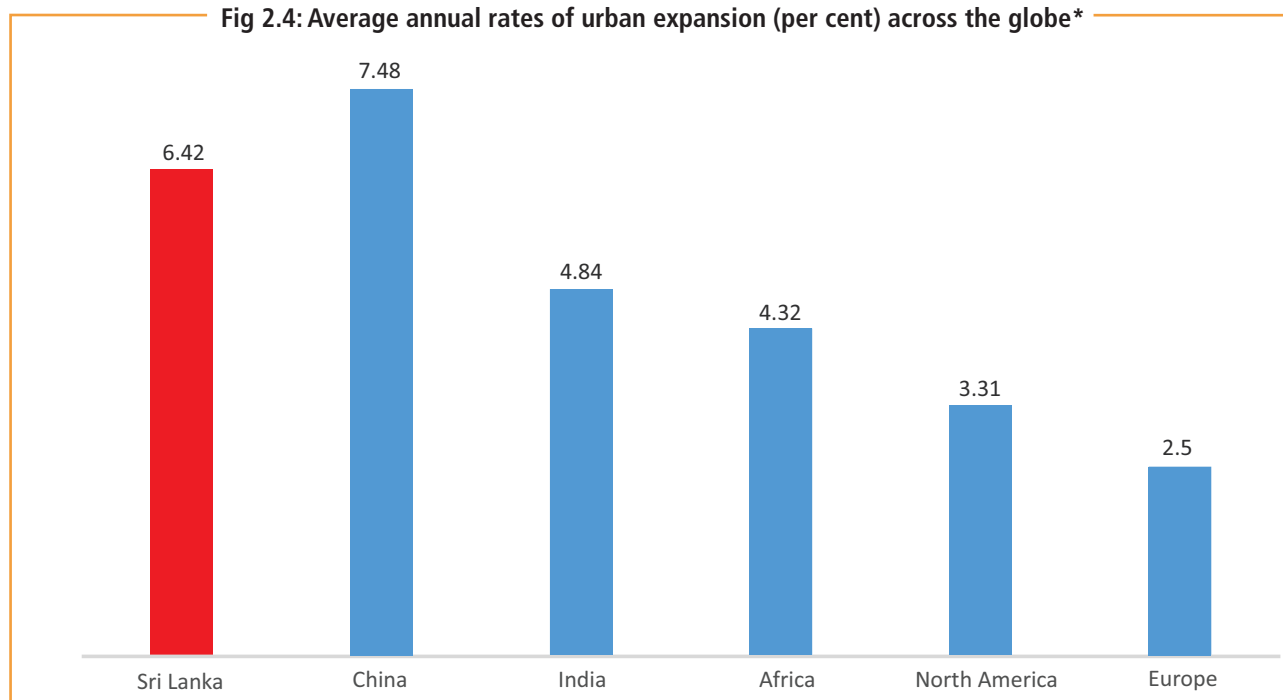
The SoSLC spatial analysis revealed that the built-up area in and around Sri Lanka's Provincial Capitals has expanded rapidly over the past two decades. On average, the 9 Provincial Capitals expanded at a rate of 6.42 per cent per year (Fig 2.4) driven by economic growth and population increase (See Box 2.1). The rate of urban expansion was faster than those observed in the cities of Europe, North America, Africa, India and, slightly lower than cities in China (see Seto et al. 2014).

Fig 2.3: Built-up area in Galle 2017



Source: SoSLC Project

Fig 2.4: Average annual rates of urban expansion (per cent) across the globe*



Sources: Sri Lanka, SoSLC Project; Others, Seto et al. (2014)

*Note: Sri Lanka reference period 1995-2017 for 9 Provincial Capitals; Others, 1970-2000

Box 2.1: What is driving Sri Lanka's urban expansion?

Rapid urban expansion has occurred in Sri Lanka over the past two decades. It is critical that policy makers understand the drivers of this expansion so appropriate policy responses can be developed.

From a global perspective, the two main drivers of urban expansion are population growth (natural population growth and rural-urban migration) and economic growth (Seto et al., 2011). In Sri Lanka, natural population growth is unlikely to be the driving cause of urban expansion. In general, population growth is low in Sri Lanka (see Chapter 3). However, as shall be discussed in Chapter 3, rural-urban migration is a significant driver of urban population growth in the Provincial Capitals.

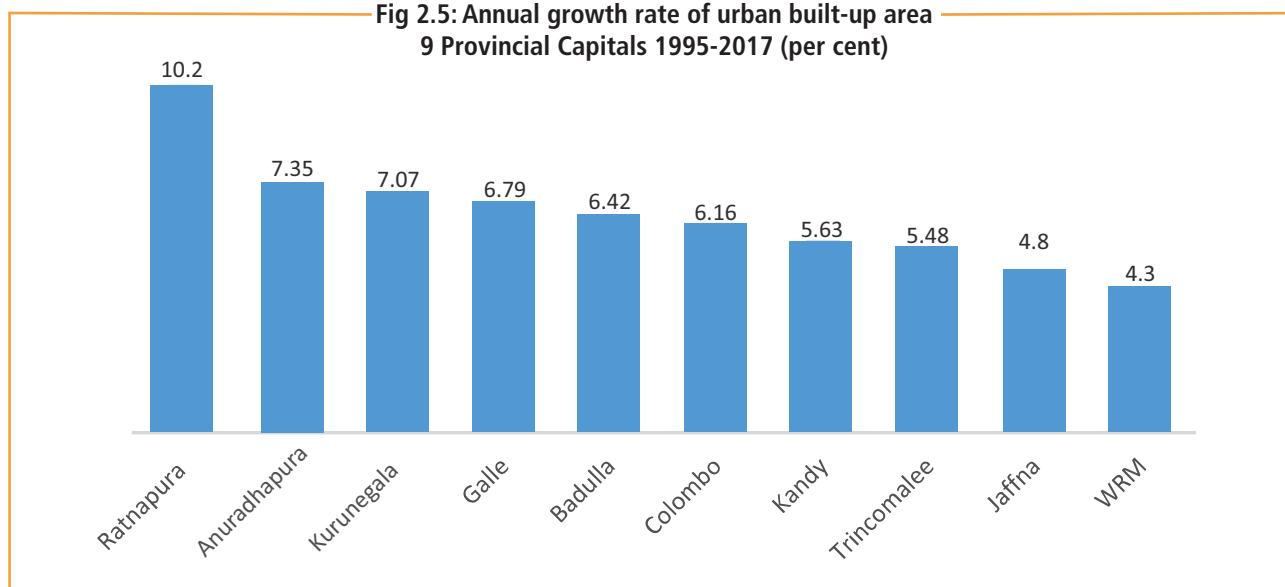
In many cities across the globe the majority of urban expansion can be attributed to economic development, rather than population growth (Angel, Parent, Civco, Blei, & Potere, 2011). In such cases, urban economic growth results in the expansion of industrial and services related land use. In Sri Lanka, large redevelopment projects (such as Port City, see Section 2.4) have played a role in increasing urban area, and have been a response to the changing trade and investment climate in the country as Colombo emerges as a regional hub of trade and investment. In addition, per capita increases in wealth mean urban residents have more disposable income to spend on housing and consumer products, driving increases in land use change.

Rural-urban migration and development-driven land use change require careful management to ensure sustainable cities in Sri Lanka.

Within Sri Lanka, rates of urban expansion varied across the country (Fig 2.5). In Colombo Aol, which includes the urban area of Colombo, Kotte and Dehiwala MC and outside fringe areas, the rate of expansion was 6.16 per cent per year, which accounted for an addition of 333 km² of urban area in the period 1995-2017. The larger WRM, which includes Colombo Aol and the remainder of the Western Province, registered a growth rate of 4.3 per cent per year during the same period. A notable feature of the data was that some cities expanded from a very small urban base in 1995, and in

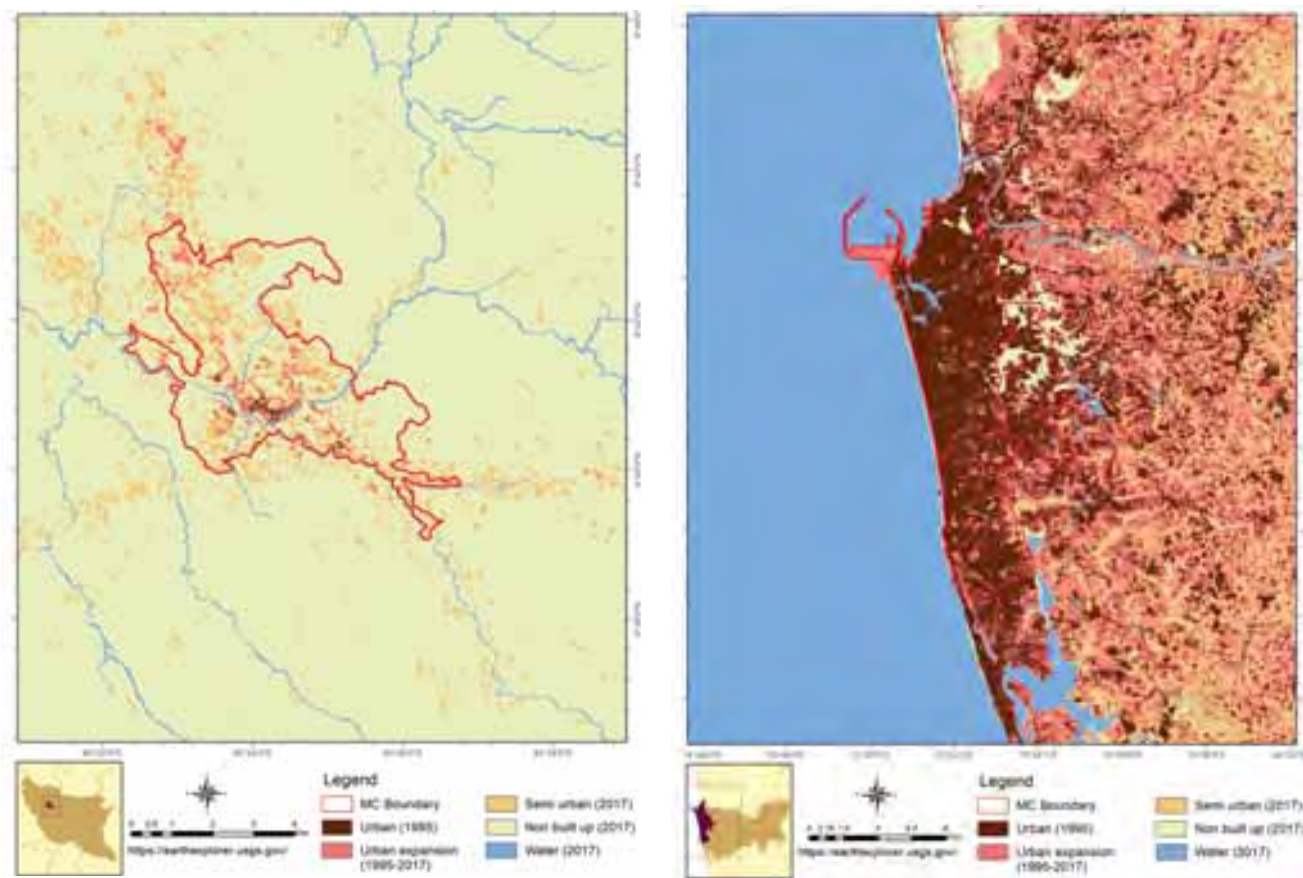
some cases remained small urban areas in 2017. Hence, although cities like Ratnapura expanded at a fast rate, the amount of additional urban area this accounted for was very small in comparison to larger cities. For example, in Ratnapura urban land use accounted for 0.4 km² (or around 0.15 per cent) of the Aol in 1995, and increased to 3.5 km² (or around 1.3 per cent) of the Aol by 2017. In contrast, Colombo Aol urban land use accounted for 122.1 km² (around 22 per cent) of the Aol in 1995 and 455.2 km² (around 73 per cent) in 2017 (Fig 2.6).

**Fig 2.5: Annual growth rate of urban built-up area
9 Provincial Capitals 1995-2017 (per cent)**



Source: SoSLC Project

Fig 2.6: Urban expansion in Ratnapura Aol (L) and Colombo Aol (R) 1995-2017



Source: SoSLC Project

The Aol of all capitals were found to be far larger than the MC area, with large fringe areas lying outside the MC boundaries (Table 2.1). When the fringe areas are taken into account, the populations of the Provincial Capitals were far larger than official statistics suggest. The SoSLC project estimated 2017 population for MC and fringe areas using the distribution of urban and semi-urban built up areas, and 2012 population densities from the census (see Annex 3). In

some cases, the fringe population was found to be large than the size of the MC population. These results strongly suggest that city boundaries need to be revised, and appropriately demarcated, to enable evidence-based urban planning. The large fringe populations have implications across urban sectors, and is a key theme of this report.

Table 2.1: Population estimates for Provincial Capitals in 2017

Municipality	MC area (km ²)	Fringe area (km ²)	Estimated MC pop. 2017	Estimated fringe pop. 2017	Estimated total pop. 2017
Anuradhapura	51.40	632.82	66,000	71,000	136,000
Jaffna	19.11	99.67	94,000	83,000	177,000
Badulla	10.66	85.46	54,000	67,000	122,000
Galle	17.32	183.17	104,000	263,000	366,000
Kandy	25.00	113.61	113,000	117,000	230,000
Kurunegala	11.00	65.03	38,000	12,000	50,000
Rathnapura	22.66	244.84	56,000	55,000	110,000
Trincomalee	13.79	129.85	56,000	62,000	118,000
Colombo and WRM*	81.3	3598.00	889,000	5,192,000	6,081,000
Total	252.24	5152.45	1,469,000	5,922,000	7,391,000

Source: SoSLC Project and data from DCS

Note: *For Colombo and the WRM, the 'MC area' includes the MCs of Colombo, Kotte and Dehiwala, and the 'fringe area' refers to remainder of the WRM.

2.3 Sri Lanka's sprawling cities

The preceding discussions have shown that Sri Lanka's cities have expanded rapidly over the past two decades. Spatial analysis of urban expansion reveals sprawl is the typical form of urban expansion in the 9 Provincial Capitals. Urban sprawl is typically defined as unplanned and/or uncoordinated low density expansion, and involves rapid land consumption as rural spaces transition to urban land use (Bhatta, 2010; Peiser, 1989). Sprawl is widely considered an undesirable urban attribute for a variety of reasons (Box 2.2). A precursor to sprawl is ribbon development, which involves low density expansion along transport routes; ribbon development progressing to sprawl is a typical mode of expansion in Sri Lanka's cities, and a key urban planning issue for the GoSL (GoSL, 2017).

A notable example of ribbon development progressing into urban sprawl can be observed in the city of Kurunegala, as demonstrated by satellite images from 1995, 2001, 2012 and 2017 (Fig 2.7). In 1995, the image shows a very small urban space, concentrated in a few areas at the centre of the MC area. By 2001, we can see the formation of semi-urban ribbons radiating out from the centre, particularly to the north-west along the A10 road to Puttalam and south-west along the A6 road towards Colombo. Semi-urban areas exhibit lower building densities than areas categorised as urban (See Annex 2), and in the 9 Provincial Capitals, semi-urban is often a precursor to urban sprawl. Correspondingly,

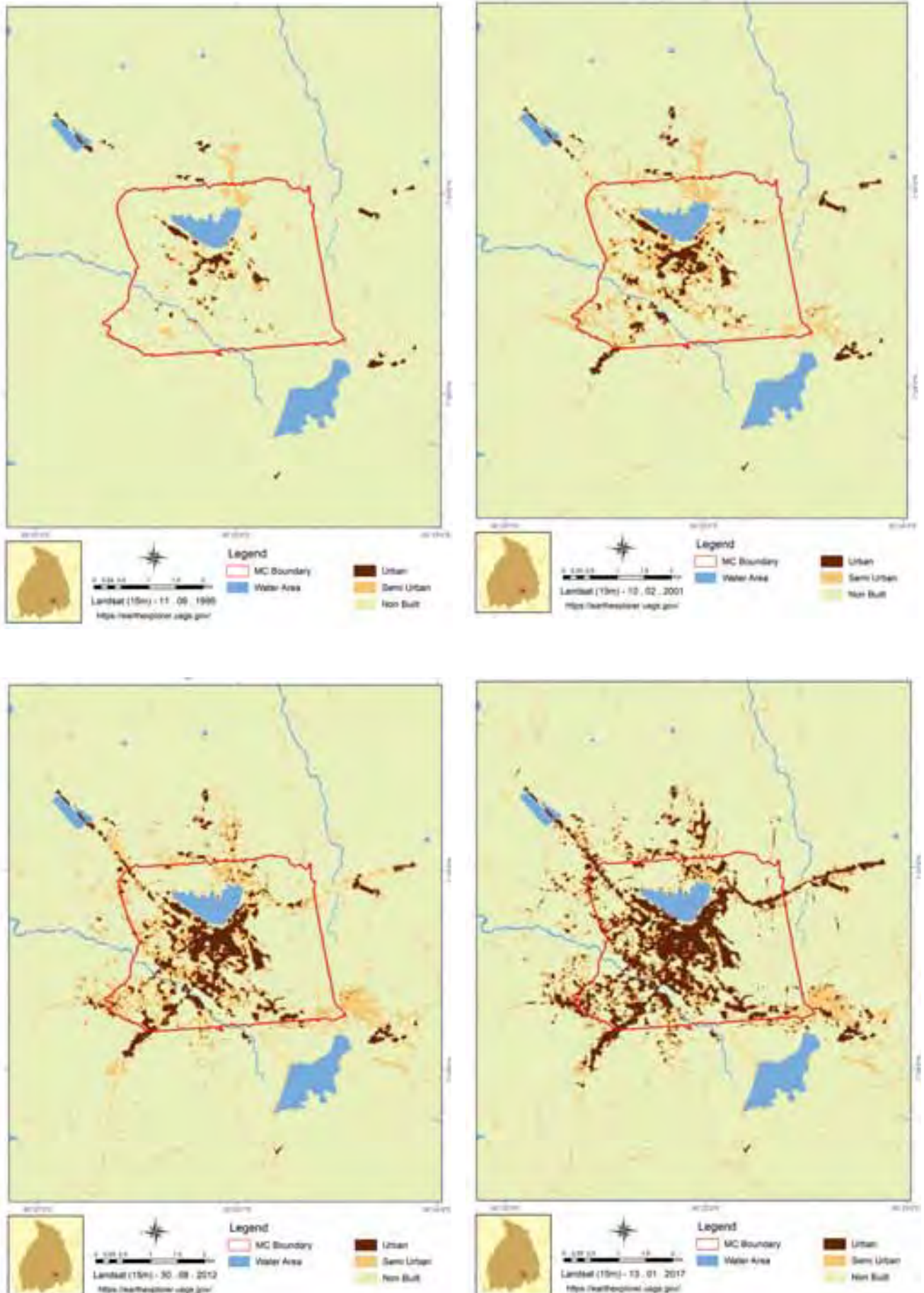
the 2012 image shows that semi-urban ribbon areas have converted to sprawling urban land use, and semi-urban areas are emerging in peripheral spaces between transport corridors. By 2017, we can see significant sprawling expansion in urban and semi-urban area across the Aol, which is dispersed with non-built-up area.

Street view of Kurunegala



Source: UN-Habitat/ Charmalee Jayasinghe

Fig 2.7: Ribbon and sprawl expansion in Kurunegala, 1995, 2001, 2012, 2017 (L-R)



Source: SoSLC Project

Box 2.2: Why is urban sprawl a problem?

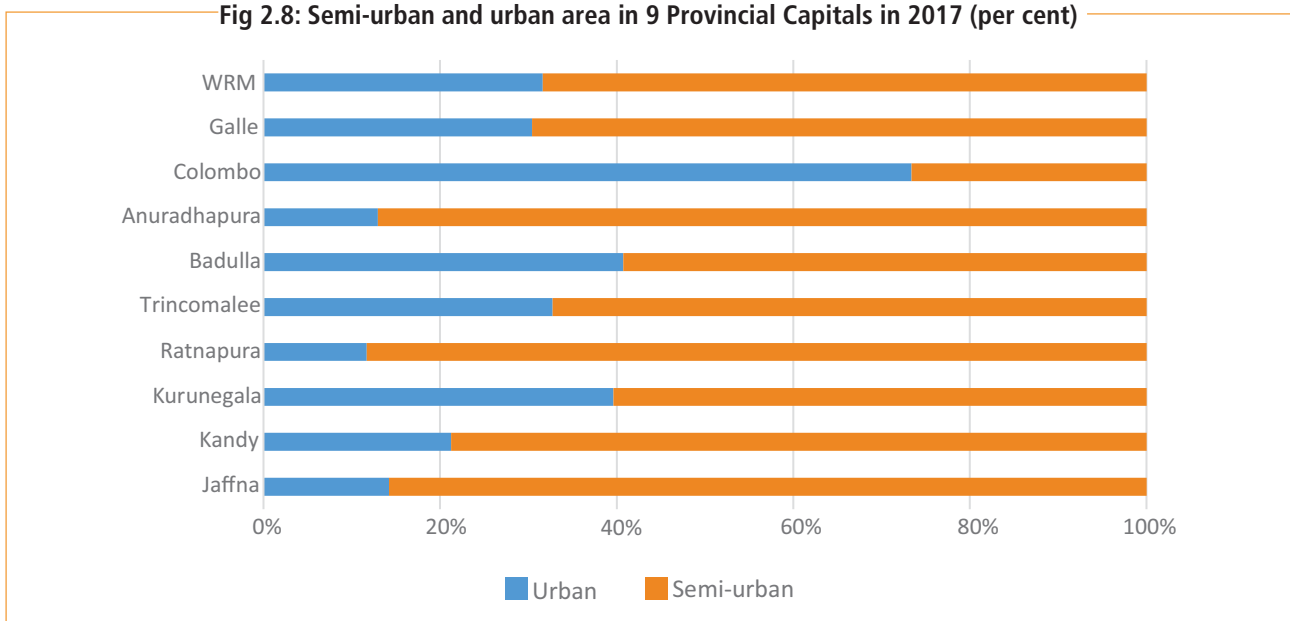
Reducing urban sprawl is a key component of SDG 11, which has a specific indicator related to urban sprawl (the rate of urban land consumption), and the New Urban Agenda. Sprawl is widely regarded as posing severe challenges to promoting competitive, inclusive, resilient, safe, and sustainable cities for many reasons:

- Rapid urban expansion poses grave threats to important Earth systems, globally and in Sri Lanka, with severe implications for environmental sustainability. A major study led by Karen Seto of Yale University highlighted Sri Lanka's biosphere as part of one of the top four locations globally under threat from urban expansion (Seto, Güneralp, & Hutyrá, 2012).
- Rapid land use change from non-urban to urban have been shown to have negative effects on urban resilience to climate change, particularly through increasing flood vulnerability. Land use change has reduced drainage capacity in the greater Colombo area substantially, increasing flood risks to urban residents (Hettiarachchi et al., 2014).
- Sprawl increases the costs of public service provision, because population and economic assets are spread over wide areas, relative to more compact cities (Bandara & Hettiarachchi, 2010). This affects the competitiveness of cities by reducing their liveability and increasing the costs of service provision.
- Urban sprawl creates problems for urban mobility, particularly in the provision of affordable and reliable public transport, and encourages private vehicle usage (Vance & Hedel, 2007). This has implications for safe cities because of increased exposure to traffic accidents: urban sprawl has been directly linked to road traffic fatalities globally (Ewing, Schieber, & Zegeer, 2003). Increased private vehicle usage also leads to greater greenhouse gas emissions.

The prevalence of low density semi-urban area is in evidence in most of the Aols associated with the 9 Provincial Capitals (Fig 2.8). In Jaffna, Anuradhapura and Ratnapura, this trend was particularly pronounced, with more than 80 per cent of built-up area consisting of low density semi-urban and less than 20 per cent fitting into the category of urban built-up area, with semi-urban area often spreading far beyond the

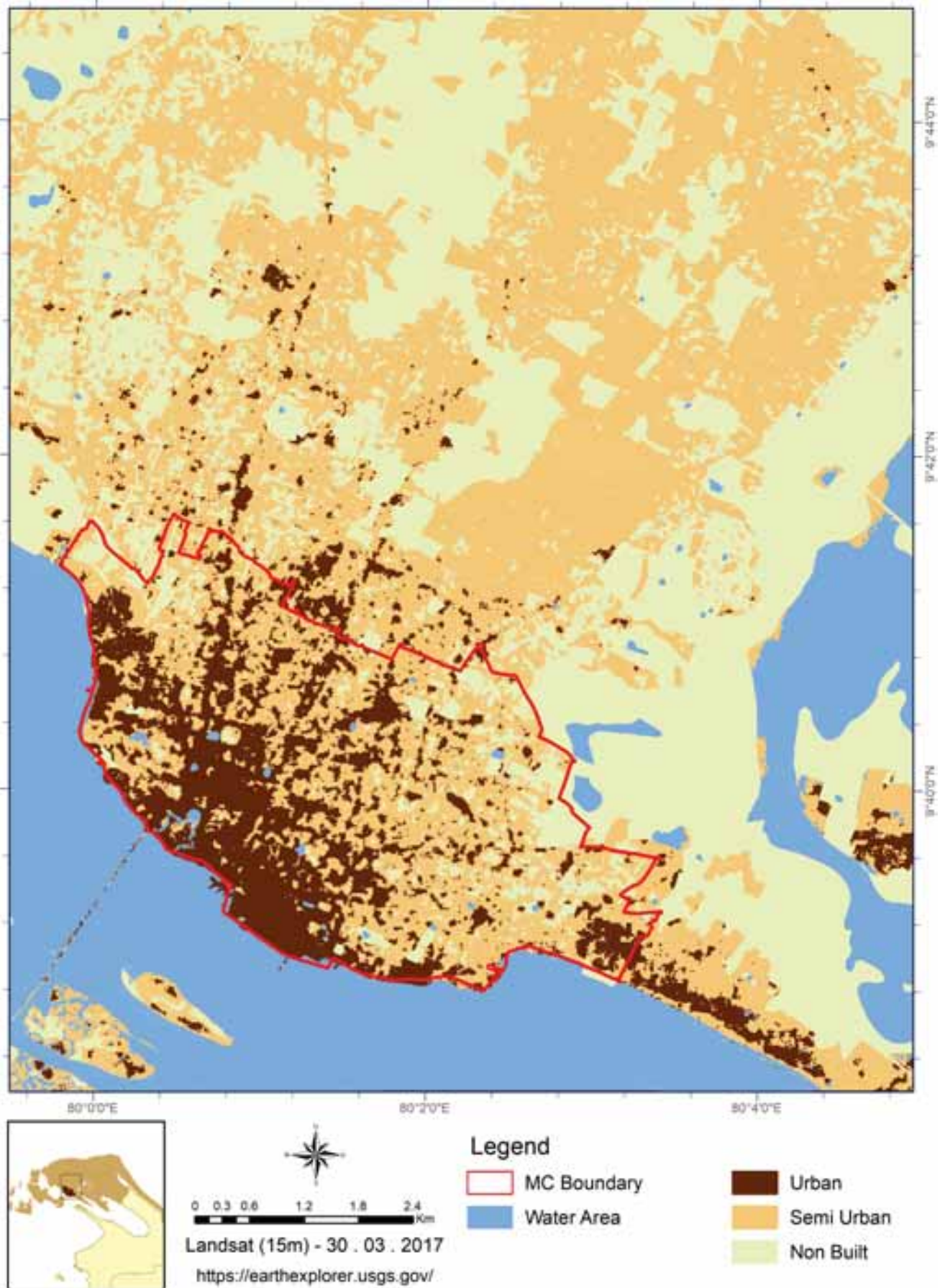
MC boundary (Fig 2.9). Following the Kurunegala example, it is likely that much of this low density semi-urban space will transition to urban sprawl if remedial policy actions are not taken. The scale of this issue is most obvious in the case of the WRM, which covers an area of 3,684 km², where around 70 per cent of the built-up area is low density semi-urban.

Fig 2.8: Semi-urban and urban area in 9 Provincial Capitals in 2017 (per cent)



Source: SoSLC Project

Fig 2.9: Semi-urban area in Jaffna in 2017



Source: SoSLC Project

Box 2.3: Benefits of compact cities

Compact cities are promoted by SDG 11 and the New Urban Agenda as an important component of sustainable urbanization. There are a variety of benefits associated with compact cities:

- Promoting compact cities with appropriate urban planning interventions can improve access to urban services, such as solid waste and waste water management infrastructure, and drive cost effectiveness in service delivery by reducing coverage areas (OECD, 2012).
- Compact cities improve urban mobility by reducing the need for vehicle usage and enabling effective, efficient and equitable provision of public transport (Zhao, 2010).
- The mobility benefits of compact cities reduce greenhouse gas emissions and have been shown to have significant impacts in improving public health outcomes (Stevenson et al., 2016).
- Reducing the rate of land consumption by promoting urban densification rather than sprawl safeguards ecological environments on the urban periphery (Seto et al., 2012).
- Compact cities are more resilient to climate change, reducing the urban heat island effect and flood vulnerability (Stone, Hess, & Frumkin, 2010).
- In the medium- to long-term, compact cities enable upgrading urban service delivery through ICT interventions, and delivering smart cities – an important component of the globe's urban future as detailed in the New Urban Agenda.

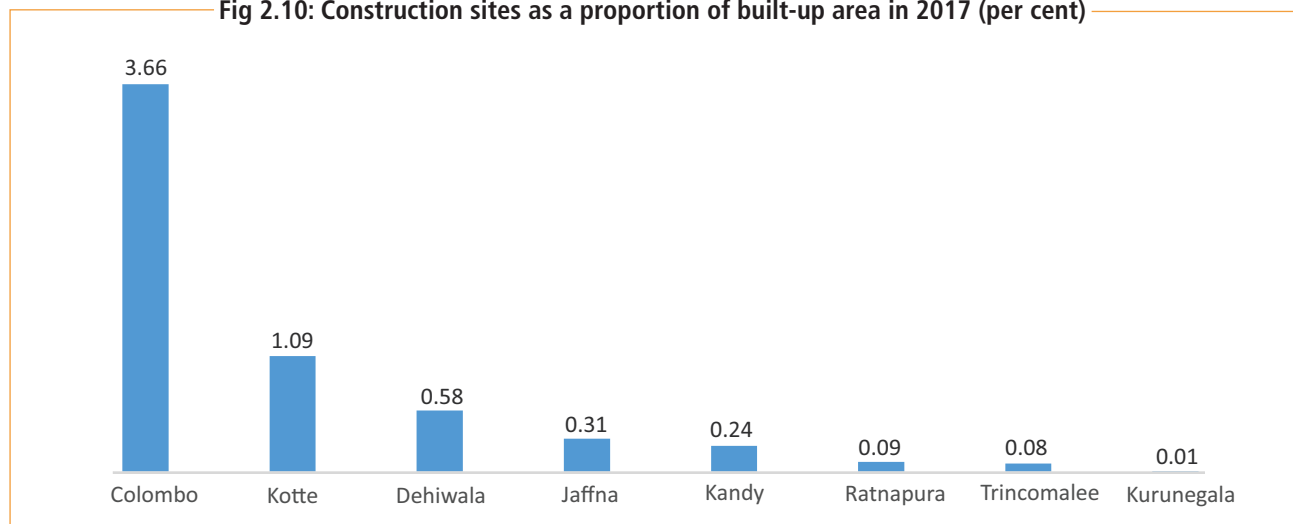
2.4 Promoting compact cities as the antidote to sprawl

Compact urban expansion refers to the densification of mixed urban land use over a small area and is widely viewed as preferable to low density sprawl (see Box 2.3). In general, Sri Lanka's cities show limited evidence of compact urban expansion. The exception to this trend is Colombo MC, which provides the strongest example of compact urban expansion out of the 9 Provincial Capitals. It is important here to again distinguish between the small Colombo MC area and the much larger WRM; infill and extension have been identified

as modes of urban expansion in the MC area, rather than the WRM, where sprawl is prevalent.

Spatial analysis suggests that Colombo MC has more densified land use than other MCs. Remote sensing shows that 90 per cent of Colombo MC fits into the 'urban' land use category – higher than any other MC. In addition, SoSLC land use mapping of very-high resolution satellite imagery shows that high-rise buildings accounted for approximately 9 per cent of residential land use in the city, in comparison to 1.5 per cent on average across other cities (see Chapter 5). Colombo MC also includes the country's most significant

Fig 2.10: Construction sites as a proportion of built-up area in 2017 (per cent)



Source: SoSLC Project

Central Colombo with the Presidential Secretariat and Shangri La Hotel and new developments in the background



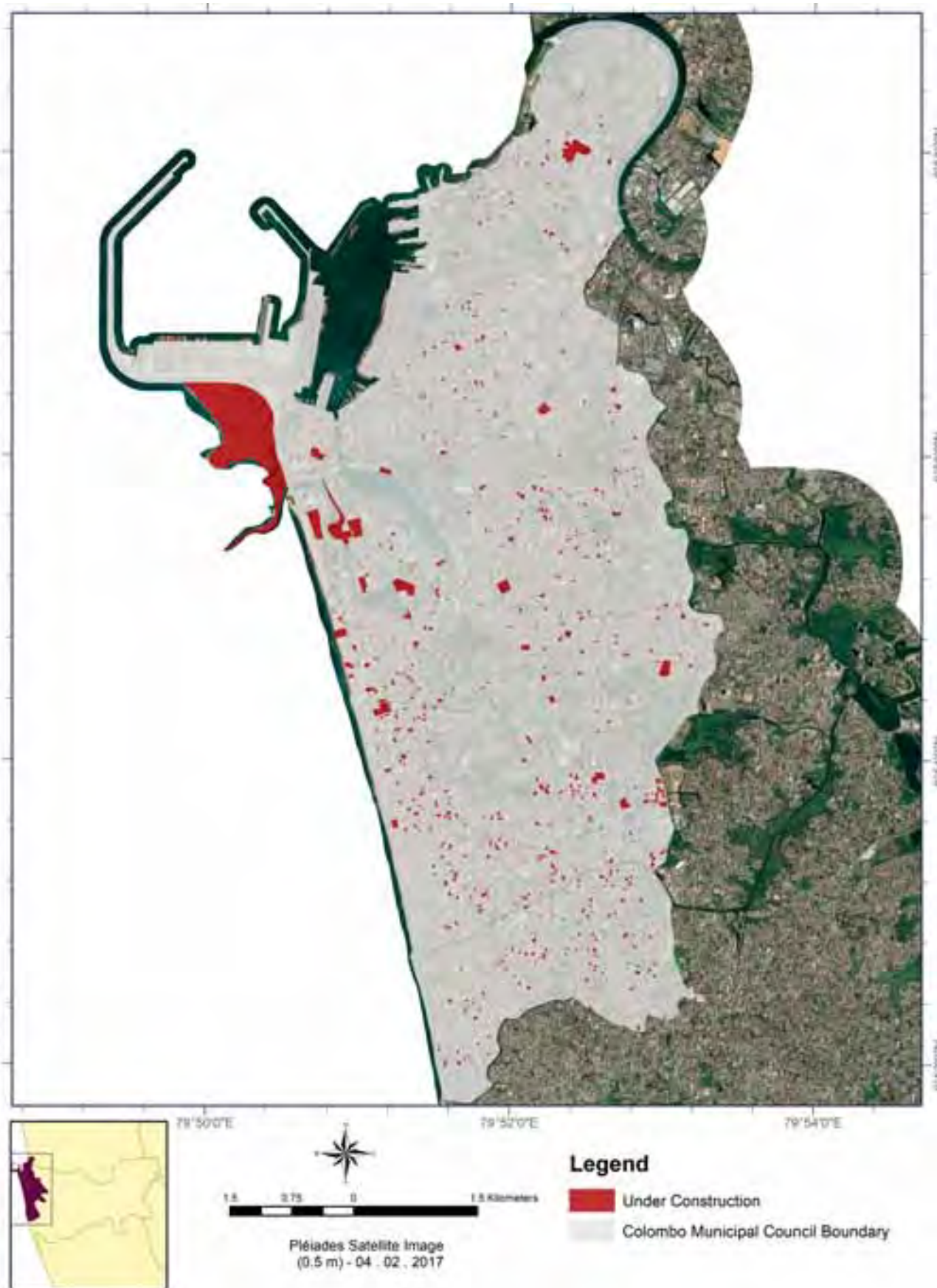
Source: UN-Habitat/Charmalee Jayasinghe

Central Business District (CBD): a hub of business, it includes numerous high-rise office buildings, including the World Trade Centre.

Colombo MC is also in transition, with redevelopment to densify the urban area occurring. SoSLC land use mapping shows the MC includes the largest proportion of built-up area identified as being 'under construction' for urban development. Around 3.7 per cent of Colombo MC's entire built-up area is categorized as under construction in 2017 (Fig 2.10; 2.11). Outside of Colombo, far smaller proportions of built-up area was identified as 'under construction', with 3 MCs (Badulla, Galle and Anuradhapura) not exhibiting any construction sites of sufficient size to be picked up in the land use mapping protocols utilised (see Annex 1).

Land use mapping of Colombo MC revealed two processes associated with compact urban expansion. The first is infill expansion, which refers to redevelopment of urban land to accommodate increased density of the built-up area; for example, by promoting vertical urbanism. Compact expansions can also refer to urban extensions, where planned additions are constructed on the periphery of a city's urban core. Port City is a planned CBD extension of Colombo MC, which involves reclaiming land from the sea on the city's west coast: it is by far the largest construction area in Colombo MC (Fig 2.11). The project is intended to position Colombo as a hub of transnational trade and investment in the South Asian Sub-Continent. Currently, the area is a vast area of sand immediately bordering Colombo's existing CBD; it is envisioned to become a global centre for business, finance and other commercial activity (Fig 2.12).

Fig 2.11: Areas under construction in Colombo MC in 2017



Source: SoSLC Project

As well as this CBD extension, there are numerous cases of infill development dotted across the MC (Fig 2.11). In many of these projects, low density commercial and residential land is being converted to highrise structures. There are, however, important social considerations when transitioning residential areas from low rise to high rise, particularly from a community cohesion perspective. In this regard, the GoSL's strategy to relocate the 50 per cent of the

city's residents currently living in low-rise self-built settlements and house them in high-rise redevelopments has planning implications if the wellbeing of affected urban residents is to be secured. Thus, as is suggested in Chapter 5, high-rise redevelopments are not a panacea to be implemented in all cases, but are an appropriate form of urban expansion in some cases.

Fig 2.12: Port City current construction and future plan (L-R)



Source: UN-Habitat/ Charmalee Jayasinghe



Source: CHEC Port City Colombo (2018)

2.5 Urban spatial development and a better urban future for all Sri Lankans

Urban spatial development has a significant impact on promoting the competitiveness, inclusivity, resilience, safety and sustainability of Sri Lanka's cities. Improving the spatial composition of the country's cities will have a range of positive impacts to improve urban systems and contribute to a *better urban future for all Sri Lankans*.

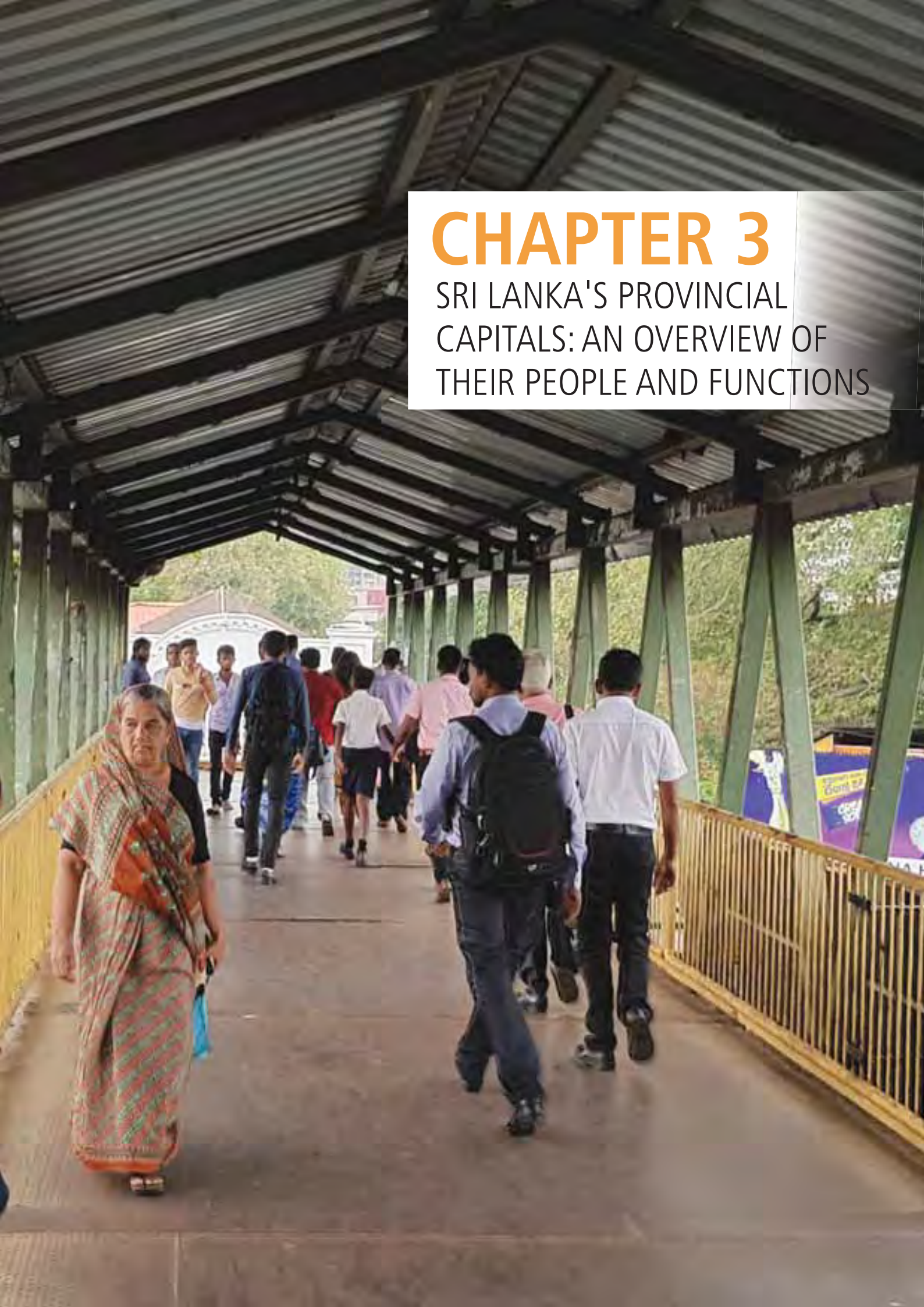
City outcome	Contribution of spatial development
Competitive	<p>Accurate information about urban boundaries is a prerequisite of planning for urban economic development.</p> <p>As Sri Lanka's cities rapidly expand, sprawl development increases costs for service provision, and renders cities less liveable and more susceptible to shocks, diminishing investment incentives and constraining GDP growth. In response, promoting compact cities can increase competitiveness by rectifying problems associated with sprawl.</p>
Inclusive	<p>Rapid urban expansion and sprawl development make it difficult for residents on the urban periphery to access urban services.</p> <p>Redrawing urban boundaries to include residents in peri-urban fringe areas will foster more inclusive urban development.</p>
Resilient	<p>Rapid urban expansion poses threats to the resilience of cities to climate-related shocks.</p> <p>Sprawling cities make it more difficult for authorities and other stakeholders to respond to shocks because of large coverage areas.</p>
Safe	<p>Sprawling cities encourage private vehicle usage, increasing the risk of accidents and pollution-related health issues.</p> <p>Redefining urban boundaries ensures that people living in fringe areas have access to the same safety-related public services as those in MC areas.</p>
Sustainable	<p>Promoting compact cities as an alternative to urban sprawl will lessen the impact of urban expansion on important ecological habitats.</p> <p>Urban boundaries that capture fringe areas will increase the capacity of authorities to plan for sustainable cities.</p>

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CHAPTER 3

SRI LANKA'S PROVINCIAL
CAPITALS: AN OVERVIEW OF
THEIR PEOPLE AND FUNCTIONS



This chapter assesses Sri Lanka's 9 Provincial Capitals in relation to the populations and functions of their official Municipal Council (MC) areas. First, the demographic attributes of the MCs are explored, including the size and change of the MC population over time, and the age, sex, ethnicity and educational attainment levels of the MC population. Second, the chapter provides an overview of the key social, economic, administrative and other functions of the MC areas through an analysis of their 2017 land use patterns.

KEY MESSAGES

1. Sri Lanka is projected to have an ageing population. According to UNDESA, nearly 30 per cent of the population will be over 60 by 2050, compared to just 12.4 per cent at the time of the last census. This trend will be particularly acute in Sri Lanka's cities, where the proportion of elderly population is higher than the national average. In addition, women will be disproportionately represented because of their longer life expectancy. Appropriate policy responses are required to manage the increased costs and social issues associated with the ageing population trend.
2. There are gender-based disparities in educational attainment across Sri Lanka's cities. Women aged 25 or above are more likely to have received no schooling than men, and are less likely to be educated to degree level. However, there is evidence that this gender bias has been redressed to a certain degree: in the under 25 age group, it is women who are more likely to be attending a higher education institution. Providing education to urban women is a key tenet of sustainable urbanization.
3. Sri Lanka's overall population is expanding at one of the slowest rates in the region. Despite this, the populations of the 9 Provincial Capitals are expected to grow due to rural-urban migration that will bring opportunities for economic development, particularly in regional cities.
4. Cities provide a range of functions to their populations and the surrounding areas. However, there are regional disparities in the range of services provided by the 9 Provincial Capitals. In Colombo, for example, over 60 per cent of built-up area is allocated to economic, social and other services. In contrast, the more remote Badulla has less than 25 per cent of built-up area allocated to such activities. There is a need, therefore, to extend social and economic opportunities to more remote Provincial Capitals.

3.1 The population of Sri Lanka's Provincial Capitals

Age and gender attributes of Sri Lanka's cities

Sri Lanka is experiencing a demographic dividend – where the share of the working-age population is larger than that of the dependent population – which is conducive to rapid economic growth. At the last census (2012), the proportion of the working age population (age 15-59 years) in Sri Lanka was 62.4 per cent (De Silva & De Silva, 2015). In general, Sri Lanka's 9 Provincial Capitals recorded a higher share of working age population than the national average, particularly Anuradhapura (66.9 per cent) and Colombo (64.6 per cent) (Table 3.1). As we shall see, this is likely the result of working-age economic migrants moving to cities for employment opportunities. The lowest share of working age population is in Galle (61.1 per cent) and Badulla (61.8 per cent).



Source: UN-Habitat/Charmalee Jayasinghe

Table 3.1: Distribution of population by age and MC in 2012

City	Age			Total
	<15	15-59	60+	
Colombo*	21.8	64.6	13.6	100.0
Kandy	22.6	62.6	14.8	100.0
Galle	25.6	61.1	13.3	100.0
Jaffna	23.6	62.1	14.3	100.0
Kurunegala	22.9	63.9	13.2	100.0
Anuradhapura	22.4	66.9	10.7	100.0
Badulla	24.9	61.8	13.3	100.0
Ratnapura	23.3	63.8	12.9	100.0
Trincomalee	24.6	64.3	11.1	100.0

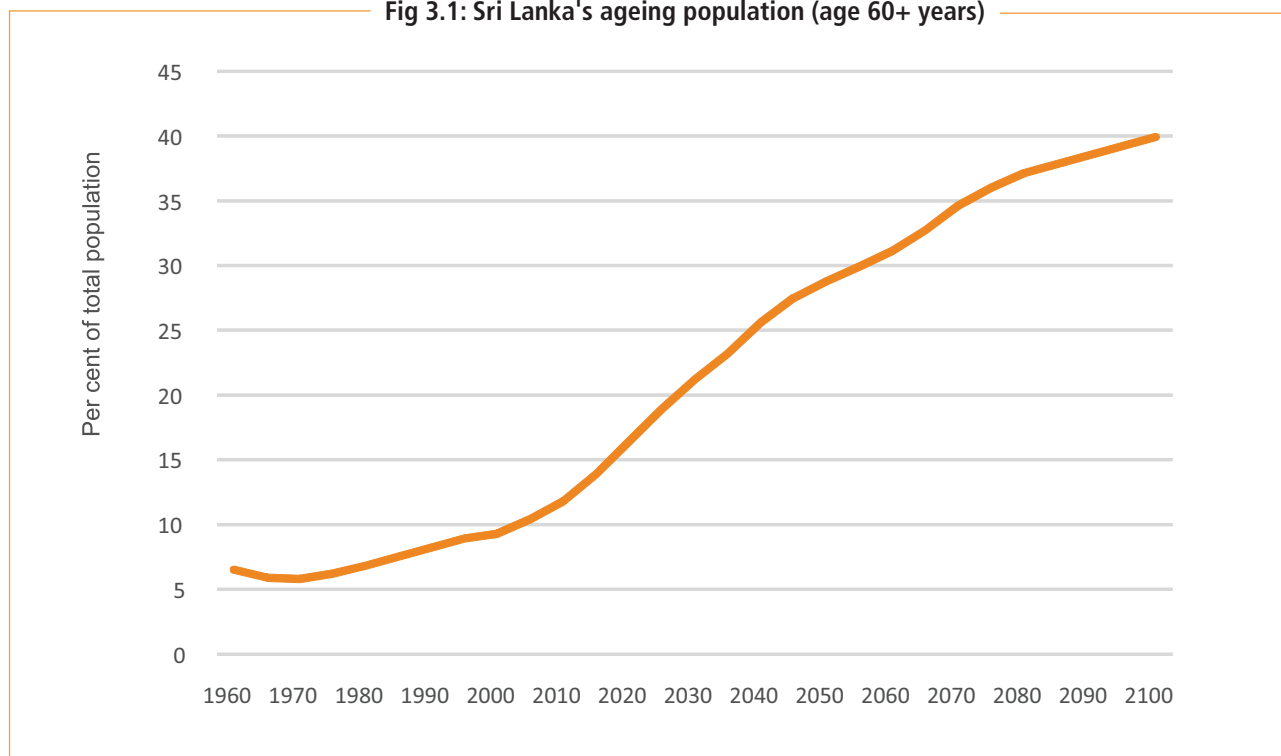
Source: Data from DCS

Note: *Colombo includes Colombo, Kotte and Dehiwala MCs

While experiencing a demographic dividend currently, over the next decades this trend is set to reverse, as Sri Lanka is projected to transition to an ageing society. By 2050, it is projected that 28.8 per cent of total population will be aged over 60, compared to less than 10 per cent in 2000 (UNDESA, 2017; Fig 3.1). A growing elderly population results in a number of social and economic challenges. A key issue is that ageing populations require increased government spending: in Sri Lanka ageing is expected to account for up to 1.8 per cent of GDP in healthcare costs alone by 2100 (IHP, 2007). A corresponding reduction in the proportion of the working age population results in a higher dependency ratio, where a large proportion of the population are not contributing to the economy or tax base but require more public resources allocated to healthcare and other costs.

Sri Lanka's 9 Provincial Capitals will be particularly affected by the ageing population trend. The 2012 census data show that cities typically register a higher share of elderly citizens (age 60+ years) in comparison to the national average of 12.4 per cent (Table 3.2). This is due to better access to services (such as healthcare) and higher living standards in urban areas compared to rural areas (see Chapter 6). The differences in the proportion of elderly across the MCs is the

Fig 3.1: Sri Lanka's ageing population (age 60+ years)



Source: Data from UNDESA (2017)

result of numerous factors, including lower life expectancies in the poorer north, east and central areas (GoSL, 2013) and migration patterns (as shall be discussed below).

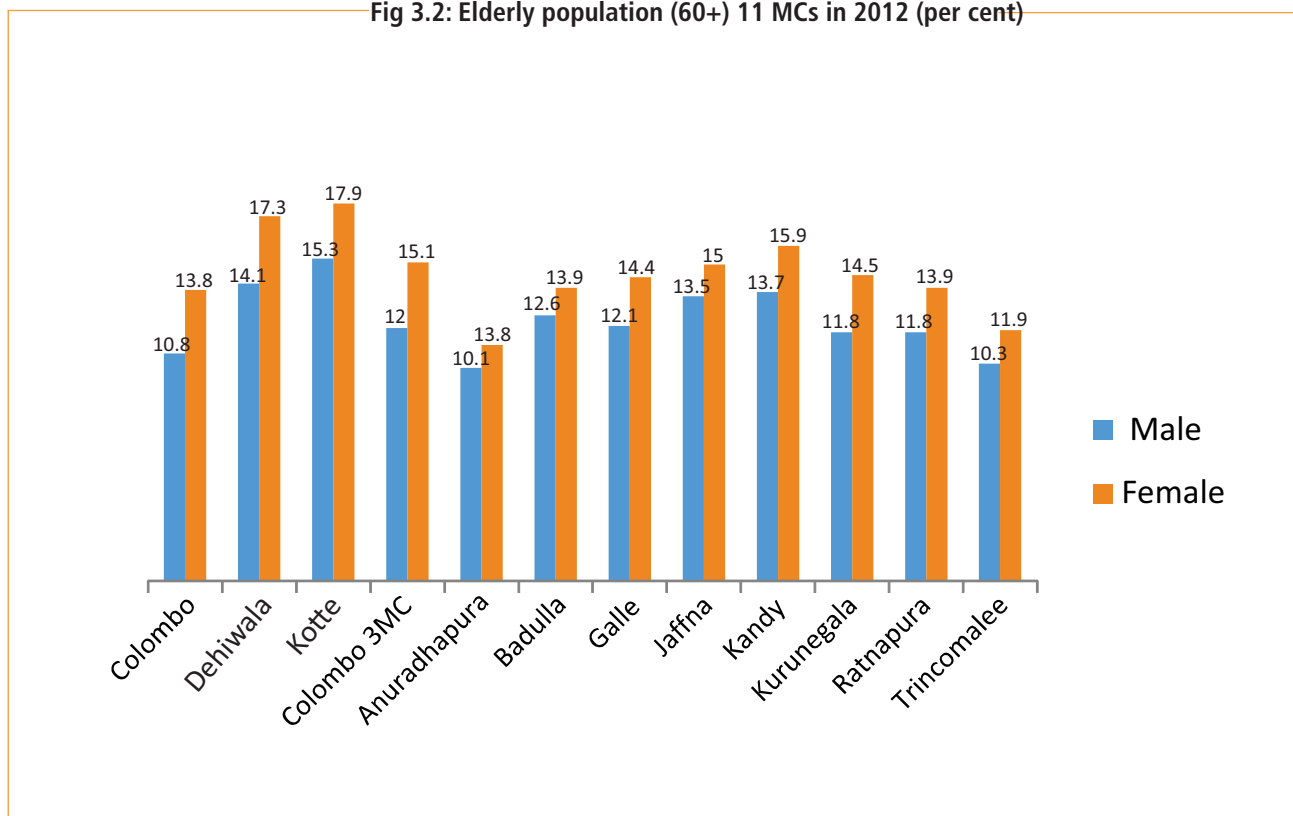
Among the elderly population there are pronounced gender differences – in each city the proportion of elderly females is higher than elderly males (Fig 3.2). The high proportion of elderly women poses questions about how their wellbeing can be secured. This will be a growing policy concern for the GoSL, as has been the case in many advanced economies with ageing populations. Japan, for example, has seen a pronounced trend of population ageing with a series of healthcare and social support options introduced by government in response to the trend, including mandatory public long-term health insurance to fund care in later life (Tamiya et al., 2011). Similar interventions will be required in Sri Lanka in the future, with particular attention given to the issue of elderly women.

A notable demographic attribute of cities is the overall gender imbalances in their populations. In general, since

1971 the sex ratio of the Sri Lankan population has been weighted towards women (De Silva, 2015): the national average was 94 men for every 100 females in the 2012 census. This trend is also reflected in most of the MCs, and is particularly pronounced in Badulla and Jaffna, where there were on average between 11 and 12 less men than women per 100 of population (Fig 3.3). Colombo MC was the only area registering a modest positive male-female sex ratio, which is substantially higher than the national average.

When the working age populations (i.e. those aged 15-59) of the MC areas are isolated, however, many MCs recorded a higher ratio of men to women (Fig 3.4). Colombo, Kotte, Dehiwala, Anuradhapura, Ratnapura, Kurunegala and Kandy registered a higher proportion of working-age men compared to working-age women, bucking their overall trend of women-weighted populations. In contrast, Jaffna, Trincomalee, Galle and Badulla registered a higher number of working-age women, mirroring the overall gender profile of their populations.

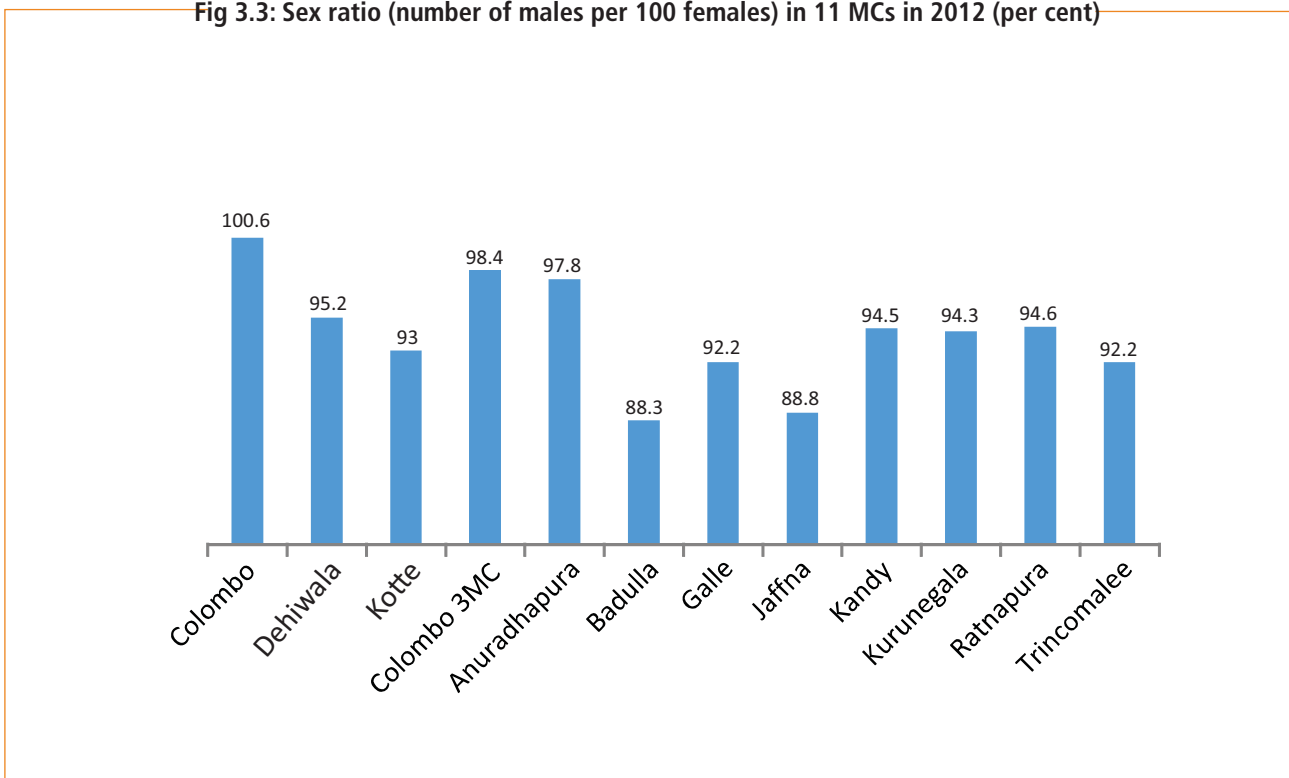
Fig 3.2: Elderly population (60+) 11 MCs in 2012 (per cent)



Source: Data from DCS

Note: Colombo 3 MC includes Colombo, Dehiwala and Kotte

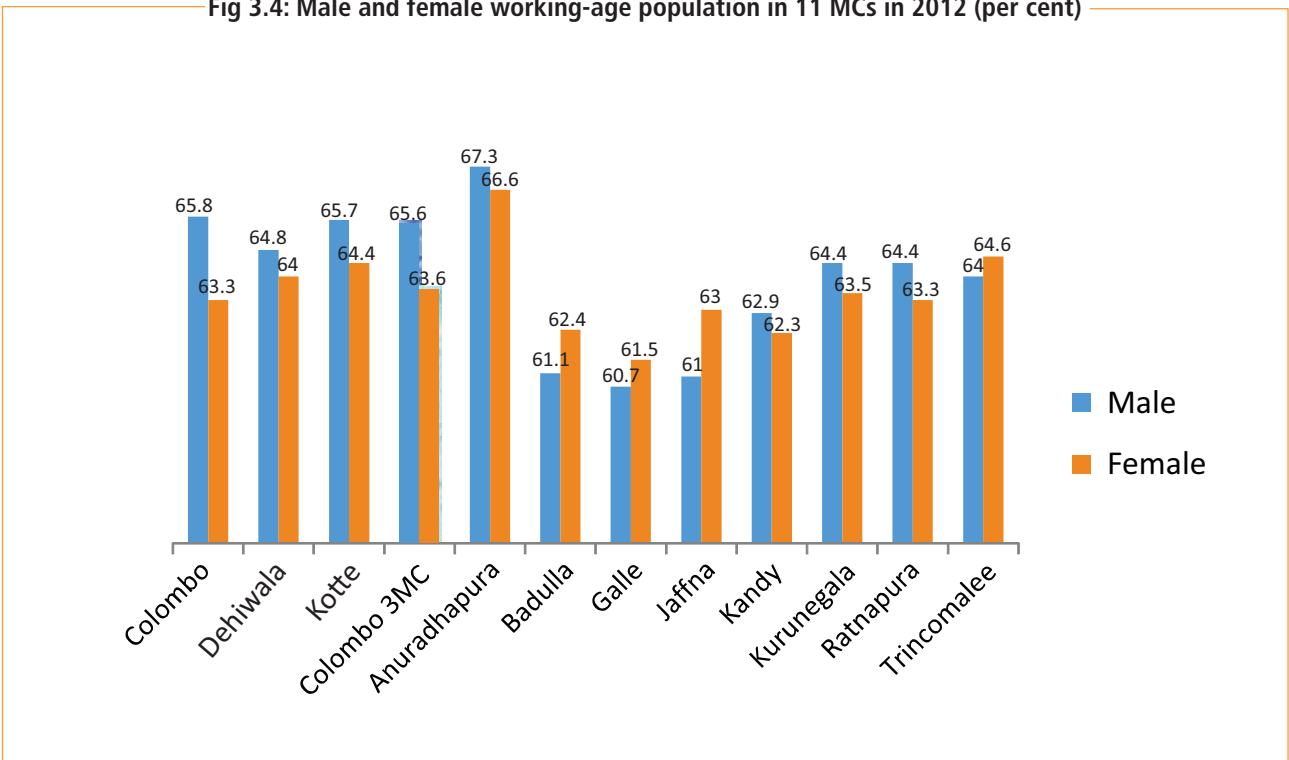
Fig 3.3: Sex ratio (number of males per 100 females) in 11 MCs in 2012 (per cent)



Source: Data from DCS

Note: Colombo 3 MC includes Colombo, Dehiwala and Kotte

Fig 3.4: Male and female working-age population in 11 MCs in 2012 (per cent)



Source: Data from DCS

Note: Colombo 3 MC includes Colombo, Dehiwala and Kotte



Source: UN-Habitat/Charmalee Jayasinghe

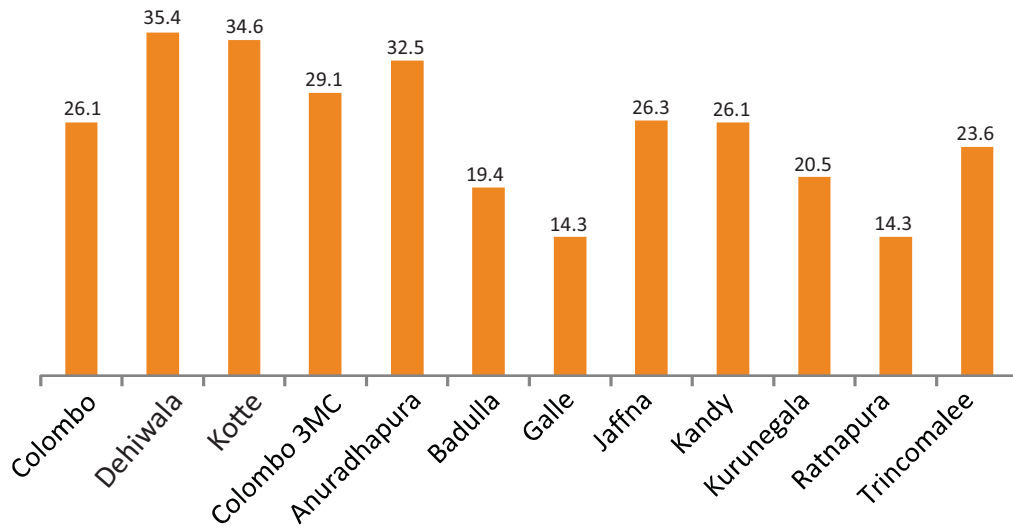
The gender profiles of the 9 Provincial Capitals suggests that gendered migration has played a role in the composition of their respective populations, particularly in relation to the high male-female ratio of the working-age population in some cities (see Fig 3.4). This trend is confirmed by census data on migrant populations in the Provincial Capitals: MCs with higher male-female working population ratios also record higher levels of in-migration. The Colombo suburbs of Dehiwala and Kotte registered the highest share of in-migrants as a proportion of total population (each 35 per cent), followed by Anuradhapura (33 per cent) (Fig 3.5). Because of Colombo MC's size, its 26 per cent migrant population is particularly significant, accounting for 146,000 people in 2012. The census data also suggests that the majority of male migrants are motivated by employment. In Colombo, for example, 57 per cent of male in-migrants reported employment as the main reason for their migration, compared to 30 per cent of women.

That men appear to migrate to cities more frequently for economic reasons – particularly in the case of Colombo – highlights gender-based inequalities that constrain women's participation in the urban economy (this theme is

explored in more detail in Chapter 4). The low number of males in Badulla and Jaffna are likely the result of out-migration. As well as economic migration to more prosperous cities, Badulla and Jaffna MCs included large Tamil populations that migrated to other cities or abroad during the conflict.

Another linkage between urban economic development and gender inequality relates to the distribution of female-headed households across the Provincial Capitals. Colombo registered the highest percentage of female-headed households – of every 100 households 31 is headed by females (Fig 3.6). Other more developed cities, including Galle and Kandy, also report higher proportions of female headed households – over 25 per cent in each. The cities which are less developed recorded a lower proportion of female-headed households – the lowest is Ratnapura (21 per cent) followed by Anuradhapura (23 per cent). This pattern indicates that in developed cities with more wealthy residents, women are able to exercise their agency to improve their domestic situation.

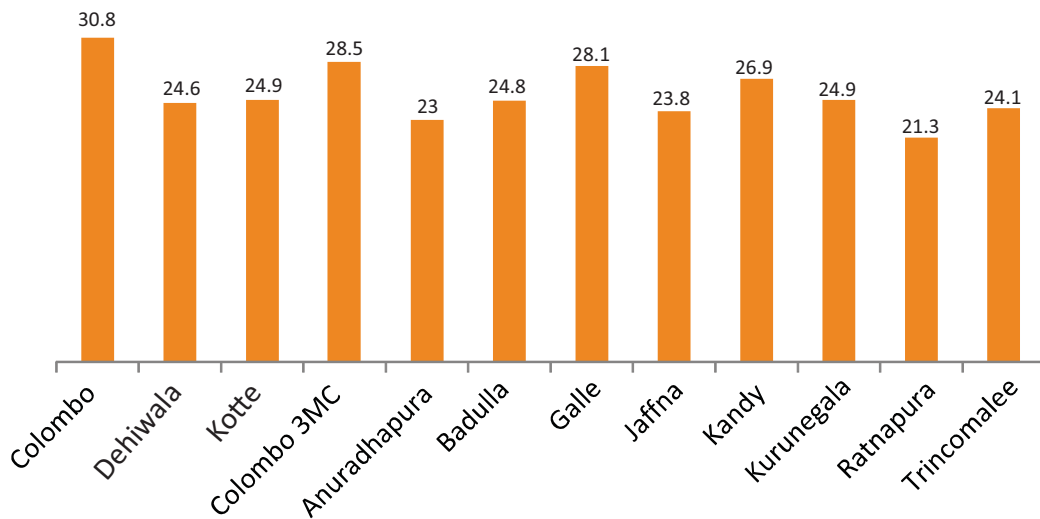
Fig 3.5: Migrant populations in 11 MCs in 2012 (per cent)



Source: Data from DCS

Note: Colombo 3 MC includes Colombo, Dehiwala and Kotte

Fig 3.6: Share of female-headed households in 11 MCs in 2012 (per cent)



Source: Data from DCS

Note: Colombo 3 MC includes Colombo, Dehiwala and Kotte

Ethnic diversity

Sri Lankan society is diverse, being a multi-ethnic, multi-religious and multi-linguistic population, with groupings based predominantly along linguistic and religious lines. The linguistic different groupings are the Sinhalese and the Tamils; the Moors, although also speaking Tamil, group themselves by their Islamic religion. The Sinhalese follow either Buddhism or Christianity; while the Tamils are either Hindu or Christian. There are many other smaller groupings based largely on their origins in the country, including the Burghers (with origins based from the colonial countries) and the Malays (originating from Malaysia or Java). In the 2012 census, Sinhalese were the predominant ethnic group, accounting for 74.9 per cent of the total population of Sri

Lanka, while the Tamils accounted for 15.3 per cent (including 11.2 per cent Sri Lankan Tamil, 4.1 Indian Tamil) and Moors 9.3 per cent.

In many cases, the census data underscores the importance of cities as sites of ethnic diversity, and by extension, sites of cultural interaction, where understanding and tolerance between different groups can be promoted. Colombo is the most cosmopolitan of the cities – only 37 per cent of the population is Sinhalese, with 30 per cent each of Sri Lankan Tamil and Sri Lanka Moor populations (Table 3.2). Other cities are less cosmopolitan in comparison, indicative of the historical context and ethnic characteristics of their region. For example, Anuradhapura is almost 92 per cent Sinhalese while Jaffna is 97 per cent Sri Lanka Tamils (Table 3.2).

Table 3.2: Distribution of population by ethnicity and city in 2012 (per cent)

City	Sinhalese	Sri Lanka Tamil	Indian Tamil	Sri Lanka Moor	Other	Total
Colombo	36.7	29.8	1.7	29.5	2.2	100.0
Dehiwala	70.0	11.3	1.0	15.1	2.7	100.0
Kotte	84.8	6.9	0.7	5.1	2.4	100.0
Kandy	69.3	10.9	2.7	15.5	1.6	100.0
Galle	70.5	0.8	0.3	28.2	0.2	100.0
Jaffna	0.4	97.0	0.4	2.1	0.1	100.0
Kurunegala	73.3	8.1	0.5	16.8	1.3	100.0
Anuradhapura	91.5	1.2	0.1	7.0	0.2	100.0
Badulla	73.4	6.8	3.7	14.7	1.4	100.0
Ratnapura	79.4	7.0	1.1	12.2	0.4	100.0
Trincomalee	17.6	69.1	0.4	12.4	0.5	100.0

Source: Data from DCS

Pilgrims at Anuradhapura



Source: UN-Habitat/Susitha Thilakarathne

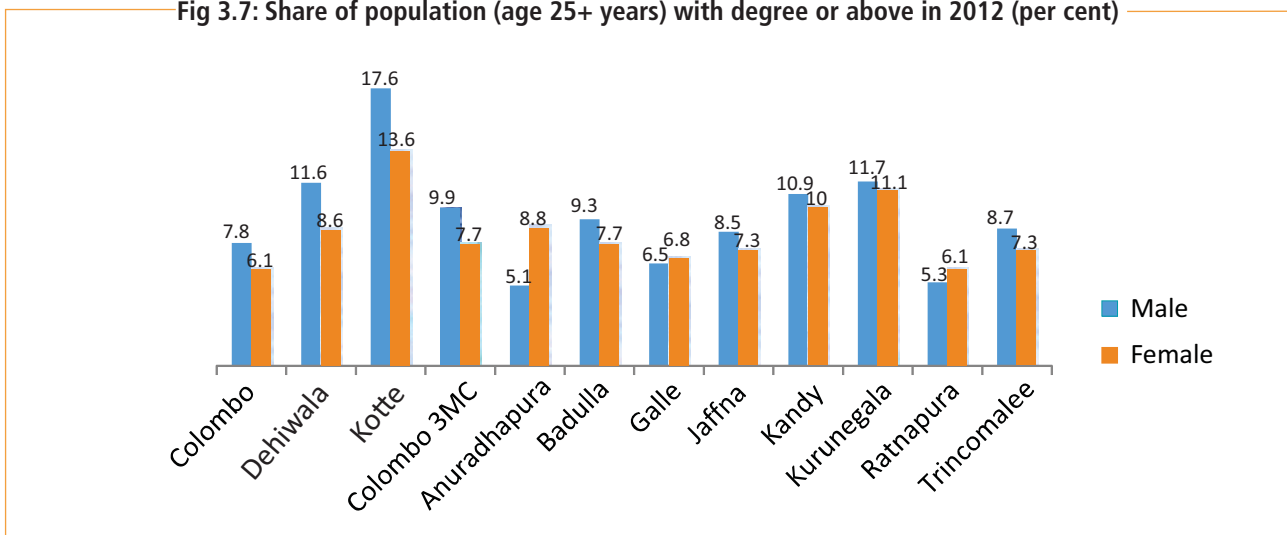
Education

The education profile of the population varies markedly across the Provincial Capitals, and is related to the uneven distribution of education infrastructure across the country (see Chapter 6). The proportion of people in the over 25 age group with degree/postgraduate education is highest in the Colombo suburbs of Dehiwala and Kotte, followed by Kurunegala (Fig 3.7). As discussed further in Chapter 6, Kurunegala MC has a high proportion of land used for educational activities, and is a national hub of private education, while the Western Province has the country's top tertiary education institutions. Colombo MC is a centre of education nationally, yet its population includes less than 8 per cent of people over 25 with a university degree or higher. This is likely the result of the large economic migrant population that reside in Colombo MC, who often come from rural areas with limited education opportunities.

Ratnapura has the lowest proportion of population with a degree and above (5.7 per cent) – the MC also has a relatively small proportion of land used for educational purposes (see Chapter 6). Mirroring tertiary education, the percentage of no schooling among the population age over 25 is highest in Colombo, followed by Ratnapura (Fig 3.8).

There are also gender dimensions to educational attainment in the MCs. Of the over 25 year age group, men report degree or above qualifications more frequently than women (Fig 3.7), while a greater proportion of women have never attended school (Fig 3.8). However, among the younger population, a higher percentage of females than males under 25 years of age reported attending higher education (Fig 3.9). This indicates improvements in females accessing tertiary education in contemporary Sri Lanka, which was earlier dominated by males in many Provincial Capitals.

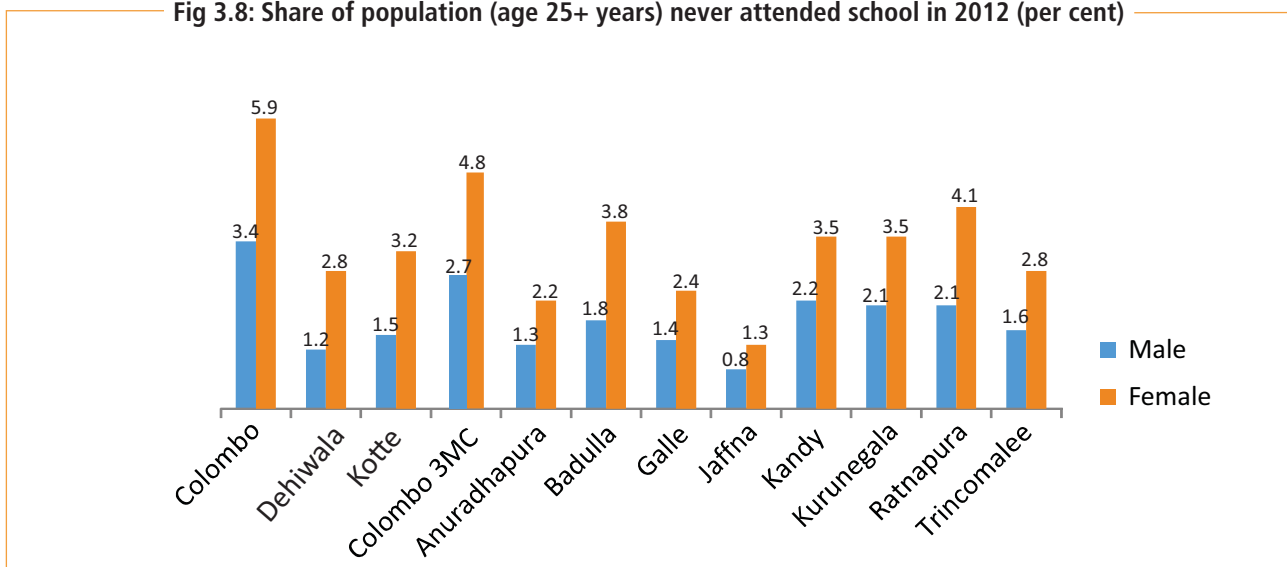
Fig 3.7: Share of population (age 25+ years) with degree or above in 2012 (per cent)



Source: Data from DCS

Note: Colombo 3 MC includes Colombo, Dehiwala and Kotte

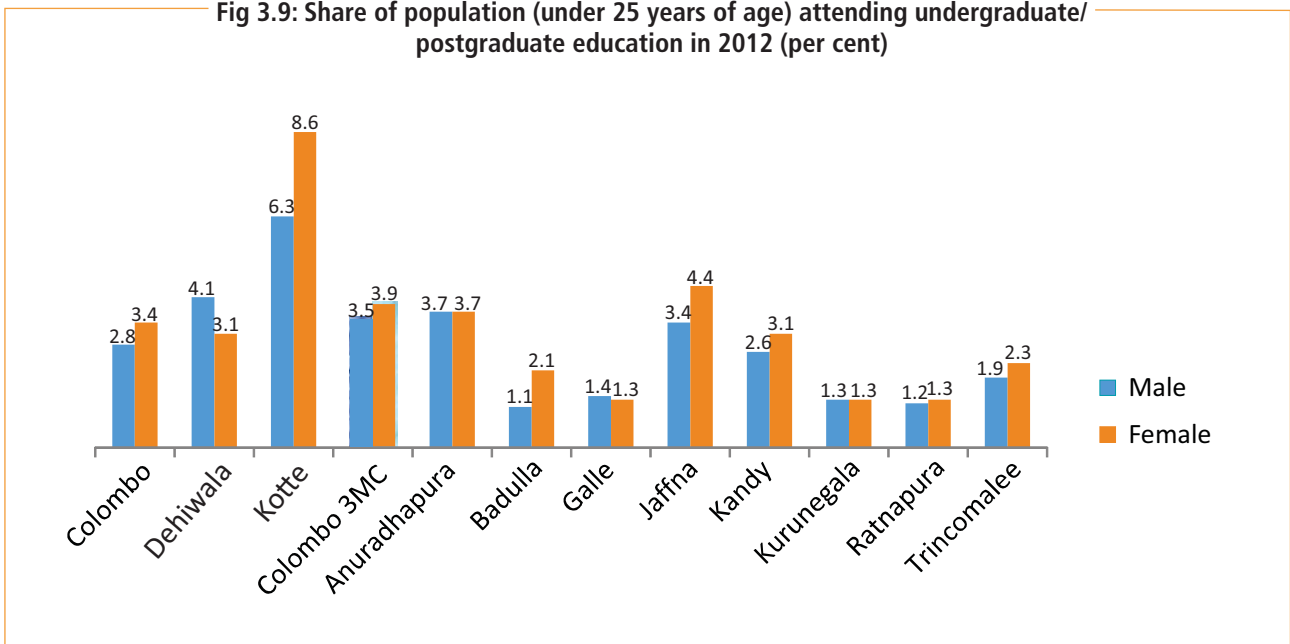
Fig 3.8: Share of population (age 25+ years) never attended school in 2012 (per cent)



Source: Data from DCS

Note: Colombo 3 MC includes Colombo, Dehiwala and Kotte

Fig 3.9: Share of population (under 25 years of age) attending undergraduate/postgraduate education in 2012 (per cent)



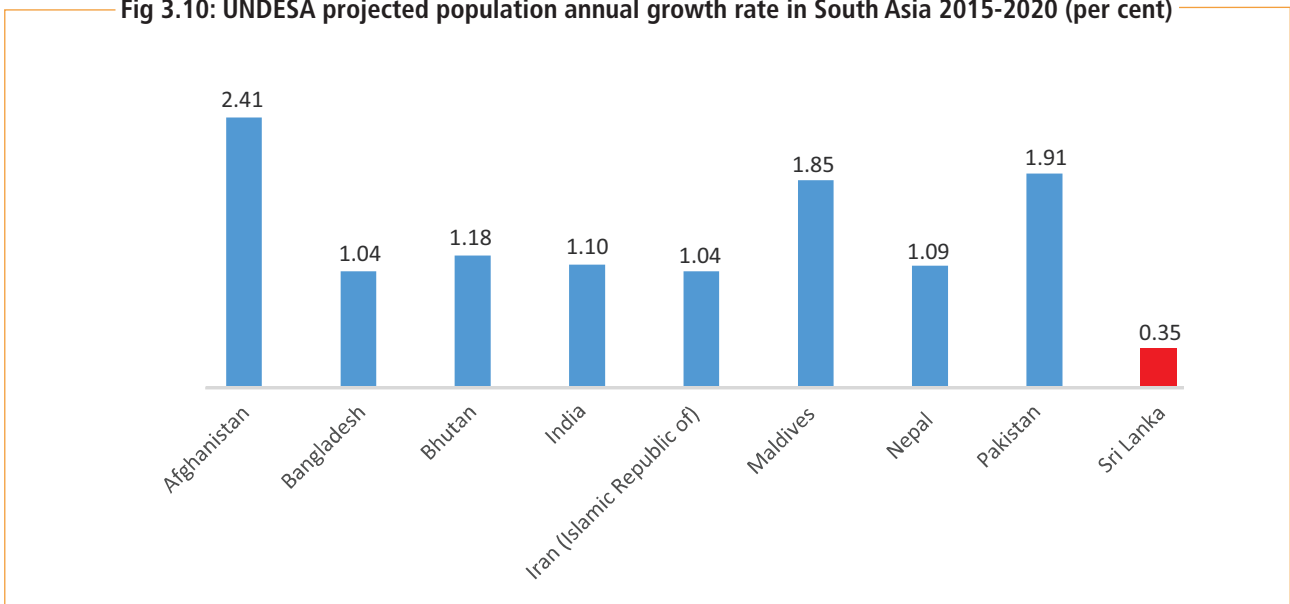
Source: Data from DCS
 Note: Colombo 3 MC includes Colombo, Dehiwala and Kotte

Urban population growth in the post-2012 census period

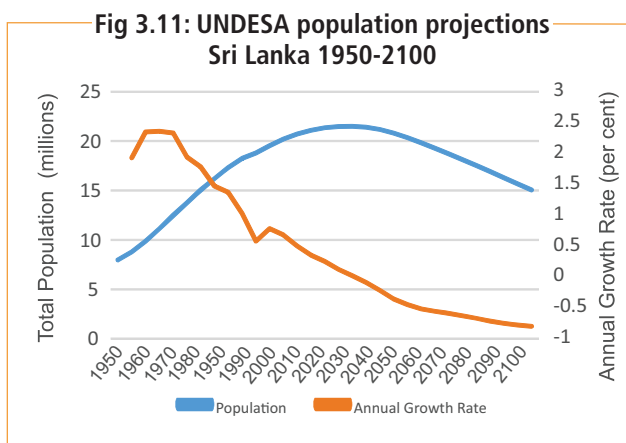
An important question for policy makers is whether Sri Lanka's urban population will increase and, if so, by how much. In this regard, it is notable that Sri Lanka's overall population is increasing at the slowest rate in South Asia. At the time of the 2001 census the population was 18.7 million, rising to 20.4 million by the time 2012 census, equating to an annual growth rate of 0.79 per cent. In the post-2012 census period, UNDESA estimates that annual population growth has fallen to just 0.35 per cent in 2015-2020, which is far lower than any other country in the South

Asian region (Fig 3.10; UNDESA, 2017). According to UNDESA projections, Sri Lanka's population will begin to decline after 2035; by 2050 it will be approximately the same as it is today, and by 2100 it will reduce to around 15 million people (Fig 3.11). This population change is the result of low (and a projected decline) in fertility rates and longer life expectancies (UNDESA, 2017). Other studies have projected higher – although still relatively modest – population increases. A study for UNFPA Sri Lanka projected Sri Lanka's population to increase from 20.4 million in 2012 to 21.4 million in 2017, equating to an annual growth rate of 0.96 per cent, and increasing to 25.8 million by 2062 (De Silva and De Silva, 2015).

Fig 3.10: UNDESA projected population annual growth rate in South Asia 2015-2020 (per cent)



Source: Data from UNDESA (2017)



Source: Data from UNDESA (2017)

The SoSLC analysis projected population growth in the 9 Provincial Capitals using spatial analysis for the period 2012-2017¹. The findings show that the 9 Provincial Capitals grew at a faster rate than projections of national population growth in the period 2012-2017 (Table 3.3). This trend was due to rural-urban migration captured in census data and discussed above (see Fig 3.5). The population of the Western Region Megapolis (WRM), which includes Colombo and fringe areas, expanded at 0.95 per cent per year, adding an estimated 230,000 people. Other regional MCs expanded at a far faster rate. The population growth in these regional cities points to challenges and opportunities for local governments. If managed correctly population growth, particularly resulting from increases in working-aged migrants, can be harnessed to drive economic development in less developed regions.

Data constraints mean that the figures in Table 3.3 do not capture fringe areas (with the exception of Colombo, which is captured in the WRM), and so likely underestimate the scale of urban population growth in the period 2012-2017 (See Table 2.1, Chapter 2 for 2017 fringe populations). The

limitations of measuring urban population growth related to MC and fringe areas underscore the need to revise municipal boundaries and establish mechanisms to better capture changes in urban population.

Despite data limitations, it is clear that populations of the Provincial Capitals have increased in the period 2012-2017. It is likely that urban populations will continue to grow, even as Sri Lanka's overall population growth slows and eventually declines. The shift to an urban economy identified in Chapter 4 will mean that economic migrants will continue to come to Sri Lanka's cities in the future.

Table 3.3: Growth of MC population 2012-2017

	Population 2012	Population 2017 (Estimate)	2012-2017 (Estimate)
WRM*	5,851,130	6,081,000	0.95
Kandy MC	98,828	113,000	2.72
Galle MC	86,333	104,000	3.79
Jaffna MC	80,829	94,000	3.07
Kurunegala MC	24,833	38,000	8.5
Anuradhapura MC	50,595	66,000	5.46
Badulla MC	42,237	54,000	5.04
Ratnapura MC	47,105	56,000	3.54
Trincomalee UC	48,351	56,000	2.98

Source: Special tabulation by DCS using 2012 census data; population 2017 is an estimate based on built-up area for 2017 and population densities (see Annex 3)
Note: *WRM boundary is Western Province

Badulla city centre



Source: Shalika Madushanka Peramuna

¹The SoSLC report assessed population change in 8 MCs and the Western Region Megapolis (WRM) in the period 2012-2017. Data for 2012 was derived from the census, while population data for 2017 was derived from analysis of land use changes in the MC areas (see Annex 3). It is important to note that fringe areas were not included in this analysis because of data constraints, hence the analysis covers only changes in the MC population, except Colombo (where MC and fringe areas are included in the WRM boundary).

Busy street in Kurunegala



Source: UN-Habitat/Charmalee Jayasinghe

3.2 The functions of the Provincial Capitals

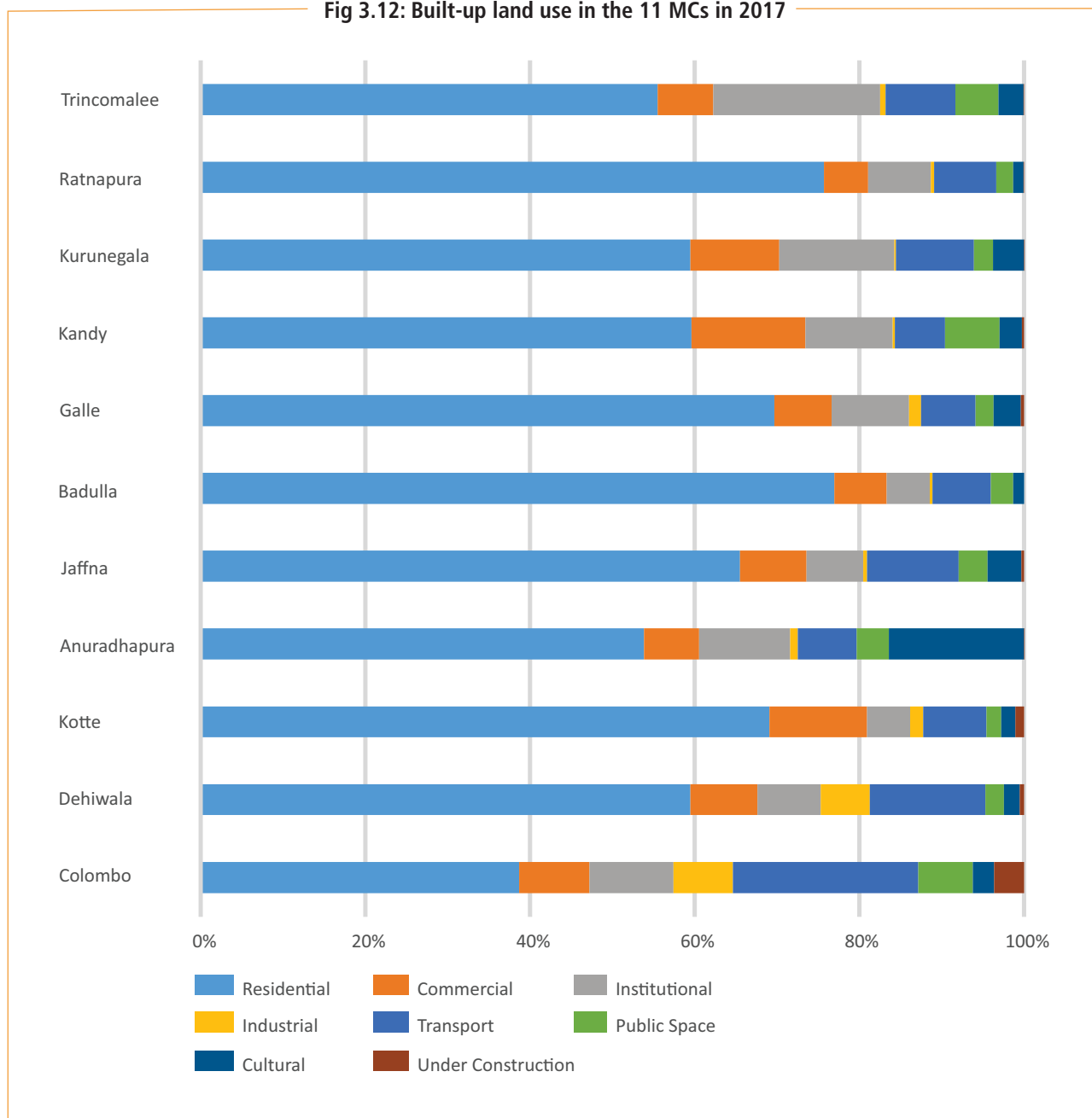
Sri Lanka's cities serve a variety of functions that are crucial for the country's socioeconomic development. They provide a wealth of opportunities to city residents and for the people living in the surrounding rural areas. As such, cities are a force to drive socioeconomic development across the country, opening up opportunities and widening access to services for residents in some of the poorest regions of Sri Lanka.

To identify the functions of Sri Lanka's cities, the SoSLC project conducted GIS land use mapping in 11 Municipal Council (MC) areas associated with the country's 9 Provincial Capitals (See Annex 1 for methodology details). As Annex 1 explains, land use was digitised by visual interpretation of very-high resolution satellite images from 2017, and supported with ground truth observations. Through this process, 8 built-up primary land use classes were identified: residential, commercial, institutional (which includes health, education and other public service land use), industrial, transport, public space (such as squares and playgrounds), cultural (religious buildings, heritage sites) and land with buildings under construction (Fig 3.12). These

main classes were then divided into further sub-classes, to aid detailed analysis in subsequent chapters of this report. (The full list of main classes and subclasses can be found in Annex 1). In addition to built-up land use, a number of non-built up land uses were also identified, which highlight the ecosystem services provided by cities, and are explored in depth in Chapter 8 (Climate Resilience).

Land use mapping reveals that the 11 MCs provide a wide range of services that are crucial to the functioning and development of Sri Lanka. The cities are hubs of commerce, politics, administration, transport, culture and heritage, leisure and social services, including health and education. It is important to note that these services and functions serve large populations beyond the MC boundaries: as noted in Chapter 2, the MCs often only account for a small proportion of the urban built-up area associated with the Provincial Capitals, with large populations living in fringe areas that also use services provided by MC authorities. This mis-match between administrative boundaries and service coverage has implications for the provision of services to peripheral areas outside the MC boundaries, cost-recovery and maintenance (see Chapter 6, Municipal Services).

Fig 3.12: Built-up land use in the 11 MCs in 2017

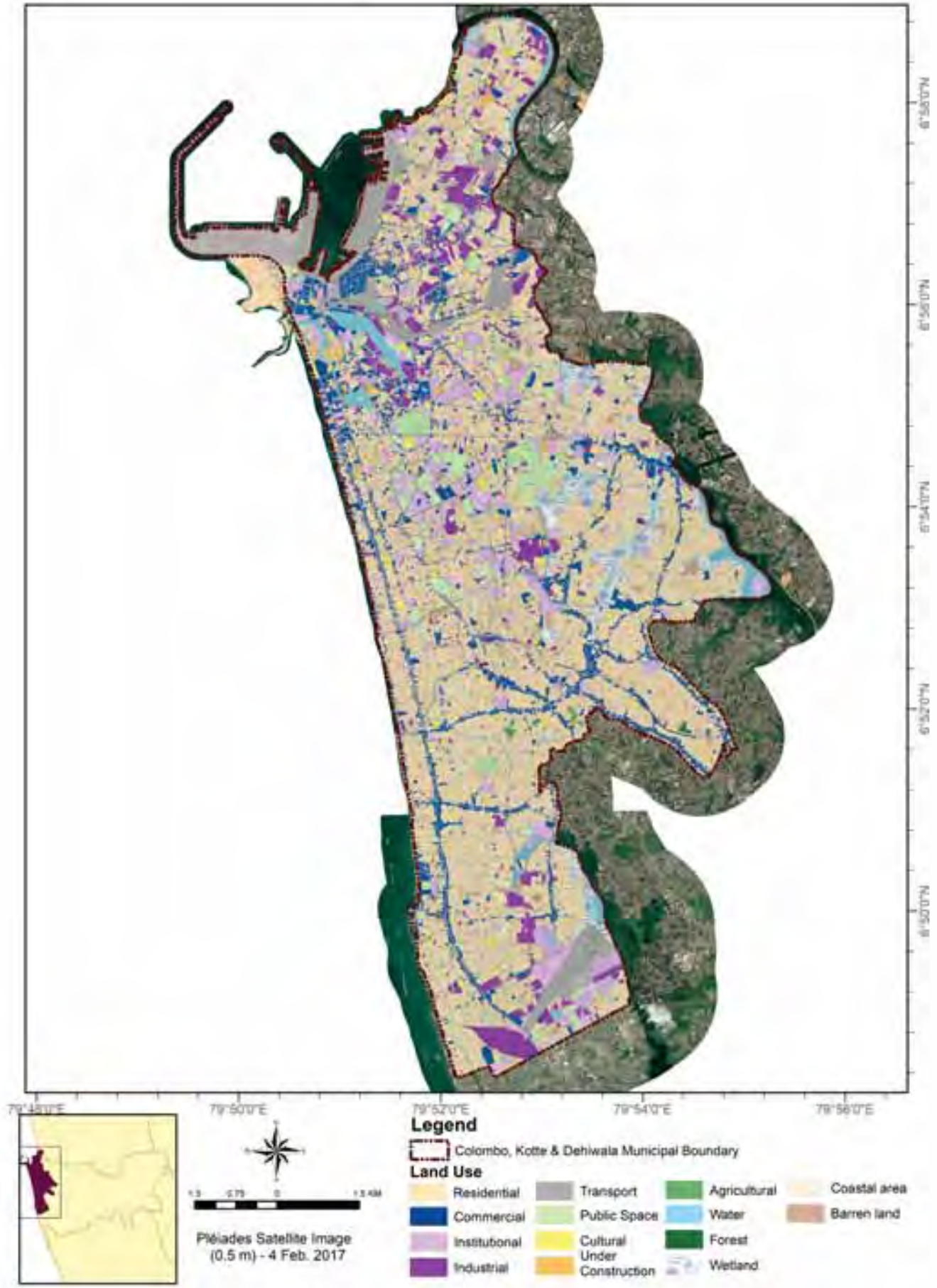


Source: SoSLC Project

The spatial analysis revealed notable differences in the distribution of land use across municipal areas, according to the different functions of the 11 MCs, and in the broader socioeconomic context of disparities between the WRM and other parts of the country. A striking aspect of the results is that Colombo MC includes by far the greatest proportion of land allocated to non-residential purposes (over 60 per cent) including a diversity of commercial, transport, industrial, social and cultural activities. The MC also includes a relatively high portion of built-up area as secondary and tertiary education centres, which support its economic activities (see Chapter 6). Much of this infrastructure is

clustered around the Central Business District (CBD) in the north of the MC (Fig 3.13). The other MCs in the WRM have less diversity of land use. In particular, MC areas immediately adjacent to Colombo had a far higher proportion of residential land use than Colombo: in Dehiwala and Kotte respectively, 59 and 69 per cent of all built-up area was residential, accounting for the southern and eastern areas of Fig 3.13. This land use pattern suggests that many users of Colombo's economic and social services live outside of its administrative boundaries, and commute to the MC to access its social and economic infrastructure.

Fig 3.13: Land use in Colombo, Kotte and Dehiwala MCs in 2017



Source: SoSLC Project

Outside of the WRM, MCs exhibit land use patterns related to their functions at the local, national and global scale. Anuradhapura, for example, has a large proportion of land allocated for cultural and historical buildings (16.4 per cent of the built-up area), because it is the ancient capital of Sri Lanka, and is now a site of global tourism recognised as a UNESCO World Heritage Site. Kurunegala has a large proportion of land use designated as institutional (13.9 per cent of the built up area), which includes a large stock of land allocated to education services. This is related to its function as a national centre of Technical and Vocational Education and Training (TVET) and private education (see Chapter 6). In contrast, Trincomalee's large stock of land in the 'institutional' category (20.3 per cent) is a result of its large naval base, related to its history of maritime activity. All the MCs include administrative, economic and social services that are important for their residents and surrounding rural areas.

The different functions of cities have implications for their comparative advantages within national socioeconomic systems. As we shall see in this report, building on these advantages will enable cities to become more competitive, and in doing so, stimulate socioeconomic development in their associated districts and provinces, and nationally.

A key urban policy issue demonstrated by land use data is that the more remote provincial capitals in areas of highest poverty, including Badulla and Ratnapura, are predominantly residential; much less proportion of land is used for economic, social, cultural and other types of activity. Upgrading services in these areas, and increasing access to them, has the potential to result in major social and economic gains towards more just and inclusive cities. Hence, the inequitable distribution of social services and economic activity across Sri Lanka's cities will be highlighted as a key theme in this report, and explored in depth as a critical urban policy issue across the country.

3.3 Urban people and functions a better urban future for all Sri Lankans

The demographic attributes and functions of Sri Lanka's cities have implications for policy makers and planners achieving a better urban future for all Sri Lankans.

City outcome	Contribution of people and functions
Competitive	<p>Sri Lanka's cities benefit from a demographic dividend that can be leveraged to drive the urban economy.</p> <p>Cities provide key functions that support Sri Lanka's economy, including commercial, industrial and transport infrastructure, and social services.</p>
Inclusive	<p>Cities are gateways to the economy and social services for the varied ethnic and religious groups in the country. This rich heritage can be capitalized on to strengthen national integration and social cohesion.</p> <p>Inclusive urban planning will enable the ageing population to participate in urban life.</p> <p>Developing social and economic opportunities in remote cities can take advantage of their growing populations to drive regional economic development.</p>
Resilient	<p>Sri Lanka's cities provide a range of important services that enable the country and its population to respond to shocks and stresses.</p>
Safe	<p>Cities can provide a safe environment for female-headed households. Therefore, urban policy should strengthen safe spaces for women to participate in urban life.</p>
Sustainable	<p>Providing equitable access to economic and social services across Sri Lanka's cities will redistribute economic opportunities, leading to diversified, balanced and, hence, sustainable development.</p>

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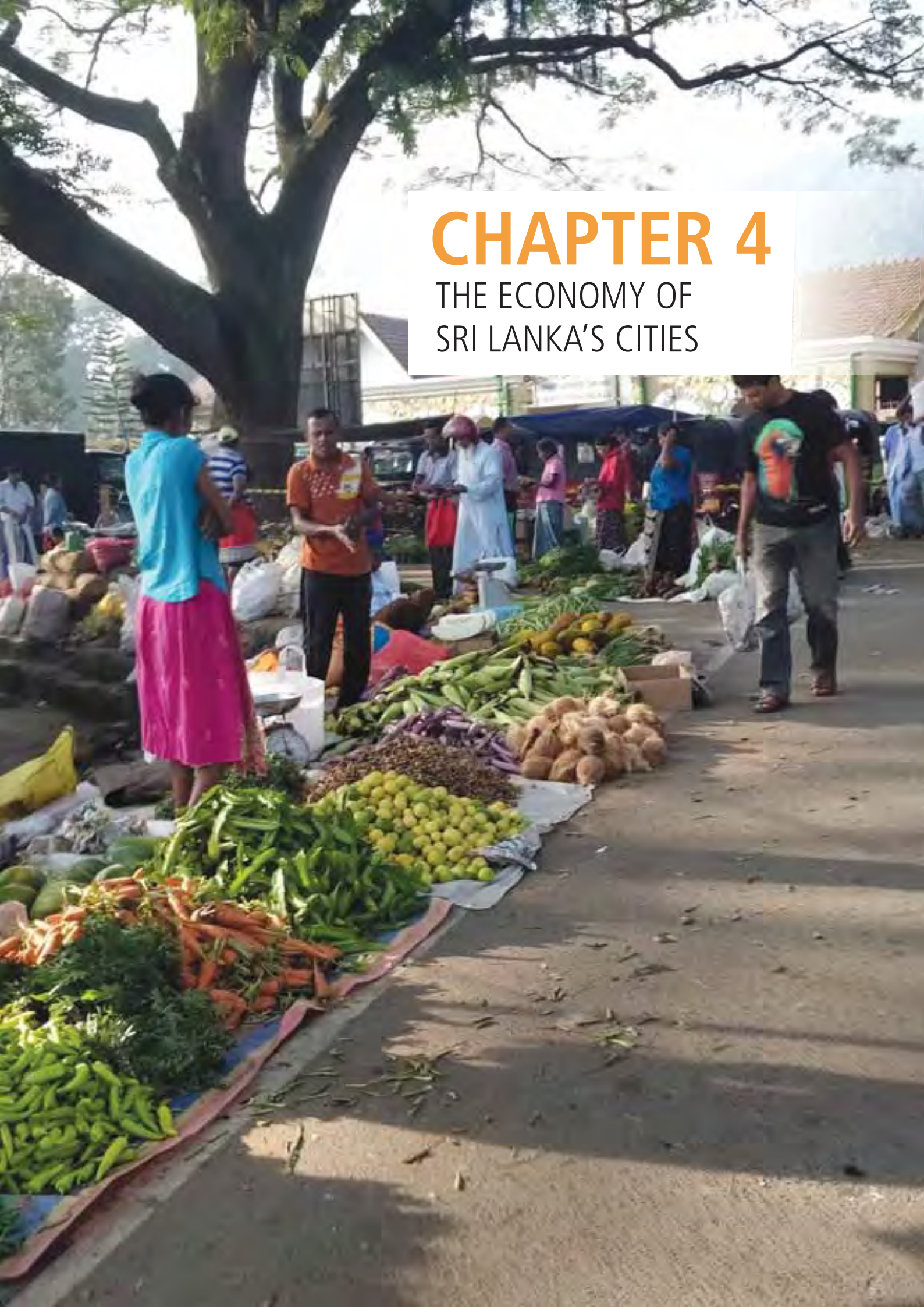
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CHAPTER 4

THE ECONOMY OF SRI LANKA'S CITIES



This chapter assesses the economies of Sri Lanka's 9 Provincial Capitals. First, it provides an overview of the importance of the cities to Sri Lanka's economic development. It then assesses the economic performance of the 9 Provincial Capitals and their key economic sectors. Finally, it provides an 'Economic Order' of the Provincial Capitals that incorporates a holistic view of urban economics as competitive, dynamic and inclusive.

KEY MESSAGES

1. Cities are central to Sri Lanka's economic development. The Western Region Megapolis (WRM) and the 8 other Provincial Capital districts, account for 71 per cent of Sri Lanka's GDP. The WRM alone accounts for around 40 per cent of GDP.
2. The competitiveness assessment of the 9 Provincial Capitals shows that Colombo is the nation's most competitive city. However, overall index scores compared to other Asian countries show Sri Lankan cities are lacking competitiveness, especially in the areas of cost of doing business: human resource development and training: and responsiveness of government to business needs. The assessment shows there are significant regional disparities in economic development, with Colombo and the WRM, and cities well-connected to it, having stronger and more diversified economies.
3. The analysis identifies economic development opportunities in more remote cities, such as cultural and ecotourism, logistics and value-added agriculture product industries.
4. There are significant barriers for women accessing the labour market, particularly in areas with high poverty. In Trincomalee 77 per cent of men participate in the labour market compared to just 22 per cent of women.

4.1 Sri Lanka's urban economy: opportunities and challenges

Cities are drivers of global economic development. According to the latest UN-Habitat's *World Cities Report*, 80 per cent of global GDP is created by cities, despite urban areas accounting for less than 60 per cent of the world's population (UN-Habitat, 2016). However, unplanned urbanization is often associated with a range of negative attributes, from poverty to environmental degradation to crime and insecurity, which can constrain sustainable economic development (IPCC, 2014; Seto, Güneralp, & Hutyra, 2012). Therefore, policies and plans to enhance the urban economy must incorporate concepts of sustainability, equity, efficiency, wealth creation, and improved standards of living (Leigh & Blakely, 2016; Payne & Phillips, 2010).

Throughout South Asia, an important policy debate is underway on the role of cities in promoting economic development (Ellis & Roberts, 2015). The region has already started to see the economic growth and poverty-reduction benefits associated with urbanization; if managed properly, further urbanization offers the potential for more prosperous and liveable cities.

The GoSL recognizes the role of the urban economy in shaping the future of the country. In this respect, *Vision 2025* and *Public Investment Programme 2017-2020* lays out urban policy priority actions: to promote the WRM as the

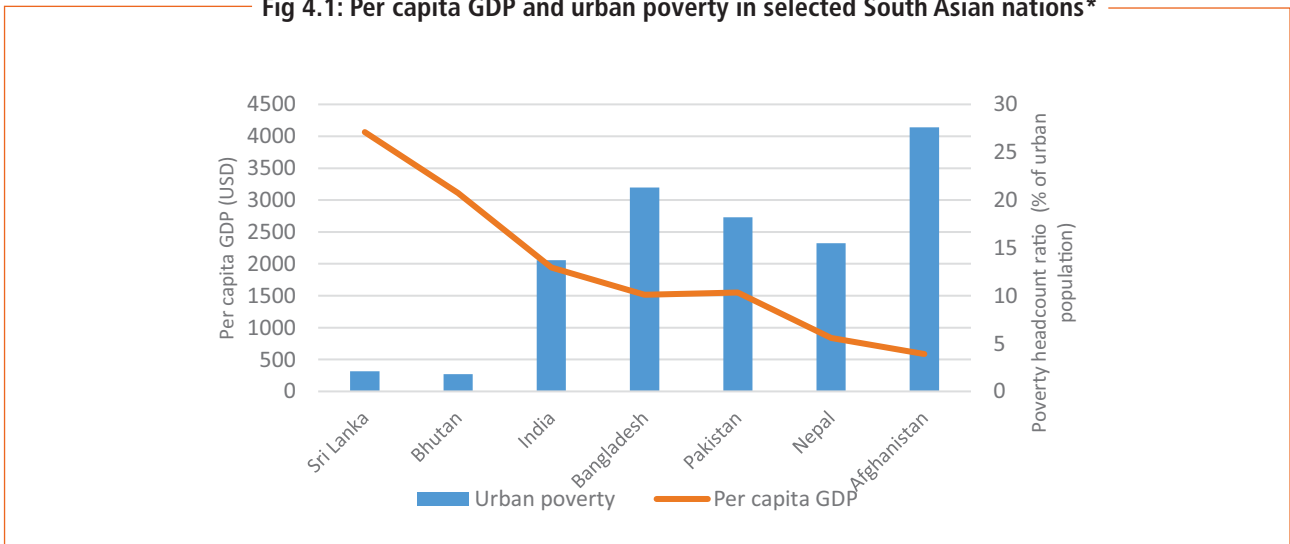
economic hub of the southern part of the Indian subcontinent, and to promote strategic city development to secondary urban spaces as provincial economic hubs (GoSL, 2017a, 2017b). Sri Lanka's cities have a decisive role to play in driving the economy forward by catalysing high value-added economic activities, including high-tech industries, as the country strives to achieve upper middle-income country status.

Sri Lanka's urbanizing economy

Sri Lanka is often regarded as an economic success story in South Asia, maintaining high GDP growth and diversifying its economic output. Growth has resulted in large increases in GDP per capita; today Sri Lanka has one of the highest per capita incomes in South Asia at over USD 4000, and one of the lowest rates of urban poverty – only 2.1 per cent of the urban population are recorded as being below the poverty line (World Bank, 2018a; Fig 4.1). A caveat to this last point about urban poverty is that large swathes of people living in peripheral city locations are not classed as 'urban' because of administrative classifications (see Chapter 2).

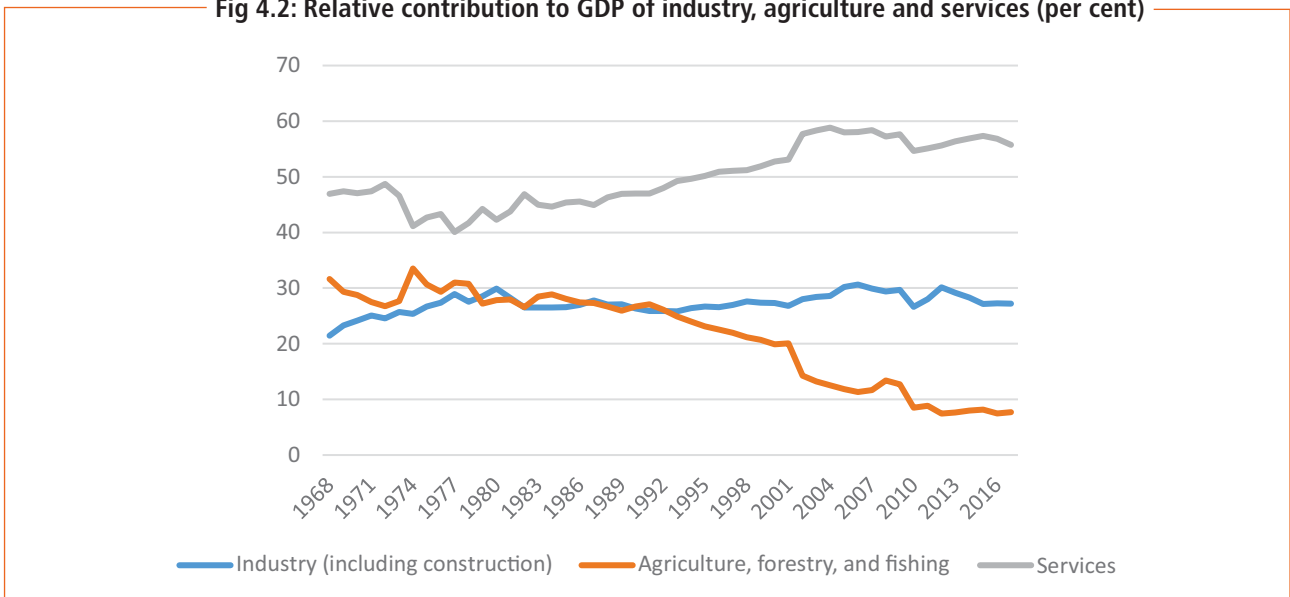
Over the past 50 years, Sri Lanka's economy has become increasingly urban centred. Fifty years ago, agriculture accounted for around a third of the country's GDP; in 2017 it accounted for less than 8 per cent, with the service and industrial sectors contributing the bulk (Fig 4.2).

Fig 4.1: Per capita GDP and urban poverty in selected South Asian nations*



Source: Data from World Bank (2018a)
 Note: *Urban poverty data most recent for each country (years range 2010-2013); Per capita GDP 2017.

Fig 4.2: Relative contribution to GDP of industry, agriculture and services (per cent)



Source: Data from World Bank (2018a)

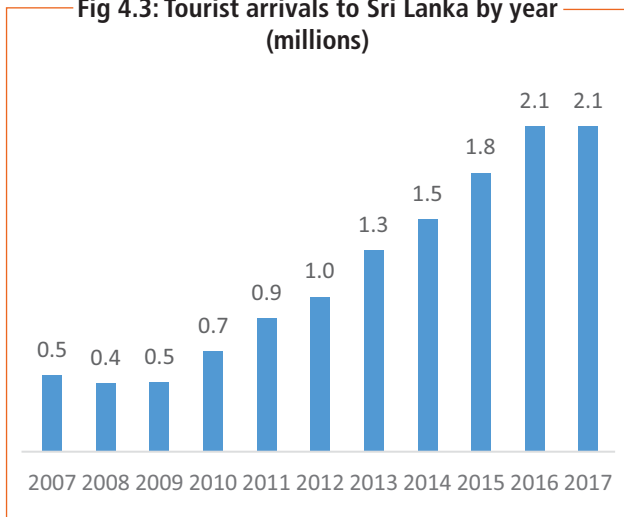
In the industrial sector, textiles has emerged as a strong growth driver, accounting for a large proportion of the country’s exports. According to the World Bank (2018a; 2018b), textiles are Sri Lanka’s biggest export earner: in 2016 out of a total USD 10.5 billion exports, around USD 5 billion were textiles. The construction industry has also boomed in cities, particularly the capital, Colombo, where large-scale megaprojects like Port City have resulted in large inflows of Foreign Direct Investment (FDI). There are concerns, however, that the pattern of high-end developments associated with the construction industry has not contributed to inclusive growth (World Bank, 2018c).

The service sector is the largest contributor to GDP growth, driven by the tourism, real-estate, retail and increasingly (as shall be detailed in this chapter) high-tech industries. Tourism is a major growth sector, with numbers increasing

dramatically over the past decade (Fig 4.3). In 2017 alone over 2 million tourists arrived in Sri Lanka, contributing around USD 3.9 billion to the economy (GoSL, 2018). Sri Lanka’s 9 Provincial Capitals provide important tourist attractions, particularly the UNESCO World Heritage sites of Galle, Kandy and Anuradhapura. Tourism is also a potential driver of inclusive growth, by providing opportunities to less developed cities in north, east and central areas. The recent master plan for Trincomalee, for example, aims to leverage tourism to drive growth in the city, and includes the development of a new airport and upgraded linkages to Colombo via the Central Corridor to accommodate increased tourist arrivals (see Chapter 7).

The shift towards urban-based economic activities has meant that Sri Lanka’s cities now account for a large proportion of the country’s GDP. The WRM alone contributes

Fig 4.3: Tourist arrivals to Sri Lanka by year (millions)



Source: Data from GoSL (2018)

around 40 per cent of national GDP (GoSL, 2017a). According to SoSLC calculations from Sri Lanka Central Bank data, the 8 other Provincial Capital districts¹ also make substantial contributions to GDP: Kurunegala district contributes 7 per cent, Kandy 6 per cent, and the other capitals contributing between 1 to 4 per cent of GDP. In total the WRM and remaining 8 Provincial Capital districts account for around 71 per cent of Sri Lanka's national GDP in 2016.

Challenges for competitive, inclusive and resilient urban economies

Despite the generally positive picture, there are many challenges that can be addressed through timely and appropriate policies and programmes to optimise Sri Lanka's urban economies. Many of these challenges relate to issues highlighted in other chapters, including constraints and threats associated with sprawl urban expansion (Chapter 2), climate change (Chapter 8), intercity connectivity and municipal transport capacity (Chapter 7), and a range of other issues.

A key issue is the competitiveness of Sri Lanka's cities, particularly with regards to the investment environment and ease of doing business, which has implications for attracting increased and diversified flows of FDI. In 2012-13, Sri Lanka was ranked 68 out of 144 countries in the World Economic Forum's (WEF) Global Competitiveness Index. However, there has been a systematic decline in the country's overall competitiveness and in 2017-18, the country ranked 85 out of 137 economies (WEF, 2014). A key competitiveness issue is related to ease of doing business: according to the World Bank, Sri Lanka ranks 111 out of 190 countries in this respect (World Bank, 2018d; Fig 4.4). Particular areas of weakness include the procedures for paying taxes (where Sri

Lanka ranked 158), which can be complicated and time consuming. There have also been issues with property rights, including registering rights (157) and enforcing contracts (165). As noted in Chapter 5, Sri Lanka ranks poorly on ease of registering property, and many tenure documents cannot be used as collateral on a loan. This situation limits investment, particularly in property, by reducing available credit for investment, and creating uncertainty over property ownership.

Linked to competitiveness is the often-overlooked soft infrastructure of cities, which is needed to foster connectivity between urban populations and systems. In this regards, the 2014 WEF Report (2014: 36) notes that:

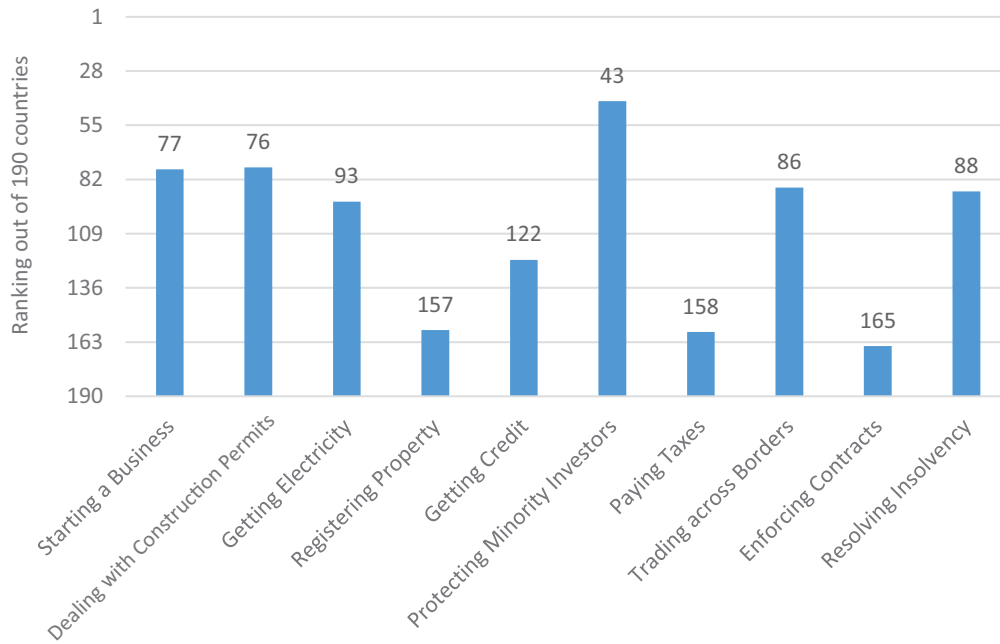
A city's social capital is as important as hard connectivity in the 21st century's knowledge economy – while soft and hard connectivity are mutually reinforcing, soft connectivity is also about supporting an open society in the city, which spurs ideas, entrepreneurship, innovation, and growth.

Many elements of soft connectivity are intangible. Things like the quality of services, level and depth of skills and competencies, image and reputation, technology orientation, innovation, expertise, decision-making, social capital and creativity are all things that are crucial to city development and in ways cities become connected. These elements are not easily quantified but are crucial to develop trade, attract investment, tourism and foster the sharing of ideas and knowledge between cities. Soft connectivity is also linked to the intellectual capital assets of firms, industry clusters, institutions, government and civil society interest groups. The ways different elements of soft connectivity capital are used, combined, flow and interact with each other are what adds extra value to the many things that cities, businesses and individuals produce, use or exchange on a regular basis (Roberts, 2019).

Another challenge is related to fostering inclusive economic growth, particularly in relation to the GoSL's strategic aim of national reconciliation following the thirty-year conflict. There remain large regional disparities in economic development across the 9 Provincial Capitals, particularly in relation to less developed cities of the north, east, and central areas. The spatial distribution of 'economic mountains' centring around the WRM area, and extending to Kandy, has been a feature of Sri Lanka's development over the past three decades (World Bank, 2004). SoSLC mapping of 2017 land use in the MCs associated with the 9 Provincial Capitals also shows that economic activities are concentrated in the WRM (Colombo, Kotte and Dehiwala MCs) and Kandy, which include the largest proportion of built-up area allocated to commercial and industrial

¹ District level data could only be obtained for some indicators. In these cases, it is important to bear in mind that districts are large administrative units, which also include rural populations, and so are only indicative of city characteristics.

Fig 4.4: Sri Lanka's ranking on components of the ease of doing business index



Source: World Bank (2018d)

activities (Fig 4.5). Colombo and Kandy MCs (Fig 4.6) in particular include 14 to 16 per cent of all built-up area allocated to such uses, while the emerging transport and business hub of Kurunegala includes the largest proportion outside of Kandy and the WRM. In contrast, the more remote and less developed MCs have less economic land use: Badulla (Fig 4.6) and Ratnapura include around 6 per cent of land use allocated to such activities.

The spatial variation of economic activities is mirrored in data on the economic characteristics of residents. For example, although the Poverty Head Count Index ratio (HCI) has declined in many cities, rates of poverty are still far higher outside the capital (Fig 4.7). The highest HCI in 2016 was recorded in Trincomalee (10 per cent), followed by Jaffna and then the central areas of Badulla and Ratnapura. The most dramatic reduction in HCI occurred in Galle from 9.9 per cent in 2012 to 2.9 per cent in 2016 - a city that has benefited from infrastructure investment to increase connectivity with the WRM, including the Southern Expressway, which was opened in late 2011. This again points to the importance of increasing intercity connectivity to open up remote cities to economic opportunities and to drive inclusive growth.

An issue of great importance to policy makers is promoting the gender inclusivity of Sri Lanka's urban economies. Currently, however, women face many barriers to accessing economic opportunities in Sri Lanka's cities. The labour force participation rate among women is much lower than men in the 9 Provincial Capital districts (Fig 4.8), as is the proportion of economically active women compared to men (Fig 4.9). Correspondingly, the unemployment rate of females is

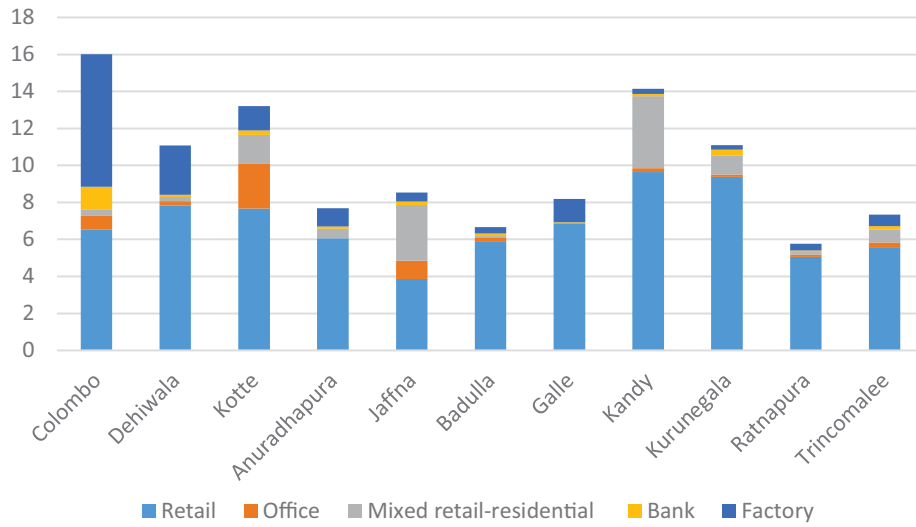
higher than males across all 9 districts (Fig 4.10). While the gender-based disparities are present across all cities, they are particularly severe in Trincomalee and Jaffna, which are both areas with high rates of poverty. This suggests that in the most deprived areas, women are the most vulnerable, and severely constrained from increasing their asset and income base.

Anuradhapura market vendors



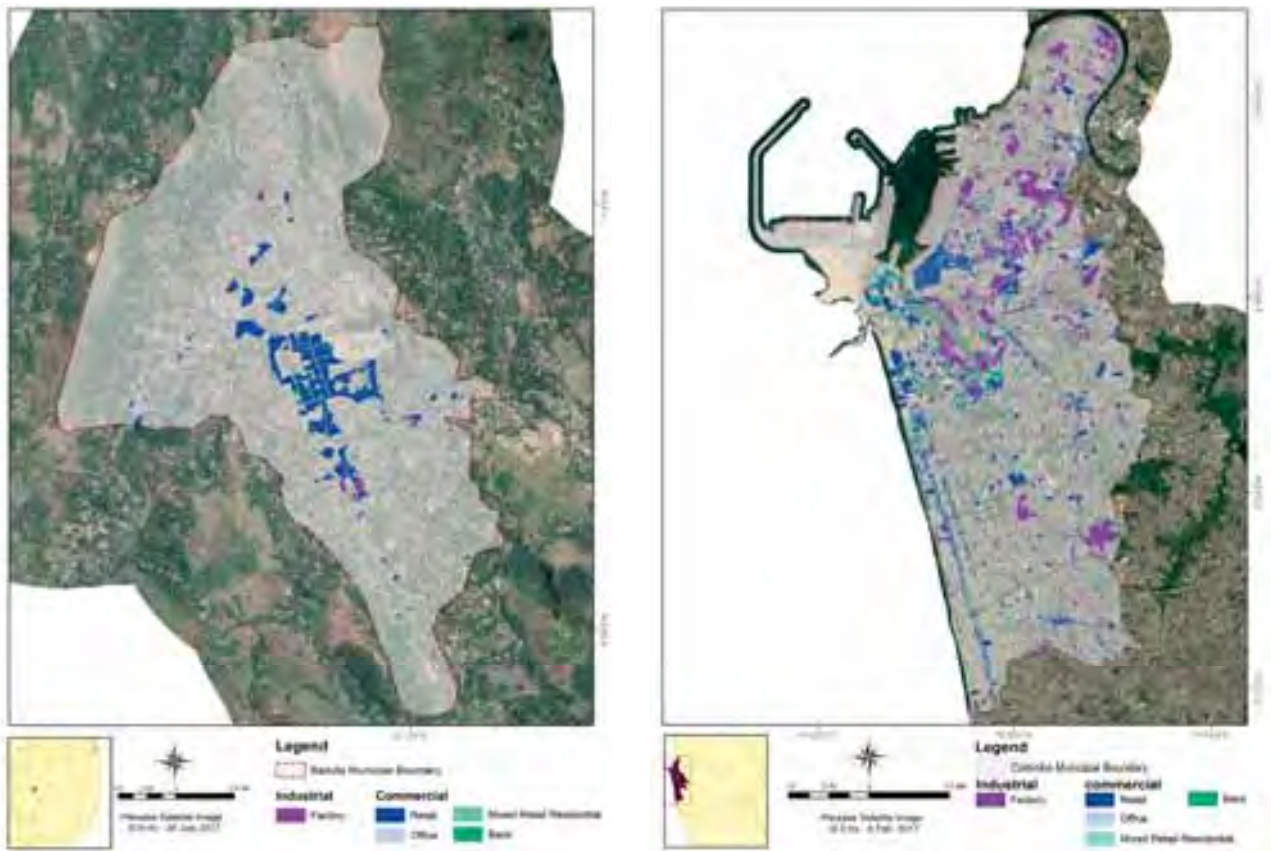
Source: UN-Habitat/Charlene Liou

Fig 4.5: Commercial and industrial land use as a percentage of total built-up area in 11 MCs in 2017



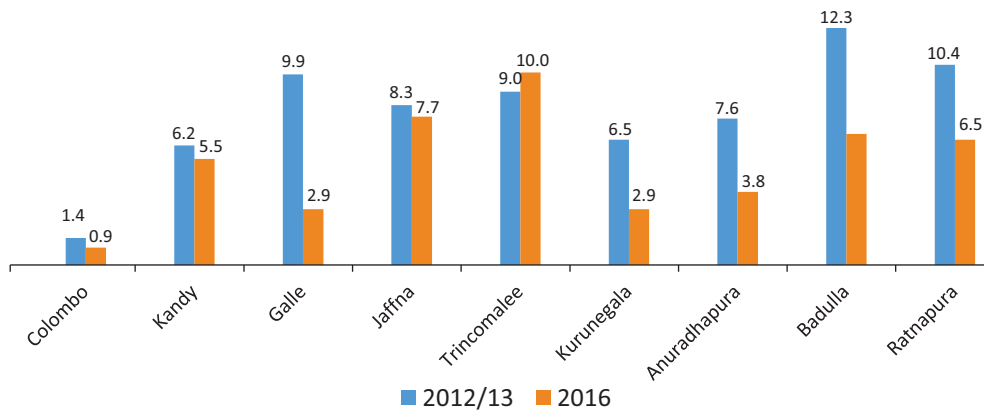
Source: SoSLC Project

Fig 4.6: Commercial and industrial land use in Badulla (L) and Colombo (R) in 2017



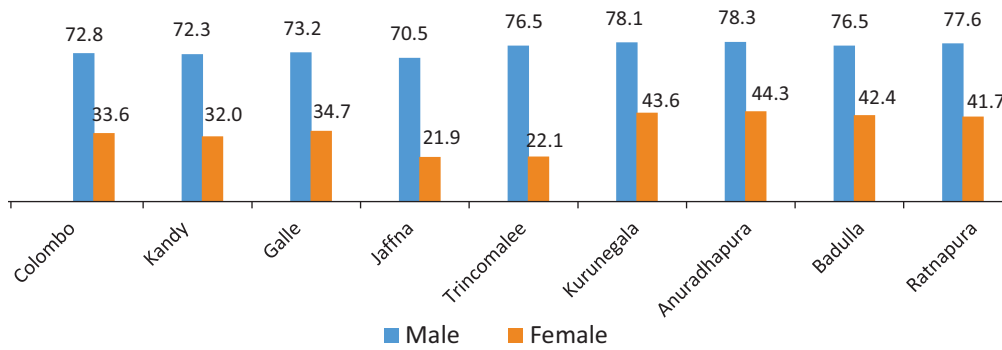
Source: SoSLC Project

Fig 4.7: Poverty Head Count Index (HCI) in 9 Provincial Capital Districts in 2012/13 and 2016 (per cent of population below national poverty line)



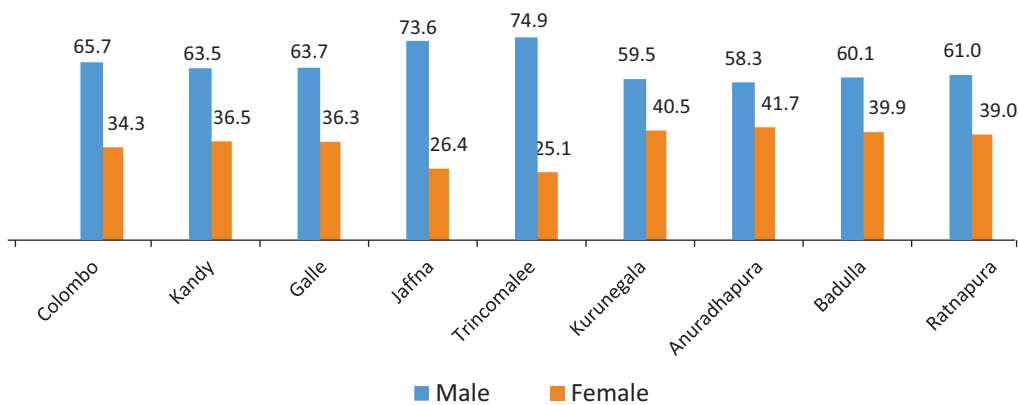
Source: Data from DCS

Fig 4.8: Labour force participation rate by gender in 9 Provincial Capital Districts in 2016 (per cent)



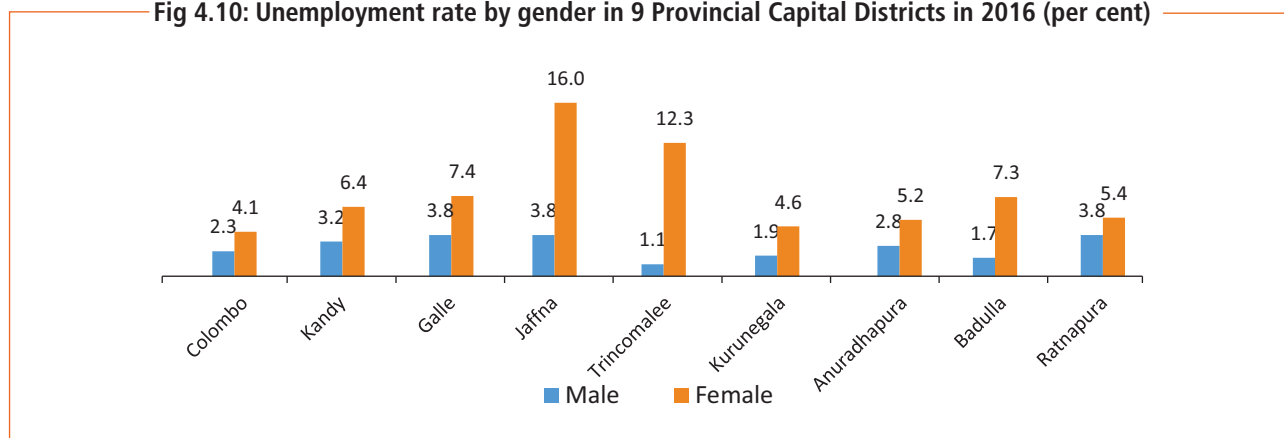
Source: Data from GoSL (2016a)

Fig 4.9: Economically active population by gender in 9 Provincial Capital Districts in 2016 (per cent)



Source: Data from GoSL (2016a)

Fig 4.10: Unemployment rate by gender in 9 Provincial Capital Districts in 2016 (per cent)



Source: Data from GoSL (2016a)

Box 4.1: Explaining the Location Quotient (LQ) graph

The LQ graphs incorporate the following key components:

- The size of the bubble indicates the employment size (number of jobs).
- The vertical axis indicates the concentration of that industry relative to the nation. A concentration of 1.25 or higher indicates that the industry is much more heavily concentrated in the region than in the nation.
- The horizontal axis indicates the employment change over the three year period. Growth to the right of the graph is positive and to the left is negative.
- The analysis was conducted based on provincial data from the DCS labour force annual reports and annual survey of industry reports (GoSL, 2013a, 2013b, 2016a, 2016b).
- The retail trade sector is not included in the bubble chart, as this sector is highly localized and not generally a subject of cluster analysis.
- The agriculture sector is also not included in the bubble chart as this sector is usually located outside city boundaries.

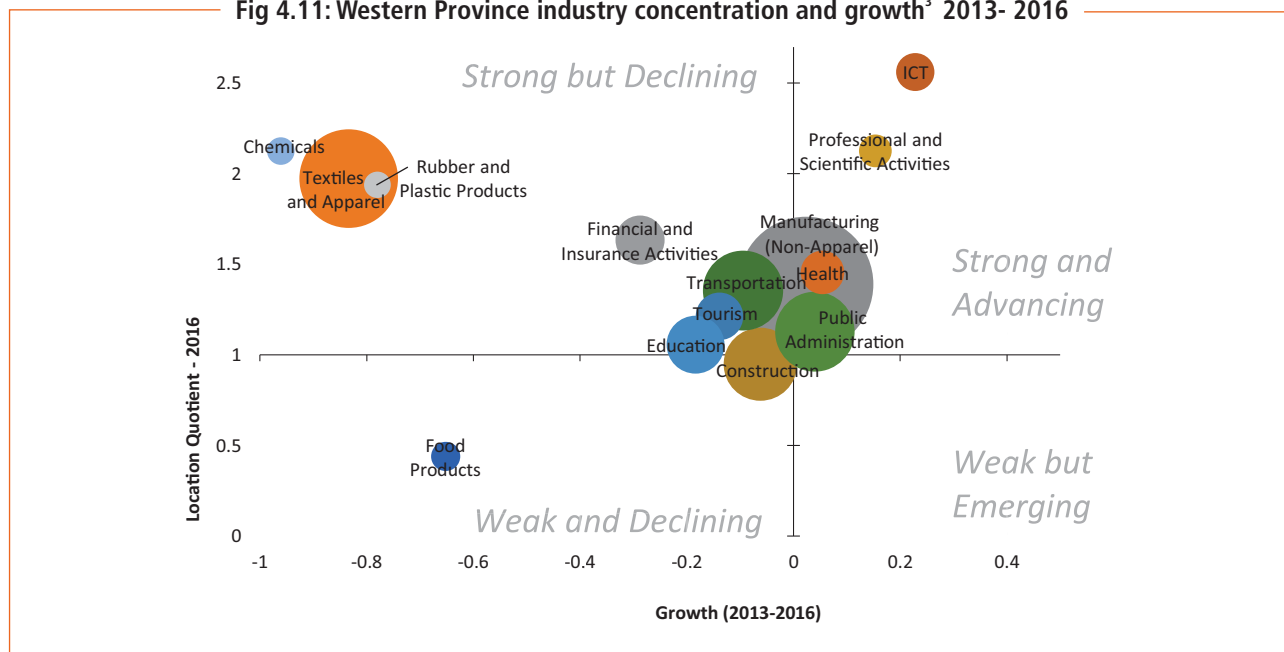
4.2 Industry analysis and identification of growth sectors

To better understand the spatial dynamics of Sri Lanka's city economies, this section provides an assessment of the concentration and growth of key sectors in the 9 Provincial Capitals. The aim is to identify the comparative advantages a city has in particular economic activities, so that these industries can be fostered through supportive actions, including infrastructure and education investments. The following assessment is based on a Location Quotient (LQ) analysis (Miller, Gibson, & Wright, 1991; see Box 4.1), and highlights the advancing, declining and emerging economic sectors based on data from 2013 and 2016. The analysis is based on provincial - level data, therefore, urban economic sectors have been highlighted to analyse the dynamics of city economies.

The LQ analysis shows that Sri Lanka's commercial centre, the Western Province², has a diverse manufacturing and service-based economy (Fig 4.11). Key manufacturing activities include Apparel and Non-Apparel, Chemicals, Rubber and Plastic products. Service sector activities include, Public Administration, ICT, Professional and Scientific Activities, Financial and Insurance Activities, Tourism and Education. The LQ analysis also reveals a changing urban economy during the period 2013-2016. In particular, the emergence of service industries such as ICT, Professional and Scientific activities, Health and Public Administration, as strong and advancing sectors. In contrast, traditional sectors such as Textiles and Apparel appear strong but declining in terms of their contribution to the economy over time. This transition mirrors global trends: cities that foster knowledge and innovation synergies between different sectors can transition to diversified, high-skilled, high-value-added economic activities. In such cases, mature manufacturing

² In the LQ analysis the Western Region Megapolis is referred to as the Western Province to reflect the mode of analysis.

Fig 4.11: Western Province industry concentration and growth³ 2013- 2016



Source: Data analysis conducted for SoSLC project

sectors move to secondary cities to take advantage of lower factors of production, labour costs and benefit from economies of scale. It should be emphasised that the apparel industry is still a major contributor to national GDP.

Across Sri Lanka's Provincial Capitals⁴ the LQ analysis revealed several categories of economic sectors: strong and advancing growth industries; mature industries with negative employment growth; and emerging industries.

Strong and advancing growth industries are detailed in Fig 4.12, and linked to the province where the industry is located. These industries export their products or knowledge out of the region and may have a competitive advantage because they are concentrated in a particular locality; they exhibit trends as drivers of future growth and typically pay competitive wages. These industry groups include Professional & Scientific Services, ICT, Manufacturing – Non Apparel and Health (Western Province), Tourism (Central Province), Food Products (Southern Province), Textile & Apparel (North Central Province), Rubber Products and Mining (Sabaragamuwa Province).

The spatial distribution and concentration of strong and advancing sectors is linked to the socioeconomic profile and natural resource endowments of the different provinces. For instance, the Western Province includes the highest concentration of leading universities, with strong connections to international knowledge networks (for example, through offering accredited courses with universities in the US and Europe). Correspondingly, knowledge-based industries are strong and advancing in the

Western Province. In Sabaragamuwa Province, mining and quarrying are emerging industrial sectors, reflecting the natural resource endowments of the province. Policy makers can build on these comparative locational advantages, for example through building linkages between universities and high-tech industries in the Western Province, and promoting agro-based industries that leverage rubber plantations and value addition in gem mining in Sabaragamuwa.

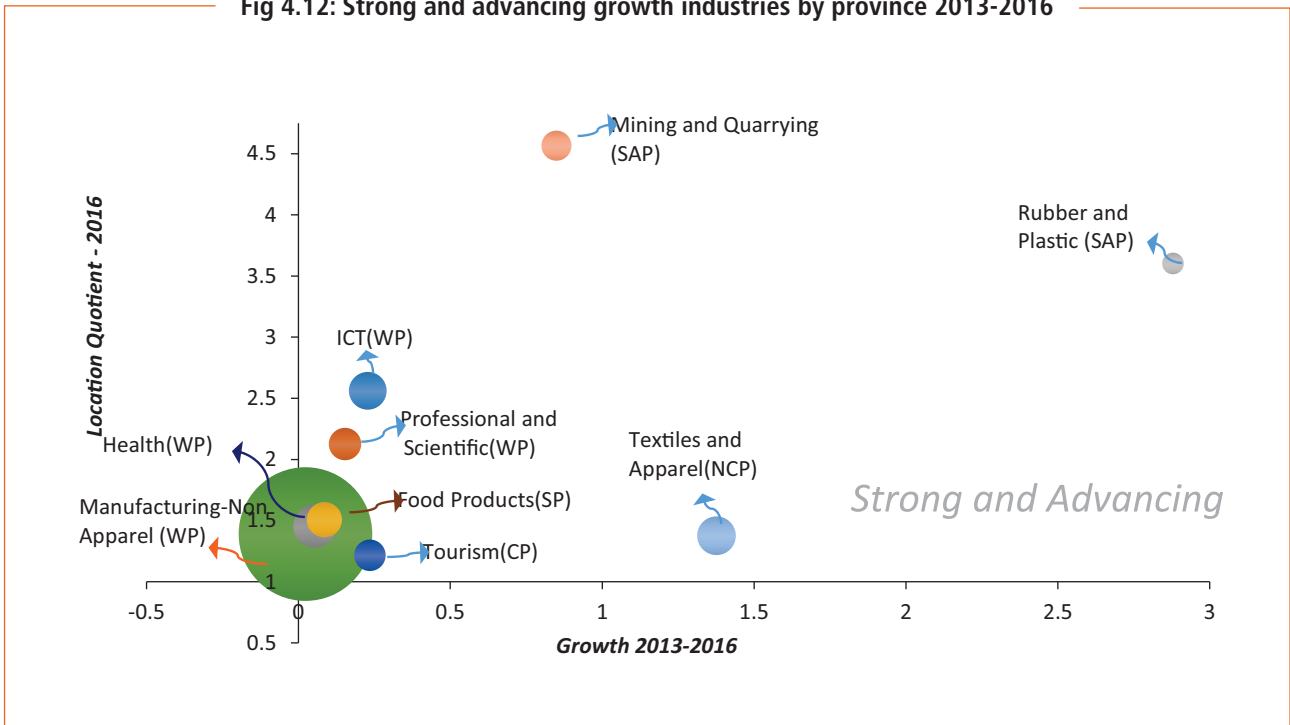
Mature industries with negative employment growth are industries in high concentration but exhibit declining employment growth or are not growing at a faster than the average for these industries in the country (Fig 4.13). They represent traditionally strong industries that have not recently experienced any significant growth. They include Textile and Apparel (Western Province), Fisheries (Eastern Province), and Tourism (Southern Province). Often, these industries account for a large proportion of the workforce: policies are needed to secure their productive participation in the urban economy. In the case of Textiles and Apparel, for example, up-skilling the workforce can move the industry into higher-value products, or provide workers with the skills to move into other sectors. In this regard, widening access to Technical and Vocational Education and Training (TVET) to workers in these sectors is key (see Chapter 6).

Emerging industries display low concentration but high employment growth (Fig 4.14). Higher employment growth indicates that the industry and its products are in demand, driving increases in the allocation of labour to that industry. Industries such as Transportation and Storage (North

³ The Manufacturing sector was further classified using annual survey of industries data by the Department of Census and Statistics (DCS).

⁴ A detailed profile of the economic sectors by province is provided on the SoSLC database.

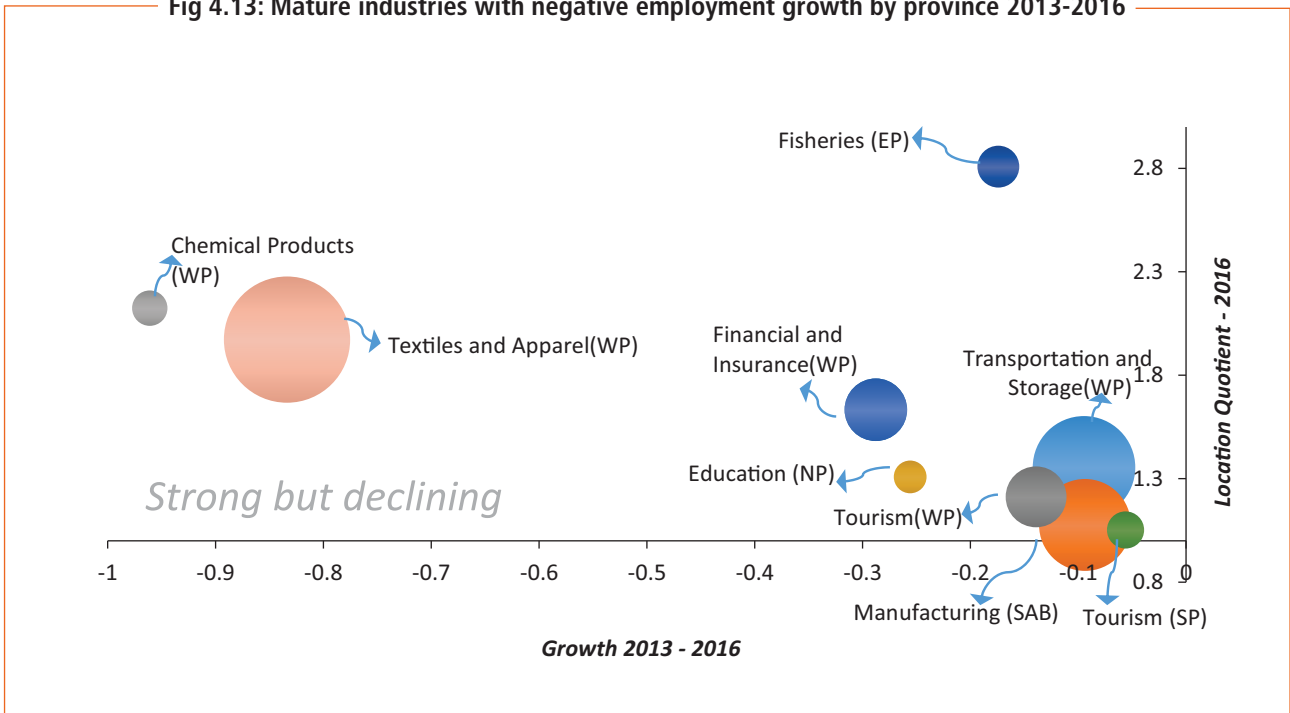
Fig 4.12: Strong and advancing growth industries by province 2013-2016



Source: Data analysis conducted for SoSLC project

Note: WP=Western Province, CP=Central Province, SP=Southern Province, NWP=North Western Province, NCP=North Central Province, SAP=Sabaragamuwa Province, UP=Uva Province, N=Northern Province, E=Eastern Province

Fig 4.13: Mature industries with negative employment growth by province 2013-2016



Source: Data analysis conducted for SoSLC project

Note: WP=Western Province, CP=Central Province, SP=Southern Province, NWP=North Western Province, NCP=North Central Province, SAP=Sabaragamuwa Province, UP=Uva Province, N=Northern Province, E=Eastern Province

Western and Uva Provinces), Financial and Insurance (Northern, North Western and Sabaragamuwa Provinces), Health (Central Province), Tourism (Sabaragamuwa, North Central and Northern Provinces) and ICT (Northern Province) have shown signs of higher growth between 2013 and 2016. A general trend across the country is the emergence of services requiring an educated workforce (for example ICT, Finance and Insurance, Health Services), which result from the gains in social and economic development over the past decades.

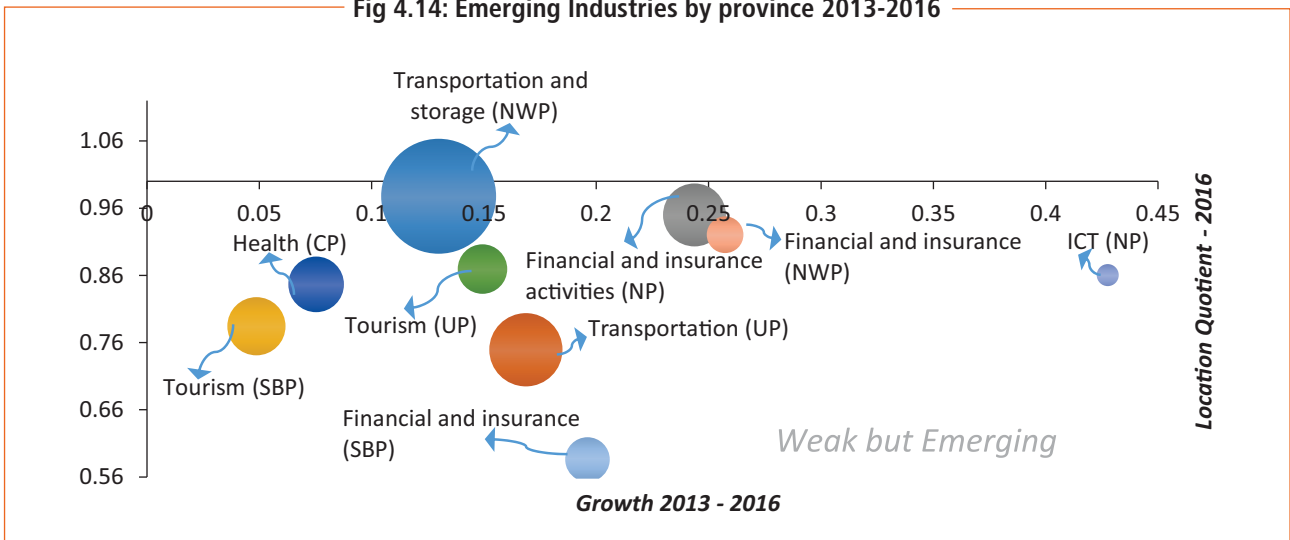
The results also show the importance of the tourism industry as a driver of inclusive growth. The growth of tourism in Sabaragamuwa and Uva provinces indicate that traditional resort-based tourism on the country's west and southern coast is transitioning to a broader-based sector, and spreading across the island to more remote provinces. In this regard, the GoSL's *Tourism Strategic Plan 2017-2020* to capitalise on a variety of tourism modalities, including beach tourism, ecotourism and cultural tourism (GoSL, 2017c), providing opportunities to enhance the economies of Sri Lanka's cities. The Provincial Capital of Uva Province, Badulla, for example, has great tourism potential due to its cultural heritage and spectacular scenery, including the Dunhinda waterfall. The GoSL has an important role to play in fostering these emerging industries through appropriate workforce up-skilling and providing appropriate infrastructure, including tourist information centres and publications on available activities.

Dunhinda waterfall, near Badulla



Source: UN-Habitat/Ben Flower

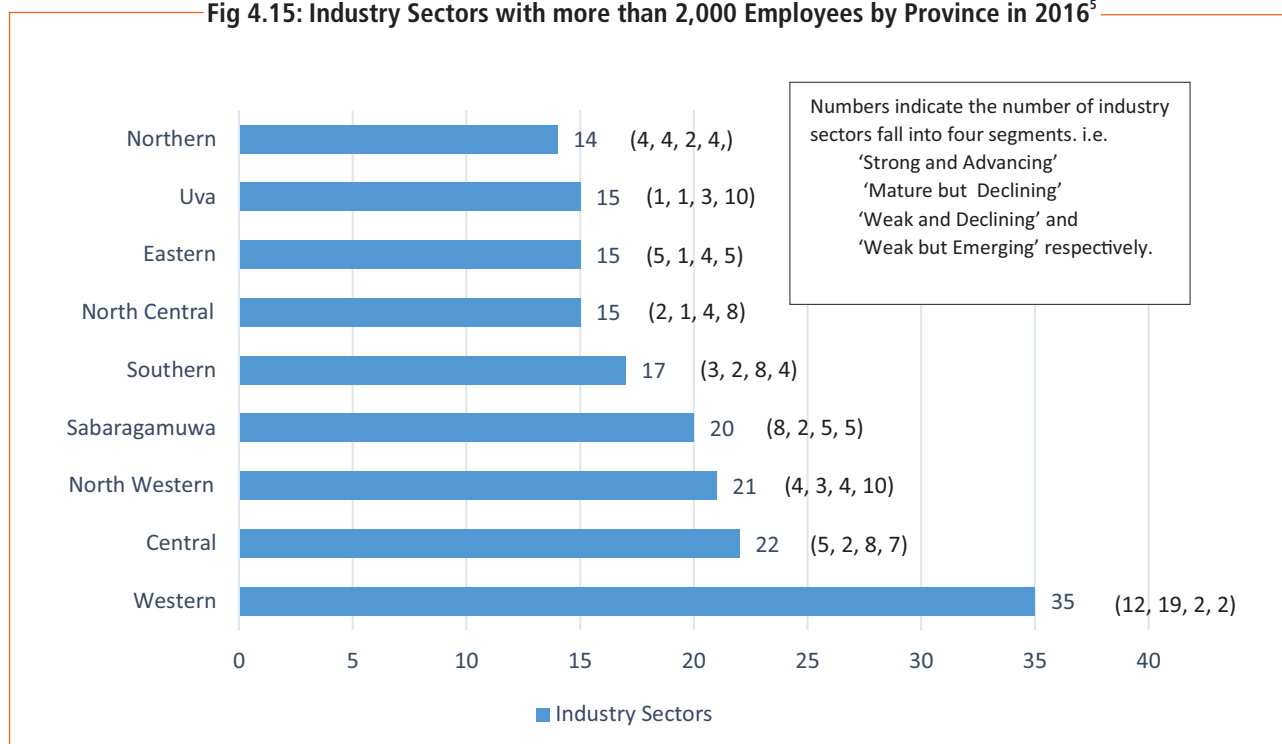
Fig 4.14: Emerging Industries by province 2013-2016



Source: Data analysis conducted for SoSLC Project

Note: WP=Western Province, CP=Central Province, SP=Southern Province, NWP=North Western Province, NCP=North Central Province, SAP=Sabaragamuwa Province, UP=Uva Province, N=Northern Province, E=Eastern Province

Fig 4.15: Industry Sectors with more than 2,000 Employees by Province in 2016⁵



Source: Data analysis conducted for SoSLC Project

There is an uneven distribution of the industry categories across the country. The distribution again clearly highlights the dominance of the WRM's urban economy: the Western Province has 35 industry sectors with more than 2,000 employees of which 12 are 'Strong and Advancing' and 19 are 'Mature but Declining' industries (Fig 4.15). In particular, the high number of 'Strong and Advancing' is encouraging, because it indicates the diversity and strength of the WRM's economy. The results also show that areas with the highest poverty, including the Northern, Uva and Eastern Provinces have the least diverse economies, highlighting the need for economic strengthening programmes in these provinces. An encouraging trend is the high proportion of 'Emerging Industries' (10) in North Western and Uva Provinces, suggesting that these areas have dynamic and emerging economies that can be strengthened in the future to drive economic development in their respective regions.

4.3 Labour productivity in Sri Lanka's cities

Labour productivity refers to the output an industry receives for each unit of input (labour) used in the production process. It can be measured as a ratio of the total output (value) to the labour used to produce the output. Increasing the productivity of labour contributes to economic growth, increases wages and raises living standards; it is therefore desirable from the perspective of urban policy makers. The labour productivity assessment of the 9 Provincial Capitals

uses GoSL employment data in 2016 classified by province and by industry sector (GoSL, 2016c, 2016a). Since, provincial-level output data by industry sector is not available, it was estimated using national level productivity rates of each industry sector.

The analysis reveals that Sri Lanka's commercial capital, the Western Province⁶, has the highest share of employment recorded in the Manufacturing Non-Apparel (25 per cent), followed by Wholesale and Retail Trade (18 per cent), Textiles and Apparel (13 per cent) and Transport and Storage (9 per cent). The highest share of income (output) is generated from Manufacturing Non-Apparel, followed by Transportation and Storage (12 per cent), Wholesale and Retail Trade (10 per cent) and Textile and Apparel (5 per cent). However, the highest labour productivity is not recorded in these major sectors, but in smaller high-skilled service sectors, including Professional and Scientific and Financial and Insurance industries (Table 4.1). The 'other' category included a number of small industry sectors with high labour productivity, including real-estate, entertainment and culture and a range of other activities.

A key trend across the Provincial Capitals is that many of the most productive sectors included high-skilled professions. In particular, the Financial and Insurance service sector often registered as the most productive provincial sector (Fig 4.16). This is unsurprising given that these activities require

⁵ Four numbers within brackets at the end of each bar represent the number of 'Strong and Advancing', 'Mature but Declining', 'Weak and Declining', and 'Weak but Emerging' sectors, respectively.

⁶ In the labour productivity analysis the Western Region Megapolis is referred to as the Western Province to reflect the mode of analysis.

Table 4.1: Western Province estimated labour productivity in selected sectors in 2016

Industry Sector	Employment		Estimated Income		Est. labour productivity
	No	% Share	LKR. Mn.	% Share	
Manufacturing (Non-Apparel)	558,880	24.84	861,581	18.2	0.73
Wholesale & Retail Trade	393,727	17.50	453,552	9.6	0.55
Textiles & Apparel	299,894	13.33	224,759	4.8	0.36
Transportation & Storage	197,971	8.80	546,936	11.6	1.32
Public Administration	194,507	8.65	216,687	4.6	0.53
Construction, Electricity & Gas	165,591	7.36	274,187	5.8	0.79
Agriculture and Fishing	135,122	6.01	55,871	1.2	0.20
Education	102,843	4.57	76,835	1.6	0.36
Financial & Insurance	73,666	3.27	243,892	5.2	1.58
Tourism	69,701	3.10	63,508	1.3	0.43
Health	58,416	2.60	109,622	2.3	0.89
ICT	44,608	1.98	60,962	1.3	0.65
Professional and Scientific	32,922	1.46	121,553	2.6	1.76
Other	221,729	9.86	1,638,623	34.7	3.52
TOTAL	2,249,683	100.00	4,723,810	100.0	

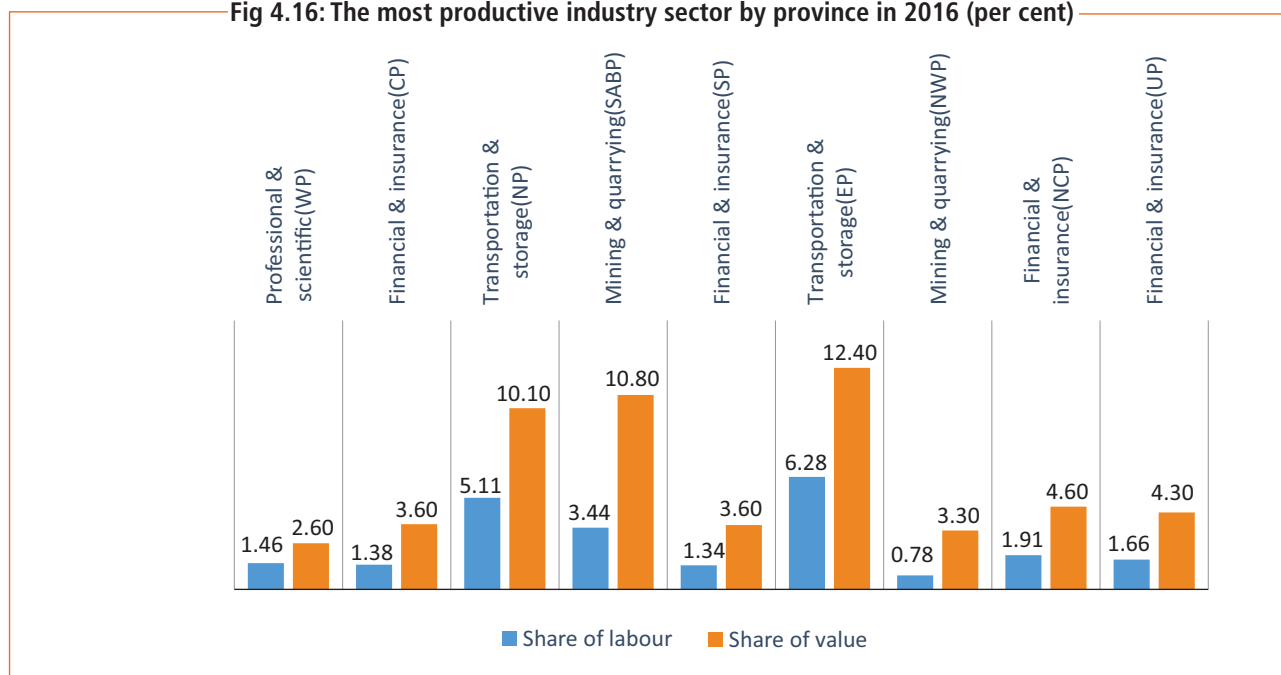
Source: Data analysis conducted for SoSLC Project

a level of technical skill, and create high value-added products and services. In many cases, however, these sectors currently account for a relatively low proportion of the workforce and of economic output. In the long-term, they can be strengthened through higher investments in human capital, training and education policies. The comparative locational strengths also have a large impact on labour productivity. In Sabaragamuwa Province, for example, the Mining sector has very high labour productivity (3.15) due to the area's natural resource endowments.

A key sector that contributes to the economy, employs a large number of people and has high labour productivity is Transport and Storage. The sector recorded a very high productivity rate in all 9 Provinces, ranging from 1.65 in

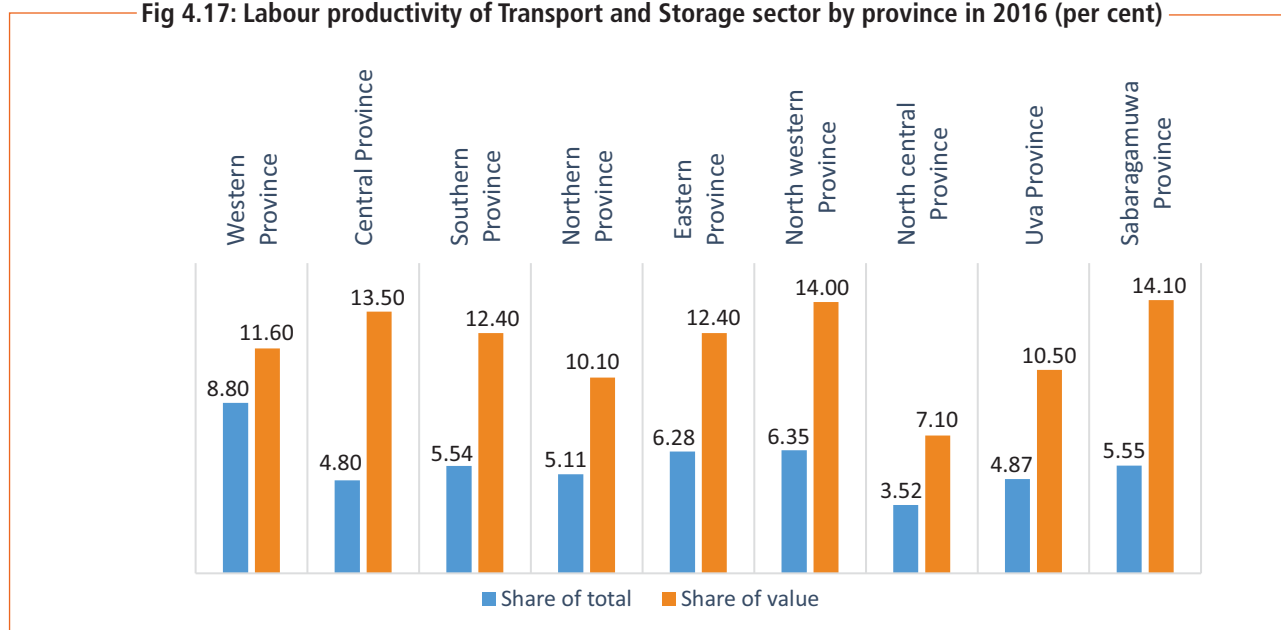
Sabaragamuwa to 2.23 in the Southern Province, with an average of 1.97 across the country (Fig 4.17). This sector accounts for a large share of the workforce, and contributes to a sizeable proportion of economic activities, particularly in the North Western Province (which includes the transport hub of Kurunegala), the Central Province (the second city of Kandy), and the Western and Southern Province, which are connected by multimodal transport and logistics infrastructure (See Chapter 7). The GoSL are currently investing in developing transport and logistics infrastructure along a Central Corridor, linking Colombo to Trincomalee via Kurunegala and Kandy. These investments will reduce travel times and widen access to markets, driving further increases in labour productivity, both in the transport sector and in other industries that trade goods and services.

Fig 4.16: The most productive industry sector by province in 2016 (per cent)



Source: Data analysis conducted for SoSLC Project

Fig 4.17: Labour productivity of Transport and Storage sector by province in 2016 (per cent)

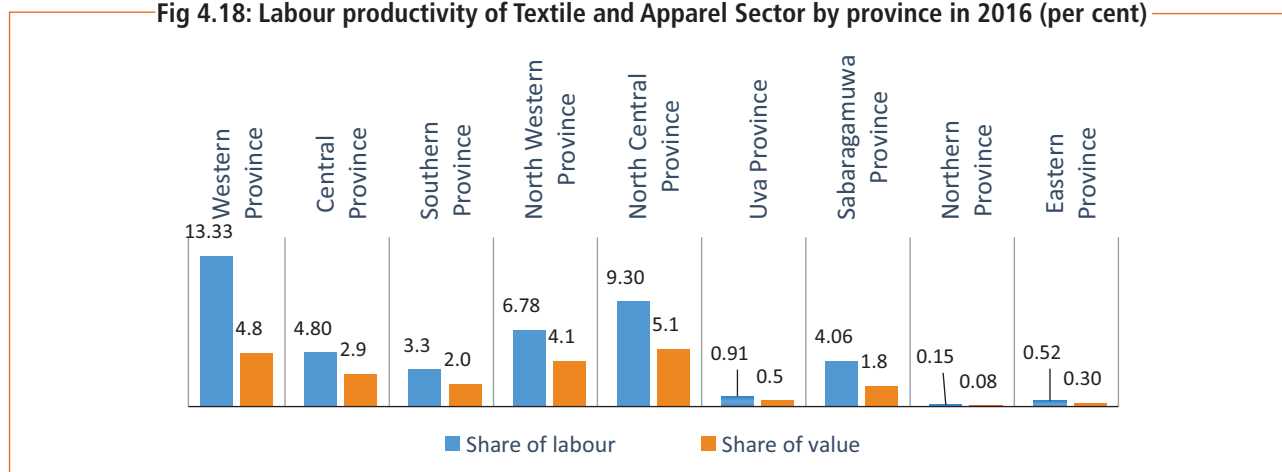


Source: Data analysis conducted for SoSLC Project

In contrast, labour intensive sectors such as Agriculture and Textile and Apparel have recorded low productivity, with a higher proportion of the workforce contributing a lower share of economic output (Fig 4.18). In the Western Province, for example, these industries recorded labour productivity rates of 0.20 and 0.36 respectively. The Textile and Apparel sector recorded a very low productivity rate in all provinces: Sabaragamuwa – 0.45, North Central – 0.55, Uva – 0.58, North Western – 0.60, Central – 0.60 and Southern – 0.61. However, there is vast dependence on this

sector for livelihoods and income in the Western, North Central, and North Western provinces. As the economy diversifies and labour market needs evolve towards higher-skilled sectors, low-skilled labour-intensive sectors become less competitive because of higher production costs. Therefore, it is important that attempts to up-skill the urban workforce are equitable and in-line with the emerging needs of the private sector; in this regard widening access to dynamic TVET is an important policy response (see Chapter 6).

Fig 4.18: Labour productivity of Textile and Apparel Sector by province in 2016 (per cent)



Source: Data analysis conducted for SoSLC Project

4.4 How competitive are Sri Lanka's cities?

Competitive cities are able to attract flows of investment and trade, and are desirable from an economic development perspective. There are various tools to measure city competitiveness, incorporating indicators ranging from the business environment to human capital availability to transport infrastructure, which are tailored to the specific context in which they are implemented. This section draws on the Cities Competitiveness Index (CCI) utilised in the Philippine Cities Competitiveness study developed by the Asian Institute of Management; like Sri Lanka, Philippines is also a rapidly urbanising middle-income country in the Asia-Pacific region, with a similar per capita GDP. The assessment involves primarily qualitative analysis, using secondary information and key informant interviews carried out in all 9 Provincial Capitals with industry experts, representatives of each city's Chamber of Commerce, officials of the Urban Development Authority, and municipal officials.

The CCI includes 28 primary indicators and 70 secondary competitiveness attributes associated with 6 key drivers, namely (i) the cost of doing business; (ii) dynamics of the local economy; (iii) human resources and training; (iv) infrastructure; (v) responsiveness of government to business needs; (vi) quality of life. A rank or scoring system ranging from 0 to 5 is used to assess the relative competitiveness of each indicator or attribute.⁷ The objective of estimating the competitiveness of Sri Lankan cities in relation to these drivers is to enable the preparation and implementation of plans, actions and initiatives which help to support local economic development.

Overall, Colombo ranked 1st with a CCI score of 3.7 followed by Kurunegala (3.3), Kandy (3.2), Galle (3.1), Anuradhapura (2.8), Ratnapura (2.8), Jaffna (2.8), Badulla (2.6) and Trincomalee (2.4) (Table 4.2). Comparing these results to the intercity connectivity analysis (see Chapter 7), it can be observed that those best connected to the WRM, including Kurunegala, Kandy, and Galle, score highest; the economic importance of connectivity to the WRM has also been highlighted in other studies (World Bank, 2004). This interconnectivity has positive impacts on many of the drivers, because it enables greater access to services and economic opportunities. In contrast, the more remote capitals of Trincomalee, Badulla and Jaffna rank lower because their populations have less access to social and economic services and opportunities.

The CCI is a useful tool for government to identify competitiveness weaknesses: performance on each of the 6 drivers can be easily assessed and compared with other cities. As an illustration, performance against the key drivers in Colombo, Kandy and Jaffna is shown in Fig 4.19. Jaffna is less competitive compared to Colombo and Kandy on all drivers except for 'responsiveness of government to business needs'. The comparison of the scores thus provide a good guide of the competitiveness of each city, but also provides policy makers with information about where key interventions are needed. Human resources and training in Trincomalee, for example, scored a very low 1.6, underscoring the need for investments in human capital in the city. For a more in-depth assessment of city competitiveness, the data can be disaggregated to show each of the 70 attributes (Fig 4.20)

⁷ 5 = Strong (globally competitive) 4 = Some strengths; 3 = Neutral (meets local needs); 2 = Weaknesses; 1 = Very Weak; 0 = Insignificant or not applicable.

Table 4.2: CCI Scores of Sri Lankan cities by key drivers in 2018

Key driver	Colombo	Kandy	Galle	Jaffna	Trincomalee	Kurunegala	Anuradhapura	Badulla	Ratnapura	Average Score
Cost of doing business	3.3	2.9	2.9	2.7	3.1	3.1	3.1	2.9	2.8	3.0
Dynamics of local economy	4.1	3.6	3.4	3.0	2.1	3.7	2.3	2.6	3.1	3.1
Human resources and Training	4.3	3.3	3.4	3.1	1.6	3.4	2.6	2.4	2.7	3.0
Infrastructure	3.9	3.2	3.3	2.7	2.2	3.6	3.1	2.7	2.9	3.1
Responsiveness of govt. to Business Needs	2.6	2.4	2.2	2.5	2.1	2.3	2.4	2.2	2.0	2.3
Quality of life	4.2	3.6	3.6	2.8	3.2	3.6	3.5	2.8	3.3	3.4
CCI Score	3.7	3.2	3.1	2.8	2.4	3.3	2.8	2.6	2.8	

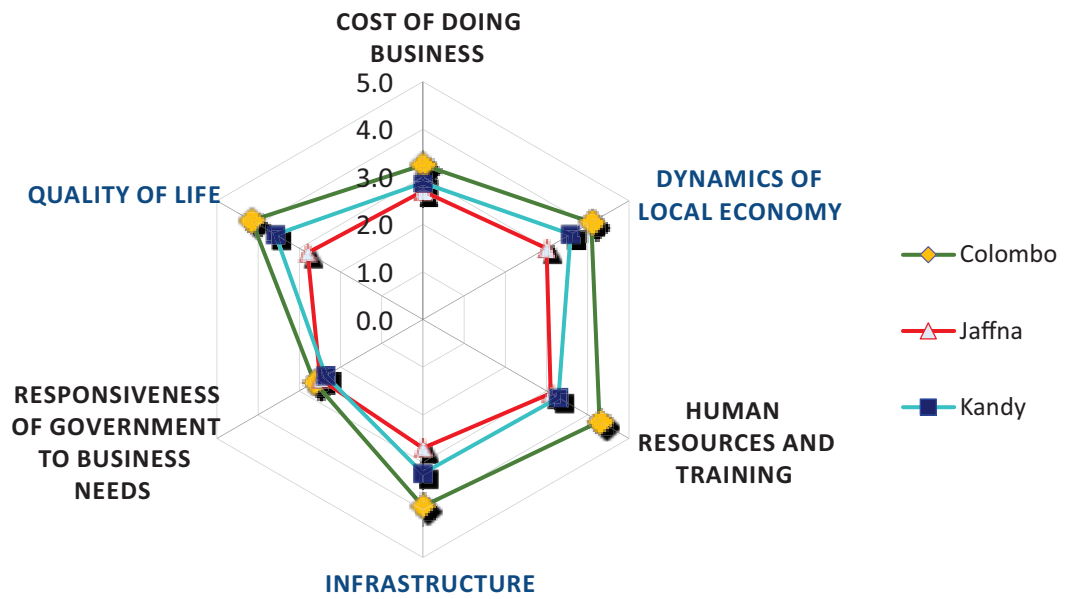
Source: SoSLC Project survey

High-end shopping complex in Colombo



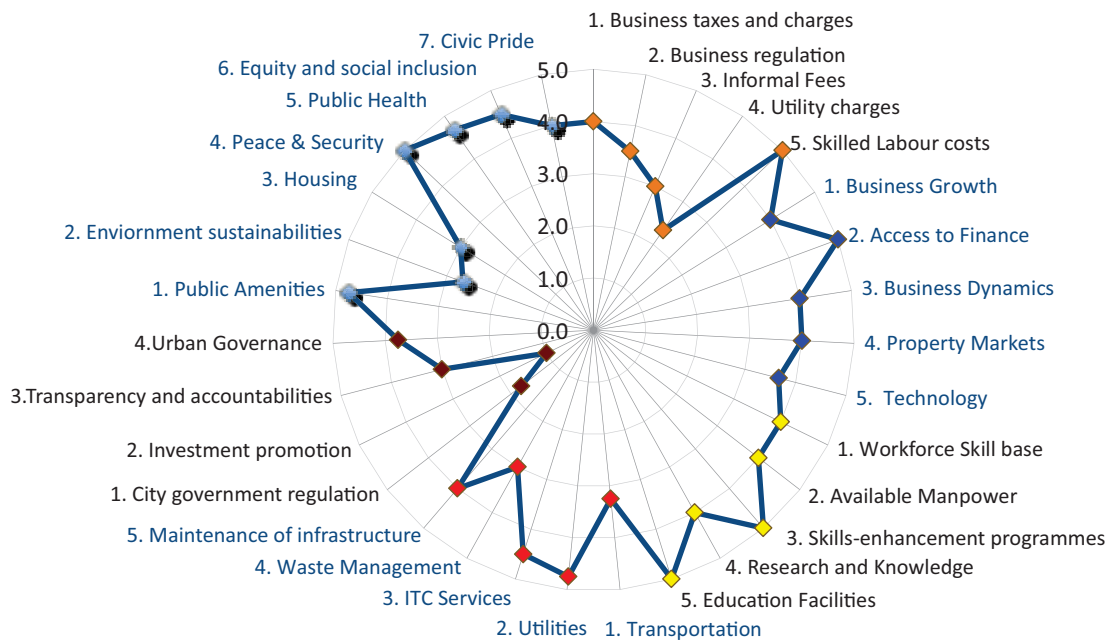
Source: UN-Habitat/Charmalee Jayasinghe

Fig 4.19 : CCI comparison in Colombo, Kandy and Jaffna in 2018



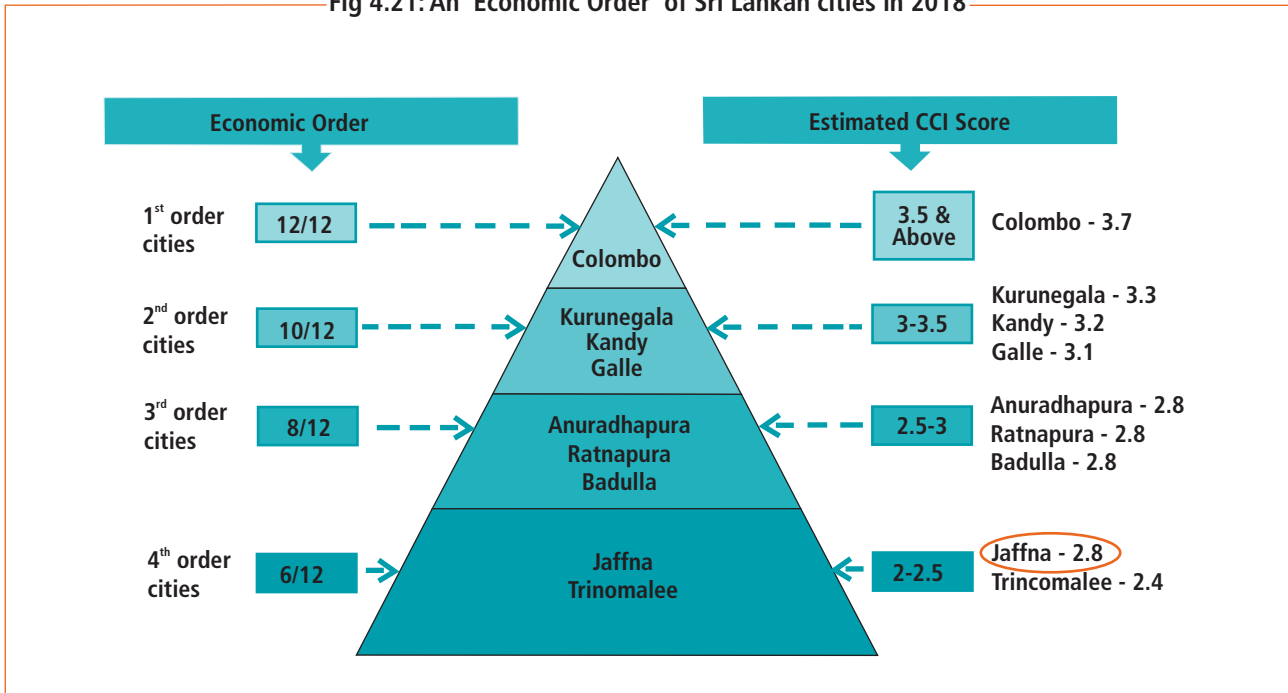
Source: SoSLC Project survey

Fig 4.20 : Colombo competitiveness attributes in 2018



Source: SoSLC Project survey

Fig 4.21: An 'Economic Order' of Sri Lankan cities in 2018



Source: SoSLC report

4.5 Towards an 'Economic Order' of Provincial Capitals

The CCI provides a good measure of a city's competitiveness. However, the SoSLC project views city economies in a broader manner to also include concepts of inclusivity, sustainability and resilience. To reflect this more holistic view, the SoSLC project has classified cities according to an 'Economic Order' based on secondary data analysed and discussed thus far in this chapter. Twelve economic indicators are selected for the analysis and each of those indicators are further divided into 4 categories to reflect the level of economic development in each city. The 12 indicators are selected in such a way to reflect: (i) economic wealth, (ii) education, (iii) employment, (iv) industry diversity, (v) technological advancement, (vi) connectivity and (vii) poverty level of each of Sri Lanka's Provincial Capital cities and subnational areas⁸.

The 'Economic Order' of the cities is almost identical to the results obtained through the CCI analysis (Fig 4.21). For instance, Colombo has fulfilled all 12 'Category-I' requirements with respect to each of the 12 economic indicators. Similarly, Colombo has also recorded a CPI Score of 3.7: therefore, Colombo falls in to a 1st Order City under both the approaches. Similarly, Galle has fulfilled 10/12 'Category-II and above' requirements and has also recorded a CCI Score of 3.1 and has therefore been classified as a 2nd Order City. The only (slight) outlier is Jaffna, categorised as 4th Order City using the Economic Order analysis despite its CCI score of 2.8.

The iconic Bank of Ceylon building in Colombo's Central Business District



Source: UN-Habitat/Charmalee Jayasinghe

⁸ The criteria used to classify the cities according to their 'Economic Order' is provided in Annex 5.

4.6 Urban economies and a better urban future for all Sri Lankans

The development of the city economies have significant implications for the competitiveness, inclusivity, resilience, safety and sustainability of Sri Lanka's cities. Optimising economies, therefore, will have a range of positive impacts to improve urban systems and contribute to a better urban future for all Sri Lankans.

City outcome	Contribution of urban economies
Competitive	<p>Improving indicators such as cost of doing business, government responsiveness, skills and labour productivity, and infrastructure, will drive the competitiveness of urban economies.</p> <p>Targeted interventions that support and build emerging sectors and remove constraints will ensure the competitiveness of urban economies.</p>
Inclusive	<p>Encouraging women's participation in the labour force will ensure economic inclusion and empowerment.</p> <p>Strengthening sectors that are emerging in secondary cities will improve the regional balance of economic development.</p>
Resilient	<p>Cities and city regions that continuously evolve local economies are more resilient to local and global economic shifts.</p> <p>Strategic economic development that fosters emerging and growing sectors by providing access to adequate resources, infrastructure, and an improved regulatory environment increases preparedness to economic shocks.</p> <p>Cities with strong economies are well equipped to respond to shocks and stressors associated with climate change.</p>
Safe	<p>Promoting local economic development can boost incomes and livelihoods, catalyse economic prosperity and enhance the well-being of communities.</p>
Sustainable	<p>Economic activities that incorporate local resources and materials, and build on competitive and comparative advantages, can lead to sustained economic development.</p> <p>Appropriately skilling the workforce to respond to changing market conditions and private sector needs will contribute to sustained economic growth.</p>

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An aerial photograph of a dense urban housing area. The buildings are multi-story, with some having balconies and others with corrugated metal roofs. The colors of the buildings range from light orange to red. There are palm trees and other vegetation scattered throughout the area. A road with a black and white striped curb is visible in the foreground, with several cars parked or driving. A white text box is overlaid on the right side of the image, containing the chapter title and subtitle.

CHAPTER 5

URBAN HOUSING:
SUPPORTING PEOPLE TO
MEET THEIR HOUSING NEEDS

This chapter provides an assessment of urban housing in Sri Lanka's 9 Provincial Capitals. First, an overview of the urban housing sector is presented, highlighting attributes of the current housing stock, supply and demand, and tenure security. The analysis draws on spatial data, statistical data from the GoSL and policy and legal documents to present a macro-level view of the urban housing sector. Second, to gain an in-depth understanding of the housing challenges and opportunities in Sri Lanka's cities, the survey team deployed a qualitative research methodology, conducting in-depth interviews to capture peoples' housing stories.

KEY MESSAGES

1. There is a significant lack of data on housing and land markets in the 9 Provincial Capitals, which makes it difficult to plan for the physical and social needs of housing and urban services. A related challenge is that definitional issues, such as what constitutes 'low-income' housing and what constitutes an urban area, constrains the development of evidence-based housing policy.
2. Land tenure systems are complicated, and include a range of tenure documents that provide varying levels of tenure security. In this context, urban residents can find it difficult to access land markets, housing finance and have limited investment incentives.
3. Urban housing research and policies are needed that build on Sri Lanka's tradition of people-centred approaches to housing, incorporating the diverse and changing needs of urban residents. In addition, housing policies that are integrated with other settlement enhancing interventions ensure the wellbeing of urban residents.
4. There is a need to provide a better mix of density, type and access to affordable housing and finance to promote an equitable housing market.

5.1 Urban housing and tenure security

Overview of housing in the 9 Provincial Capitals

A key function of cities is to provide housing for the diversity of residents that support urban life. The importance of this function in Sri Lanka is highlighted in land use mapping of the 11 MCs associated with the 9 Provincial Capitals. This shows that, except Colombo, the majority of land use is residential (Fig 5.1). The highest proportion of residential land use was recorded in Badulla and Ratnapura, where over 75 per cent of built-up area was categorised as residential. The lowest was in Colombo MC, where under 40 per cent of land use was categorised as residential.

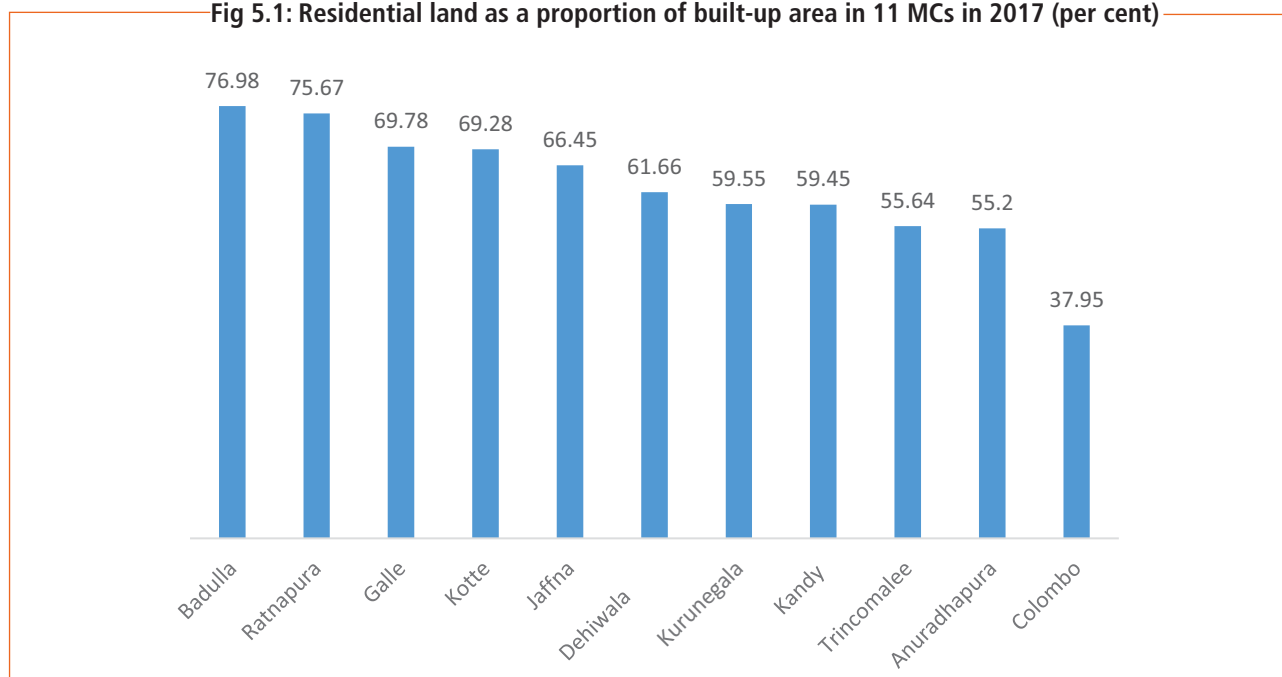
There are numerous factors that affect the share of housing as a proportion of built-up area across the 11 MCs. Anuradhapura, for example, has restrictions on residential developments because of its cultural, historical and touristic importance: the city is designated a UNESCO World Heritage Site as the ancient capital of Sri Lanka (Kurukulasuriya, 2005). Other MCs include significant social and economic land use, operating as hubs to surrounding suburbs and rural areas with large residential populations (see Chapter 3).

A striking attribute of urban housing in the 11 MCs is that the vast majority was found to be 'low-rise residential' (i.e.

residential properties under 4 floors). Overall, only 1.5 per cent of residential land use across the MCs is categorised as high-rise residential (4 floors and above). The exception to this trend is in Colombo, where high-rise buildings accounted for approximately 9 per cent of residential land use. The prevalence of low-rise residential buildings across the cities characterises Sri Lankan urban sprawl as highlighted in Chapter 2: rather than densification from low-rise to high-rise urban area, a process of suburbanization has occurred, characterised by low-density sprawl expansion.

Urban housing caters to a range of socioeconomic groups. From an inclusive development perspective, a key policy issue relates to low quality and/or non-durable housing stock. Understanding the characteristics of this type of housing, and needs of those who live in them, is essential to foster inclusive development. Presently, however, the extent and socioeconomic characteristics of those living in non-durable housing across the 9 Provincial Capitals is not clear. An important reason for this is that there are various official definitions of 'non-durable' or 'low-quality' housing, which provide different pictures of the state of cities' housing stock. A case in point is Colombo MC, where according to the 2012 census, 7 per cent of residents lived in 'temporary' housing, with the remainder living in 'permanent' structures. Colombo MC registered one of the lowest proportions of

Fig 5.1: Residential land as a proportion of built-up area in 11 MCs in 2017 (per cent)



Source: SoSLC Project

temporary housing out of the 11 MCs (Fig 5.2). In contrast, the Urban Development Authority (UDA) has categorised over 50 per cent of Colombo's residents as living in 'underserved' housing, equating to 68,000 families – a huge difference.

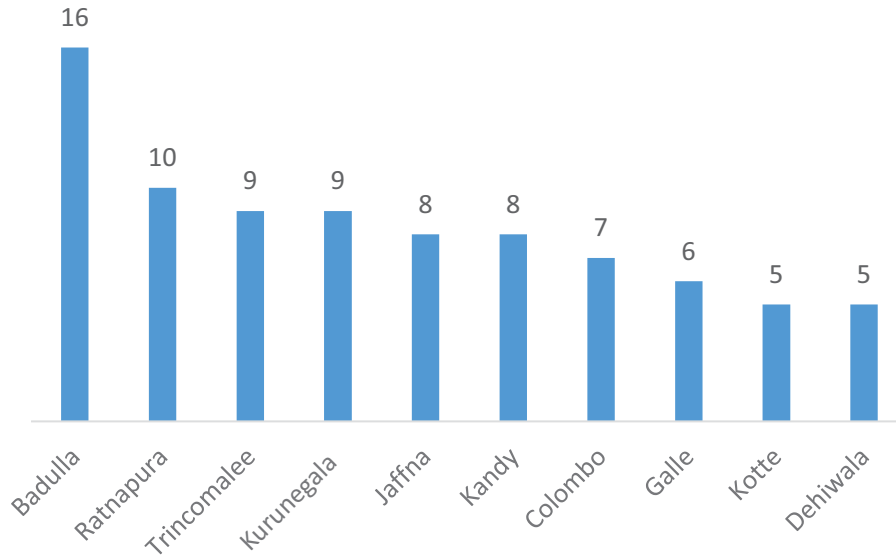
There is a substantive definitional difference between 'temporary' and 'underserved' housing. 'Temporary' housing refers to self-built housing, often comprising non-durable materials. In contrast, 'underserved' is a broad-based housing category that is not used outside Sri Lanka. Underserved housing units fall into two categories: 'slum' housing referring to planned residential units, often co-owned by multiple parties, which have fallen into a state of disrepair; and 'shanty' housing referring to unplanned and/or self-built housing. In practice, it is difficult to distinguish the two categories because there can be overlaps between planned and self-built. A study of Colombo MC, for example, suggests that 'underserved' can include self-built areas that have been subject to upgrading programmes, permanent housing that has been assessed to be in a dilapidated condition, as well as temporary housing made from non-durable materials (Sevanatha, 2012).

Another issue (highlighted in Chapter 2) is the ambiguity about what counts as 'urban' limits understanding of the state of urban housing. In Colombo, for example, systematic information on the location of 'underserved' settlements is available only for the Colombo MC area (Fig 5.3), but not for fringe areas. Therefore, there is a large and expanding urban area where the distribution and characteristics of low-income urban housing is not known. Moreover, the unclear

definitions of urban can lead to confusion about the scale of housing need. For instance, the *Western Region Megapolis Master Plan* (GoSL, 2016a) cites that 68,000 households reside in 'underserved' dwellings. However, this figure is drawn from the Colombo MC area only. Outside, the number of 'underserved' dwellings is not currently known, but if the same broad definition is applied to assess the metro area, there could be a significant hidden 'underserved' population, given that the population of the Western Region Megapolis (WRM) is 5.8 million, compared to Colombo MC's 561,000. Similar issues are likely present (to a lesser extent) in other Sri Lankan cities. The potential differences in scale have significant implications for housing policy, as shall be addressed in this chapter.

Aside from 'underserved' housing, there are a variety of other housing types serving urban residents. High-end property types are emerging in the more up-market areas of central Colombo. For instance, the 2012 Census included 'condominium' as a separate building class only appearing in the 3 MCs located in WRM. In Colombo MC, just over 3 per cent of all dwellings in 2012 were categorised as condominium, compared to 0.6 per cent and 0.5 per cent in Dehiwala and Kotte, respectively. There is also a trend in Kandy and Colombo of luxury gated community complexes on the city's outskirts, catering to an emerging urban middle-class of Sri Lankans, expatriates and foreign investors. Between the 'underserved' and the skyscraper sit the majority of Sri Lanka's urban residents. Experiences of a sample of those living in such areas will be explored in a detailed case study of Kandy in Section 5.3.

Fig 5.2: Temporary housing stock as proportion of total in 2012 (per cent)



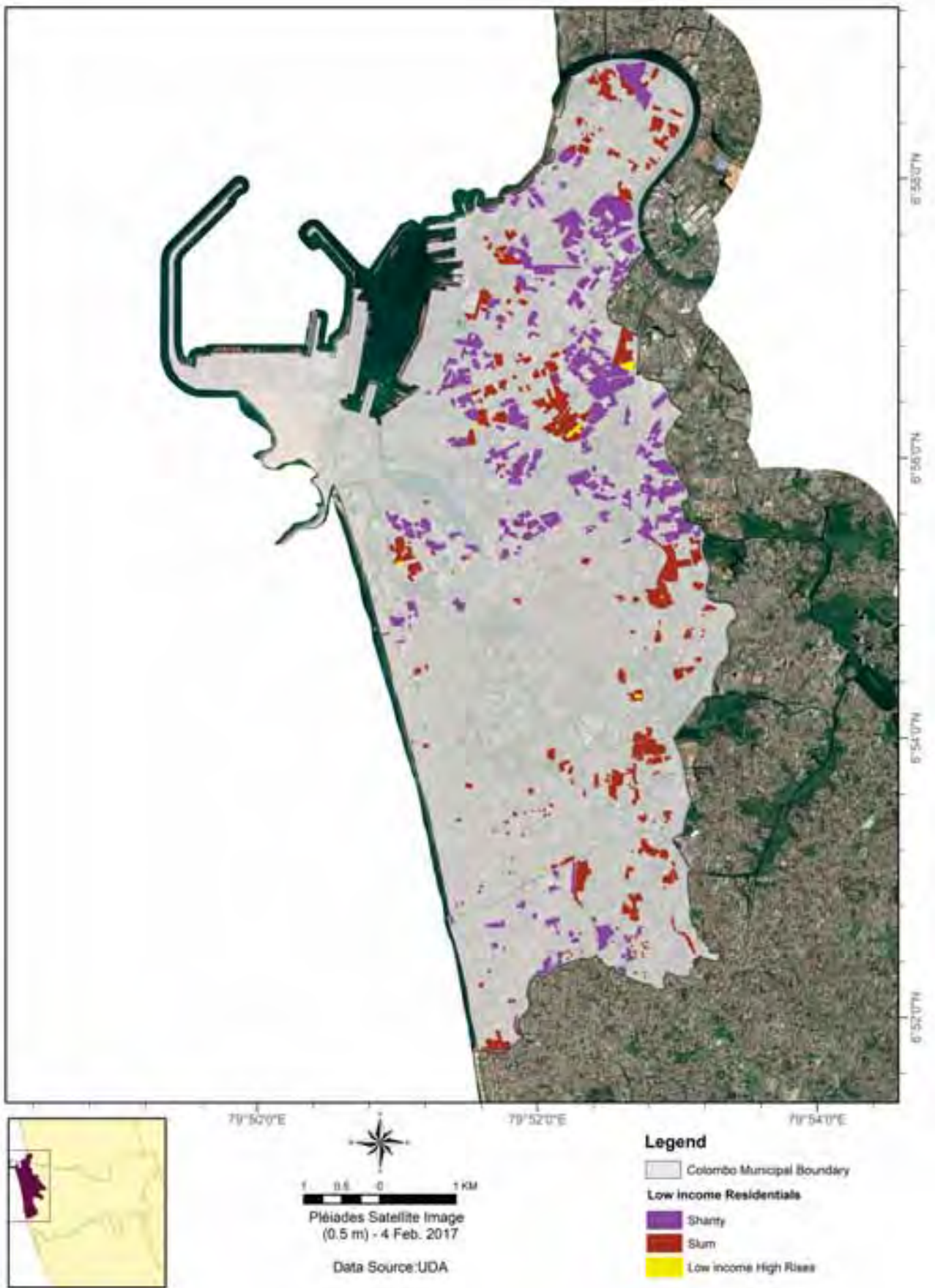
Source: Data from DSC (2018)
Note: Data for Anuradhapura missing

Self-buit housing in Kandy



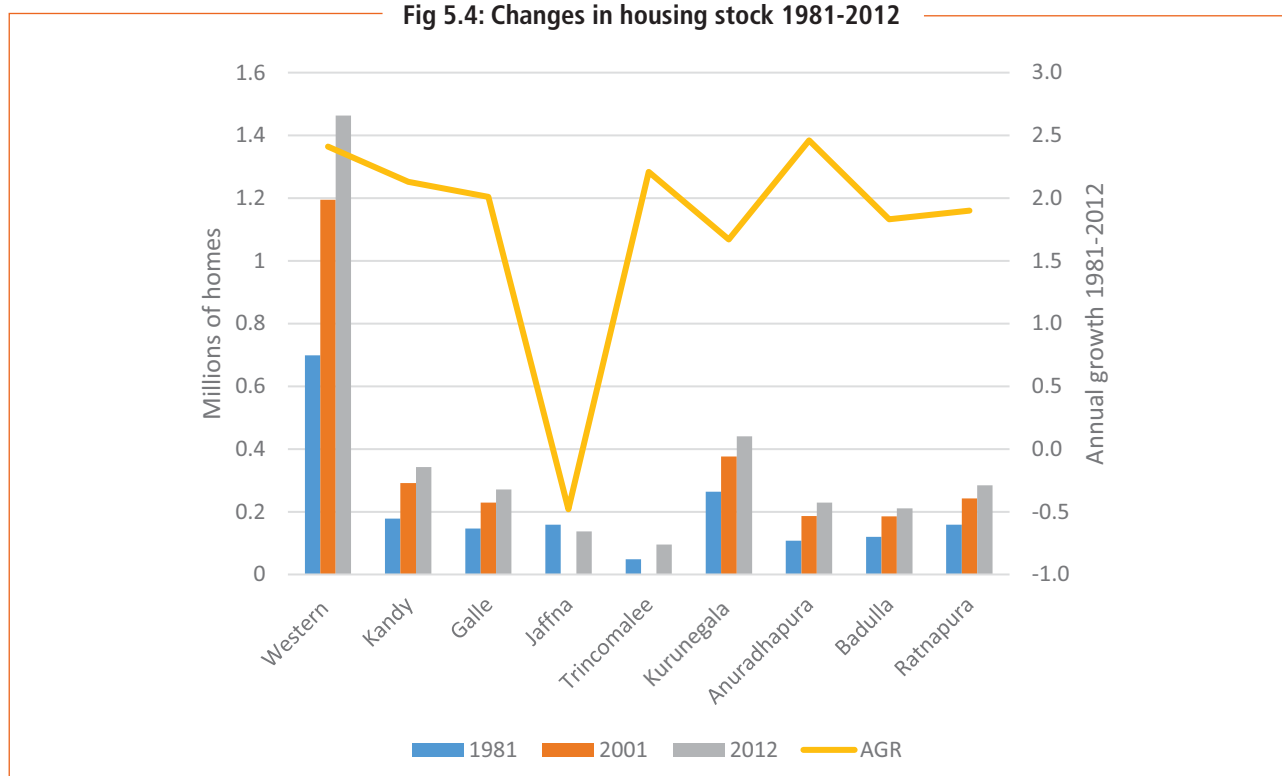
Source: UN-Habitat/Charlene Liau

Fig 5.3: Distribution of underserved settlements in Colombo MC in 2017



Source: SoSLC Project

Fig 5.4: Changes in housing stock 1981-2012



Source: Generated from census data cited in UN-GoSL (2016)
 Note: 2001 data not available for Jaffna and Trincomalee due to war: data for WRM is Western Province data.

Widening access to housing: challenges and opportunities

According to census data, the stock of housing has increased markedly over the past decade in the majority of the 9 Provincial Capitals. Data for housing stock over time is derived from district-level data, which includes substantial rural areas, and therefore should be considered as indicative rather than definitive indicator of change (UN-GoSL, 2016). Bearing this in mind, the data indicates that the housing stock in Kandy, Galle, Anuradhapura, Trincomalee and the WRM grew between 2 and 2.5 per cent per annum between 1981 and 2012, while in Kurunegala, Badulla and Ratnapura it grew at a slightly slower rate between 1.5 and 2 per cent (Fig 5.4). Jaffna was the only city that saw a reduction in housing stock as the war devastated much of its infrastructure: by the end of the 1990s, 30 per cent of all housing had been destroyed, 40 per cent severely damaged and 30 per cent slightly damaged (van Horen, 2002: 119).

The GoSL has played a pivotal role in the supply of housing across Sri Lanka's cities since independence in 1948. In this regard, as Box 5.1 details, there have been numerous policies, regulations and programmes actioned over the past 7 decades, which have aimed to increase the housing stock and quality for urban residents – particularly the vulnerable. This included in-situ upgrading in the 1970s and 1980s, where the government provided tenure rights and extended services to areas of self-built housing (Box 5.1), including

pioneering approaches such as *The People's Process* (Box 5.2). In contrast, since the 1990s, the approach has shifted to the relocation of residents from 'underserved' dwellings to new high-rise apartment blocks (Fig 5.3). This approach is motivated by the appeal of eliminating poor quality housing from the city and of freeing up high-value urban real-estate for private-sector development.

The relocation approach raises two questions about solving urban housing across Colombo and other Sri Lankan cities. The first question is about the impact relocations have had on relocated residents in some cases in Colombo MC, and about how these concerns can be addressed in the future. Box 5.3 presents the experiences of a resident relocated from a low density traditional self-built *watte* community to a high-rise block, highlighting some of these issues. The second question relates to the preceding discussion about the potential underestimation of the scale of 'underserved' settlements, and the corresponding relocations and housing supply required. Applying this policy over the WRM, for example, would potentially require the rehousing of hundreds of thousands of people. The increased scale raises questions about the sustainability of applying relocation as a one-size-fits-all approach over large urban areas, and suggests that a range of policy options to improve housing conditions may be necessary, including settlement upgrading based on Sri Lanka's history of people-centred housing.

Box 5.1: Sri Lanka's history of urban housing policy

1948 - 1969: After gaining political independence, the Sri Lankan Government directly intervened in the housing sector. During this period government mostly provided high-cost, high-quality houses, and middle-class housing in the city for public servants. Noteworthy housing projects include Kiribathgoda Housing Project, Enderamulla Housing Project, Bambaipitiya Flats and Anderson Flats.

1949 - Housing Loan Act promoted private sector investment in housing for the middle and working class.

1949 - Government grants to local authorities to set up housing schemes for the lower- and middle-income groups in urban areas.

1953 - Department of National Housing created to provide housing through government delivery.

1954 - National Housing Fund was established to provide housing loans to middle income residents.

1970 - 1976: The 1970 election installed a left-leaning government with policies focusing on widening access to ownership and constructing social housing.

1972 - Aided Self-Help Housing. Government responsible for the cost of land, building materials and certain services for low-cost housing while the beneficiary provided labour.

1970 - Creation of a new ministry responsible for housing. This ministry pursued the nationalisation of urban management agencies. The government hoped to use housing policy to increase supply of state and private-sector housing units.

1973 - Ceiling on Housing Property Law aimed to limit the number of houses that could be owned by a member of a family or an individual. Initially viewed as a positive and 'pro-poor' program, because landlords were compelled to sell their property to tenants. One of the main objectives of this law was to eradicate 'Slum Lordism', particularly in Colombo. The positive aspect of the law was that the tenants of tenement garden properties were able to acquire ownership. However an unintended consequence of the law was the decline of private sector investment in housing supply. The law was later repealed.

1977 - 1994: Change of government with the United National Party, ushering in a period characterised by large-scale self-help schemes.

1978 - Urban Development Authority was established.

1979 - National Housing Development Authority was established.

1978 - 1986: first comprehensive programme for upgrading settlements and enabling access to basic services in Colombo was the UNICEF-funded Urban Basic Services Improvement Programme. The programme objective included empowerment of communities to organize themselves through self-help groups called Community Development Councils. This program was implemented by the Ministry of Local Government Housing and Construction, the Common Amenities Board and the Public Health Department of Colombo Municipal Council

1978 - 1984: Urban Development Authority (UDA) initiated a Slums and Shanty Improvement Programme as a centralised programme for Colombo and a few other cities. It included onsite upgrading, sites and services projects, and improvement projects for which the normal planning and building regulations were relaxed. The low income settlements were declared as "special project areas" where households were able to construct a legally acceptable permanent house on plots of 37.5 to 50 sqm and granted 30 year leases. Residents were provided with 'enumeration cards' – a non-legal document which officially acknowledged the existence of the dwelling and increased perceptions of tenure security. The programme also promoted self-help and beneficiary participation in planning and construction, and tools such as community action planning were tested during its implementation.

1978 - 1983: Hundred Thousand Houses Program – Led by the newly established National Housing Development Authority (NHDA), the program constructed 50,000 houses in rural areas through the aided self-help method. Another 30,000 houses were constructed in urban areas through private sector participation. There were also 11,000 housing loans made available for residents of urban areas.

1984 - 1989: Million Houses Program (See Box 5.2)

1990 - 1995: 1.5 Million Houses Program. After the success of the Million Houses program the 1.5 Million Houses program was introduced. This program was different to the Million Houses Program in that it aimed to address housing issues across all levels of society. There were eight sub programs targeting the urban, rural, disaster, Provincial Council housing, Mahaweli housing, Plantation sector, the employee housing and Individual Family Housing.

Box 5.1: Sri Lanka's history of urban housing policy (cont.)

1994 - 2005: Change of government and a policy shift from supporting self-help housing to large-scale planned developments.

1998 - Presidential Task Force on Housing and Urban Development was appointed and tasked with creating a macro-policy framework and action program for housing development

1998 - Sustainable Townships Program –The first project under this programme, Sahaspura comprised of 13 storied high-rise apartment blocks with 671 apartments between 28 to 56 sqm. However, this programme has been criticised for its lack of community participation processes in the planning and implementation of the project, which led to community dissatisfaction.

2005 - 2010: New government elected with an election promise that 'every family in Sri Lanka should own a house'

2006 - Ten Year Vision - Broad-based policy framework, including a component to meet housing needs. Associated activities include:

2007 - The Arunodaya Urban Poor Housing Program was a housing project led by the Ministry of Urban Development and Sacred Area Development.

2005 - Diriya Piyasa housing program implemented by the Sri Lanka Samurdhi Authority which constructed 5,000 low-cost homes.

2009 - Urban Settlement Development Authority was established to deal with urban housing issues.

2009 - 68,000 Low-Income Housing Project was (and remains) the main program for addressing underserved settlements in Colombo. The program was funded through a land exchange mechanism, with the slogan 'houses for people and land for investment', whereby underserved settlements are to be removed, the land sold to developers, and the resulting funds used to construct modern apartment blocks (See Box 5.3)

2009 - 2017: Civil conflict in Sri Lanka ends. Post war and post disaster reconstruction commences.

The GoSL estimated 450,000 people were displaced because of the conflict. Districts in the North and East were particularly affected, with housing and infrastructure severely damaged. It was estimated that around 160,789 houses were destroyed or damaged. The GoSL, with the assistance of international donors and implementing agencies, assisted around 111,712 families to rebuild, adopting an 'owner driven housing' approach where housing grants were provided directly to the families to build their housing.

2017 - National Housing Policy – First national housing policy, which aims to 'ensure the right to live in an adequate, stable, qualitative, affordable, sustainable, environment friendly and secure house with services for creating a high living standard on the timely needs of the people.' The policy focuses on improving housing stock, supporting high-rise development, promotes direct involvement of government to support vulnerable groups, the improvement of housing finance, and supporting public-private public partnerships in housing delivery.

Sources: GoSL, (2017); IIED (1994); Joshi & Khan (2010); Samarasinghe & O'Hare (2013)



Source: UN-Habitat/Charmalee Jayasinghe

Aerial view of different housing types in Colombo



Source: UN-Habitat/Charmalee Jayasinghe

Box 5.2: The Million Houses Programme and the *People's Process*

During the 1980s, the GoSL embarked on a series of mass settlement upgrading schemes, most notably the Million Houses Programme (MHP). Self-built settlements around the country were targeted as part of the effort: in Colombo around 60 to 70 per cent of those living in self-built settlements benefitted through increased tenure security and improved living conditions (Chularathna, 2000). The schemes implemented during this period are widely regarded as innovative and highly effective, winning a number of international awards, and spawning programmatic approaches, such as the *People's Process*, which have 'influenced approaches to housing globally' (Joshi & Khan, 2010: 2).

The self-help approach of the MHP was a response to a policy challenge: improving people's living standards at scale, which was difficult using conventional methods, such as the state provision of social housing (IIED, 1994). Sri Lankan authorities also had experiences of contractor-built social housing as expensive, and ill-fitting to the needs of relocated residents. Instead, an alternative approach was deployed, rooted in John Turner's (1977) principle: that self-built settlements should not be viewed as a housing 'problem', but as a solution to housing challenges.

The MHP built on Turner's ideas, successfully aiding communities across Sri Lanka to better their living conditions. Core tenets of the programme included providing legal tenure through the provision of leasehold arrangements, the extension of public services and utilities, and innovative housing options and loans packages for the construction or improvement of houses (Lankatilleke, 2018). Across the country, the MHP was administered by local authorities and supported nationally by the National Housing Development Authority (NHDA).

A key innovation of the MHP was introduced by UN-Habitat, and involved the institutionalisation of a people-centred approach, now reproduced globally as the *People's Process*. This approach deploys a number of tools to ensure that the community are at the centre of the upgrading process: from planning to budgeting to building to maintenance. In particular, 'Community Action Planning' ensures upgrading interventions are decided equitably and inclusively, while 'Community Contracting' ensures that local groups carry out the upgrading works (Lankatilleke, 2018). This community-centred approach is inherently sustainable, because residents take ownership and pride in their achievements.

Since its development as part of the MHP, the *People's Process* has been implemented by UN-Habitat and other organisations across the globe, including Sub-Saharan Africa, South Asia, and Southeast Asia. It has become a key tool in post-conflict and post-disaster settings, including the rebuilding in the aftermath of the 2004 Tsunami (Joshi & Khan, 2010). In conflict-afflicted Afghanistan, the *People's Process* has enabled co-production in settlement upgrading, building trust between authorities and residents, and contributing to peace and stability (French, Popal, Rahimi, Popuri, & Turkstra, 2018).

Box 5.3: Perspectives of a relocated resident in Colombo MC

Home is not a place that Kanthi looks forward to coming back to everyday. When she enters her 400 square foot apartment every evening, she feels a sense of dread and sadness envelope her - and this is how she has felt for the last four years.

In 2014 the *watte* that Kanthi lived in was acquired for the Urban Regeneration Project that was being carried out by the Urban Development Authority (UDA). There was one of the many settlements that were cleared by the UDA in order to liberate land for investment. All the people affected by this project (according to the UDA, 68,000 families will be shifted in total by completion) were shifted to UDA build high-rise apartments in North Colombo.

The shock that Kanthi carries to date is due to the loss of her home but also the loss of an asset. Her parents had moved to the *watte* in the 1950s and in the late 1970s were given tenure documents to the land along with everyone else in the area. Based on this ownership, Kanthi's parents improved the house over the years. The State too made improvements to the area over time with water and electricity connections, better roads and sewage systems. Over the years they extended the property and by 2014, the entire floor span was close to 800 square feet. In 2014, everyone in the *watte* was forcibly relocated to the UDA high-rise. They were not provided with compensation and were asked pay 100,000 rupees upfront: Kanthi had to use all her savings to put together that amount.

The high-rise complex she lives in now is not a place she has settled into, more than 3 years later. It is home to more than a 1000 families, and her old neighbors are scattered all over the building. Kanthi's immediate neighbors from all over Colombo and not everyone has integrated well, in the way that provided a sense of community and security in the *watte* she left behind. The fact that they have to pay a million rupees for the apartment over the next 20 years, along with the burden of increased utility costs in the new accommodation, means Kanthi has had to find work again, as all her savings were invested into the house that is no more, and then into all the expenses following the relocation. Her husband's income was adequate until all the unanticipated expenses came their way. She also wonders how they will accommodate their growing family in times to come - her sons had planned to expand the house and construct a second and third floor for them to live in; this is no longer possible in an apartment.

Source: SoSLC Project

The private sector also plays an important role in the provision of urban housing in Sri Lanka. In particular, commercial credit is playing an increasing role in housing supply (Fig 5.5). According to Central Bank data, the value of bank loans to the construction sector more than doubled over the past 5 years, underscoring the importance of credit in the expansion of residential, commercial and other built-up land use area (GoSL 2018; Fig 5.5). In addition, the value of personal housing loans has also doubled in the last five years, highlighting the role of mortgages in facilitating property transactions and/or investments, and stimulating demand for housing investments.

Credit (both formal and informal) plays a significant role in facilitating property transactions and/or housing investments in the 9 Provincial Capitals¹ (GoSL, 2016b; Fig 5.6). In most areas, a substantial proportion of households (in all but one district the figure was over 50 per cent) reported loan activity; in most cities, between half and a third of all reported loans were used to either purchase, construct or upgrade a property. Residents reported

obtaining credit from a number of sources for this purpose, including banks, finance companies, moneylenders and retail credit facilities.

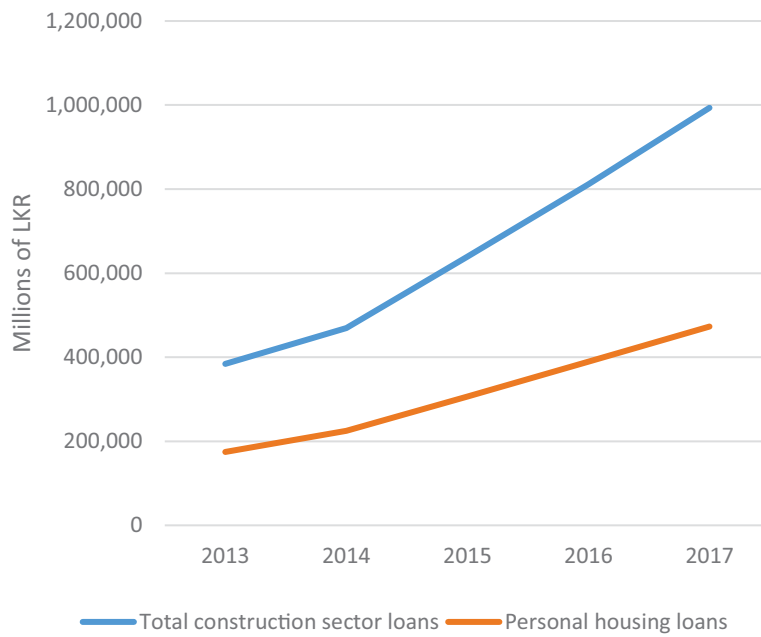
New construction in Colombo



Source: UN-Habitat/Charmalee Jayasinghe

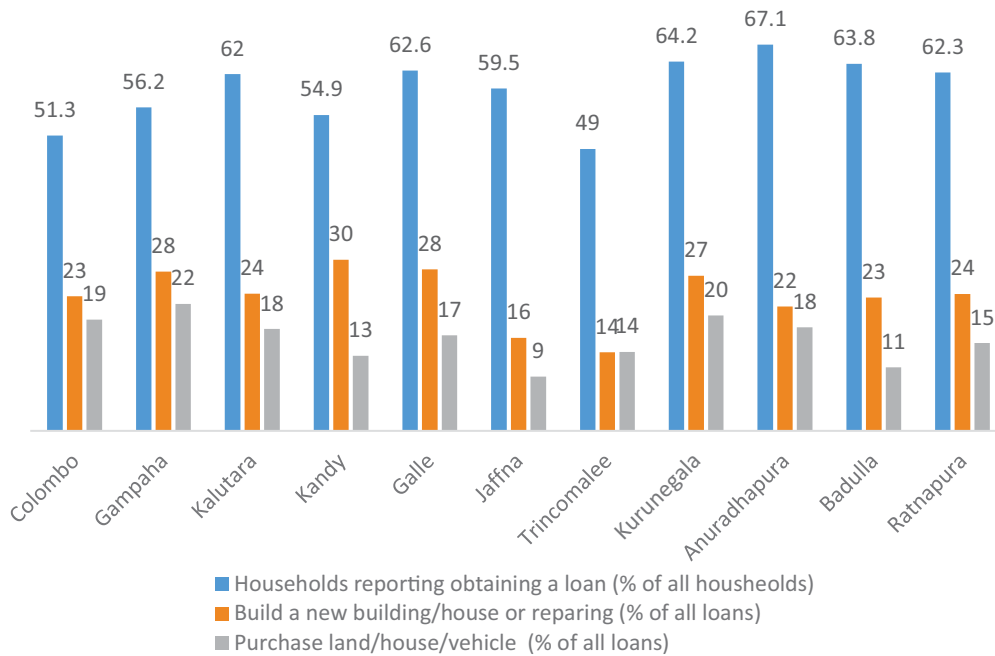
¹ This data is available to the District Level, which in many cases includes substantial rural areas as well as the MCs; therefore the data can be viewed as indicative of urban credit activity in the 11 MCs. There are also some limitations in how far the available credit data (see GoSL, 2016b) can be used to assess housing supply. First, while the disaggregated loan activity data includes categories related to housing investment, it also includes loans obtained for vehicle purchases. Second, the data does not reveal the sources of credit for these loans and/or the socioeconomic characteristics of loan recipients. For example, the data does not differentiate between a small loan from a moneylender to finance minor housing improvement work, from a deed-facilitated bank loan to construct a home. Hence, the precise role of credit in housing supply needs further examination in future research.

Fig 5.5: Commercial loans for construction and housing 2013-2017



Source: GoSL (2018)

Fig 5.6: Credit activity in 11 Districts in 2016 (per cent)



Source: GoSL, (2016b)

Note: Colombo, Gampaha and Kalutara comprise the WRM

Box 5.4: Experiences of a tenant in Trincomalee MC

Mr Chandramohan is a teacher. He and his wife are originally from Muttur and moved to Trincomalee in 1990 when they received their teaching appointments. They do not own any ancestral land and have been renters since they moved to Trincomalee. Having lived in 4 different rental houses in the town itself to date, they say that they opted to continue to live in the town area because it was more convenient for their children's schooling. Over the years, they have considered taking a loan and purchasing land or a house but when they took the cost of living and their own salaries into consideration, it was never a possibility. Land in Trincomalee is scarce and what is available is beyond what they can afford. A few years ago they obtained a small loan available for teachers and purchased a three-wheeler so that their daily commute would be easier, but a housing loan continues to be far from reality given the rising land values in Trincomalee. Having lived in the town area for a long time, with established friends and relatives networks, it is difficult for them, including their children, to imagine moving out of the town.

Even though they live in town, periodic transfers to different schools have meant that Mr and Mrs Chandramohan's commutes are longer now. While his school is about 10 km from home, her school is about 15 km away. They all leave home at 6.45 am and drop their children in school before first heading to Mrs Chandramohan's school. After school, the same routine happens in reverse.

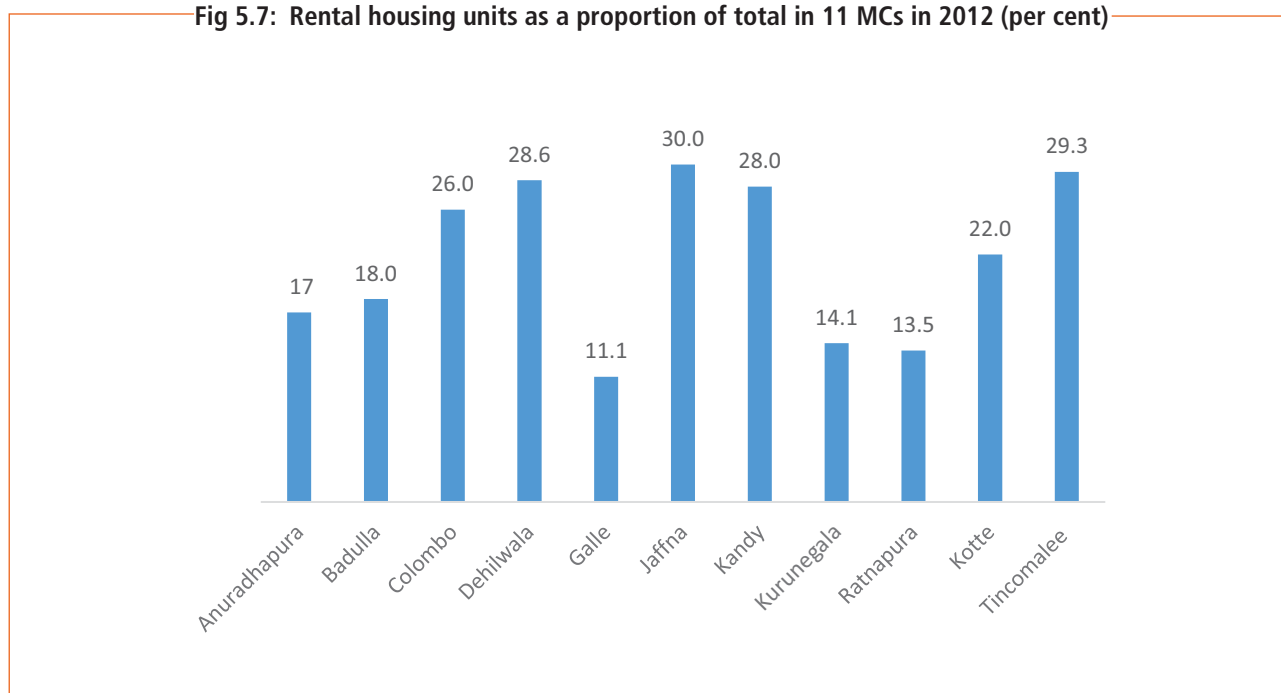
Rental properties in Trincomalee are also not the easiest to navigate for those on a government salary. Most places require people to pay a block sum upfront - and this could range from one lakh to one million - and then the monthly rent has to be paid as well. The block sum is returned at the end of the lease period, with the renter having lost the interest that this amount could have instead gained had it been invested in a fixed deposit or other investment. In the Trincomalee town area, a rental house can be anywhere between LKR 20,000 and 25,000: 'we pay about 20,000 a month when you add the water bills and electricity bills. Since we are both teachers, that is one person's salary just gone on housing expenditure,' says Mr Chandramohan.

Mr Chandramohan believes a housing scheme for government servants or at least affordable housing loans that might enable them to purchase land or build a house is much needed. With growing families and most young people in the district aspiring to also join the government service workforce, they both would like see this housing shortage in the city addressed urgently.

A key policy issue linked to credit is leveraging mortgages to stimulate middle-income housing demand and supply. In this regard, the GoSL has recognised the limited stock middle-income housing as a key urban development policy issue. A constraint to stimulating demand and supply of middle-income property relates to access to finance. People find it difficult to get a loan, either because of collateral requirements or other barriers, such as interest rate payments beyond their financial capacity. Consequently, many urban residents have had to become long-term renters, unable to transition to homeowners (Box 5.4). In many MCs, between 20 and 30 per cent of all housing units

are rented (Fig 5.7). Currently, the UDA's Middle-Income Housing Programme is working to address this issue by ensuring programme beneficiaries can access affordable loans from commercial banks. However, as shall be explored in the following section, there are more systemic problems related to the provision of formal sector credit due to the tenure documents available in Sri Lanka's cities. It is also important to note that promoting ownership is not the only solution to affordable housing. Rather, a mix of secure forms of access to housing at affordable rates is necessary, which could include providing greater protection to tenants from rising rates.

Fig 5.7: Rental housing units as a proportion of total in 11 MCs in 2012 (per cent)



Source: GoSL (2012)

Land tenure, land markets and housing investment

Land tenure is a complex issue in Sri Lanka's cities. Currently, there are a variety of mechanisms that property owners use to confer their ownership, spanning a spectrum from formal land titles to possession documents provided by local authorities. The range and complexity of tenure mechanisms means that Sri Lanka ranks very low on global indicators related to secure property ownership. Currently, Sri Lanka ranks 157 out of 187 countries for ease of property registration (World Bank 2018), and large sections of the urban population residing on land with insecure or ambiguous rights (Fonseka, 2014).

A notable feature of urban tenure is related to the title deed system, which since the British period has been the primary mechanism through which land ownership has been conferred, and remains the prevalent form of ownership document in Sri Lanka today (Divithure & Tang, 2013a). Under this system, deeds provide a legally recorded transfer of ownership, and operates under a chain of owners to the original alienation of state land. These ownership transfers are recorded in the land registry.

The weakness of the deeds system is that they do not constitute indefeasible ownership, because they only provide evidence of a transfer. In some cases, multiple deeds may show conflicting chains of ownership. This creates uncertainty over the strength of an ownership claim. The title deed system means property transactions and obtaining credit require investigations of ownership, which are carried out by lawyers. Typically, establishing ownership chains

going back at least 30 years are required to facilitate bank loans or transactions (Divithure & Tang, 2013a, 2013b). This is a time consuming and expensive processes, which limits the extent of land market transactions and means they are often conducted through extra-legal processes, depriving government of a key source of tax revenue. The requirement to prove long ownership chains also limits access to credit markets and, by extension, housing investment.

A second tenure modality is related to occupancy or possession rights. These documents are also widespread in urban areas, and provide evidence of possession rather than ownership rights. In general, these types of tenure documents provide weak tenure security, there are numerous cases where those with occupancy permits have been subject to involuntary relocation (see, Fonseka, 2014). As we shall see in Section 5.3 of this chapter, households with occupancy permits also face challenges accessing property markets and acquiring loans from banks.

The distribution of deeds and occupancy/possession documents vary within and in-between Sri Lanka's 9 Provincial Capitals. While currently there is no database that systematically records the different types of tenure documents in the 9 Provincial Capitals (although such a system is under development by the GoSL as part of the Bim Saviya land titling programme), general trends about the distribution of deeds and other tenure documents can be ascertained from secondary sources. In this regard, a notable differentiating feature across cities is related to the civil conflict, which centred on the Northern and Eastern Provinces, and correspondingly, the cities of Jaffna and

Trincomalee. This period of social upheaval, lasting from 1983 until 2009, meant that many residents of cities were moved and tenure documents lost, and government agencies tasked with keeping up-to-date cadastral records did not operate. In Trincomalee, for example, the land registry office was bombed, meaning that property records were lost (Muggah, 2008). In this context, establishing ownership histories is difficult, meaning that many households confer property rights through occupancy permits.

In individual cities, there can be a disparity between those in self-built housing and planned accommodation. Many established self-built settlements have been extended leasehold property rights over their housing, signified by an 'Enumeration Card' or other type of occupancy permit. These property rights were extended to residents during the 1970s and 1980s, when low-income housing policy was based on an in-situ, self-help upgrading approach, which also involved the extension of municipal water and electricity services to self-built areas (see Box 5.2). In principle, however, these properties remain de facto state owned, since the land is only leased from the government.

In response to the land tenure issues in Sri Lanka's cities, the GoSL have been implementing a system of indefeasible titles or Torrens titles, which were introduced under the Registration of Title Act (RTA) in 1998. Titles acquired under this act include a unique ID number and the plot boundaries are registered in cadastre, and are publically searchable online. In theory, these documents provide indisputable proof of ownership, and should represent the gold-standard of tenure security. The government has implemented a land titling programme, Bim Saviya, which has been active in formalising property rights according to the framework set out in the RTA across the country. To date, nearly half a million plots have been provided with land title under this scheme, and many more plot boundaries have been entered into the cadastral register; much titling activity has centred on the WRM to improve the functioning of urban land markets (GoSL, 2016c). The programme has faced some difficulties, however, providing land titles to residents with ambiguous or contested property rights claims, such as those in low-income settlements, or in cities of the north and east where complex ownership histories remain a legacy of the three-decade conflict.

5.2 Housing experiences and aspirations: a case study of Kandy

In this section, key issues relating to housing and tenure highlighted in Section 5.1 are explored through the housing stories of residents in low- and middle-income areas of Kandy MC.

Mahaiyawa – an 'underserved' settlement

Mahaiyawa was selected as a survey site as the largest of 23 'underserved' settlements in Kandy MC, comprising 851 housing units in 2012, and accounting for around 30 per cent of all underserved units in Kandy MC (MASHAV, 2016). It includes a mixture of building types, from poor quality dwellings made from non-durable materials to consolidated, planned structures. Surveys were conducted in March 2018 with residents in the community who highlighted a range of housing issues.

Lack of space and amenities were frequently cited as causes for concern. As Fig 5.8 shows, the settlement comprises densely arranged small housing units with limited space for extension. One respondent complained that in their home 15 members of 3 families were residing in only 4 rooms, which included a kitchen and bathroom. She noted 'we have no privacy'. Other respondents reported lacking private toilets, instead using public facilities serving the community. A mother noted the safety risks their daughters faced using public facilities, due to the threat of sexual assault, particularly during the evening. Opportunities to extend housing were limited because of space constraints. In some cases, respondents reported that local authorities or nearby landowners prevented them from expanding their homes.

A serious hazard identified by residents was related to wastewater management and associated disease exposure. WASH facilities were low capacity and could expose residents to hazardous waste, as illustrated by the following experience: 'there are 12 houses in our line and the drainage line for the public toilet pit runs alongside our houses. An overflow valve is located close to my house; when there is a line blockage, all the wastewater floods our house, causing frequent illness'. Stagnant water from domestic work (such as washing clothes) often lingered in open drains, exposing residents to dengue fever and other mosquito borne diseases, while flooding of dwellings was a frequent result of wet season rains. One resident, complained 'during the wet season stagnant water floods our house, exposing us to diseases. We cannot find any way to overcome this issue', while another reported 'there are no proper drainage facilities; it's a big issue here. We need proper drainage facilities to avoid disease, especially for children.'

No residents of Mahaiyawa had obtained a deed or land title, but instead conferred their property rights through UDA Enumeration Cards. However, given that utilities had been extended to the area and that many residents had lived in the area for 2 or 3 generations without issue, no respondents reported perceptions of tenure insecurity. However, residents did want deeds: a frequent reason cited was to access bank loans, and also for peace of mind; in the words of one resident, to be able to say 'this is my property'.

Fig 5.8: Mahaiyawa aerial and ground-level view (L to R)



Source: Google Earth and UN-Habitat/Ben Flower

An important issue for many respondents was not related to housing per se, but rather to social issues afflicting the Mahaiyawa settlement. Respondents highlighted alcoholism, drug abuse and sexual harassment, which affected women and children most severely. One respondent noted 'we feel fearful of leaving our children alone in our home; we feel insecurity about child abuse and sexual harassment.' The threat women faced restricted their mobility, particularly in the evenings. One female respondent recounted 'I finish work late in the evening because I work in a medical centre. I have to wait for my husband to collect me before I can come home because after 6pm there are many intoxicated men posing threats to my safety'. According to another female respondent, there was a culture of drinking among men in the area linked to their work-life culture: 'My husband, brother and sons drink alcohol very often and fight every day. I am left speechless by their behaviour. The culture around their job (servicing latrines in the MC area) encourages drinking.'

Social problems contribute to a negative perception of the settlement, and the people that live there, among Kandy's residents. This bad reputation has resulted in a number of issues for people living in the community. Respondents reported that their children could not obtain places at good schools, and that they suffered a variety of other forms of social stigma.

All respondents aspired to improve their housing situation by saving enough money to be able to afford a larger house

elsewhere in Kandy, but they faced financial constraints to achieving their aims. As one respondent, noted 'in 5 years we would like a detached house with 5 rooms in Kandy city with all facilities: toilet, attached bathroom, water, electricity. We all have been discussing a new house; we saw a house for 1 million rupees. We cannot afford this cost.' One resident summed up the financial constraints suffered by many in the community, highlighting access to finance: 'we have only one income source: my husband's job. His monthly salary is 30,000 rupees; it is not enough even for our day to day expenditure. We cannot apply for a housing loan with my husband's job as a temporary worker; banks also require a deed, but we don't have one'.

Deiyannewela-Suduhumpola – a middle-income residential area

Deiyannewela-Suduhumpola was selected as a middle-income residential area typical of Kandy MC. The housing units appeared larger and there are more areas of green space than was observed in Mahaiyawa (Fig 5.9). The area was not considered an 'underserved' settlement and residents of the area did not face the same issues with housing quality as did residents of Mahaiyawa. A key difference was space: as new additions were made to families, homeowners were able to extend their property – often by adding an additional floor. One respondent reported extending their accommodation in the previous year to include an additional unit on the third floor. Her family now live in this unit, with parents living below. The

respondent planned to build another floor with a further 3 rooms to be able to derive additional rental income.

Like residents of Mahaiyawa, residents did experience problems with WASH coverage. One respondent complained the area lacked 'proper drainage and sewerage facilities' such that during heavy rains latrines would leak on to the road and into water systems, exposing residents to disease. Other residents complained of flood waters inundating their homes during intense periods of precipitation due to low capacity drainage systems that overflowed, which also exposed residents to disease.

The biggest issue faced by residents is ambiguity about their land tenure. In this regard, there appeared to be a number of intersecting property regimes affecting the area. In some cases, this ambiguity had turned to insecurity. One respondent who was involved in a land conflict explained: 'Although we have lived on this land for generations, we don't have a deed and we are confused about who actually owns this land. Others also claim the land but they also cannot produce a deed. Other relevant government departments also do not have a clear idea either'.

Many residents who lived on contested land had tenure documents that conferred only occupancy rights, and that must be renewed annually. These types of occupancy permits

perpetuated social and economic exclusion in various ways. A key issue highlighted by respondents was that they were not able access bank loans using their document as collateral. Another issue related to accessing education because the type of tenure document a family holds determines the kind of schooling for which a child is eligible. Schools operate a score-based school application process, where those with the highest score are able to go to the best schools in the area. Short-term occupancy permits impact a child's application score, limiting their school choices. One mother claimed that her document caused her children to lose 15 marks on the application (out of a total of a 100) relative to those who have a full deed. She noted that the practice has worsened in the last year. Last year with her occupancy permit she received 2 points for kindergarten, and 6 for secondary school – this year 0 points out of 15.

Despite the problems facing residents, no respondents aspired to move from the area. Speaking of future plans, many respondents expressed a desire to further expand their property through the addition of more floors, either for their living needs or to derive a source of income, and highlighted access to finance as a key constraint in this regard. As one respondent reported: 'I would like to live in the same place, but build another floor with a minimum of 3 rooms to be able to rent out and get additional income. To achieve this I need to acquire a title deed and apply for a loan.'

Fig 5.9: Deiyannewela-Suduhumpola aerial and ground-level view (L to R)



Source: Google Earth and UN-Habitat/Ben Flower

5.3 Urban housing and a better urban future for all Sri Lankans

Housing is a key urban sector that relates to the competitiveness, inclusivity, resilience, safety and sustainability of Sri Lanka's cities in a variety of ways, Housing policy, therefore, is crucial to securing a *better urban future for all Sri Lankans*.

City outcome	Contribution of urban housing
Competitive	<p>Strengthening tenure security will make land markets more efficient, increase investment and stimulate credit markets, increasing growth of the urban economy.</p> <p>Increasing the stock of affordable housing will drive growth in housing markets.</p>
Inclusive	<p>Increasing tenure security is a key component of inclusive urban development, promoting social and economic integration.</p> <p>People-centred housing ensures that the diverse needs of communities are included in housing interventions.</p> <p>Currently, many people are locked out of homeownership because of constraints on accessing finance because of affordability and/or loan conditions. Resolving this issue will promote more inclusive urban land and housing markets.</p>
Resilience	<p>Access to durable housing with high-quality WASH services are an important factor in resilience to climate change.</p>
Safe	<p>Durable housing with adequate WASH services are key to securing the health of urban residents.</p> <p>Integrated housing policy that addresses social problems of a locality contributes to safer cities, benefitting women and children in particular.</p>
Sustainable	<p>Promoting formal land markets can potentially increase government tax revenue, securing the sustainable provision of public services.</p> <p>Creating support mechanisms for people-centred housing, through access to land, secure tenure and access to credit enable people to meet their own housing needs over the long-term.</p> <p>Access to adequate housing is an important social issue that promotes peace and stability. Therefore providing appropriate solutions for a range of affordability groups promotes social integration and the sustainable development of Sri Lanka's cities over the long-term.</p>

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CHAPTER 6

MUNICIPAL SERVICES AND
UTILITIES IN SRI LANKAN CITIES

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**PLEASE DON'T LITTER
HELP KEEP YOUR
COMMUNITY CLEAN**



This chapter provides an account of the current state of municipal services and utilities in Sri Lanka's 9 Provincial Capitals, identifying opportunities and challenges to their equitable and efficient provision, and suggesting policy options for improvement. The first section assesses the key social services provided by municipalities, focusing on health and education infrastructure. Following this, an assessment of municipal utilities is provided, focusing on Water, Sanitation and Hygiene (WASH) service coverage. Finally, an assessment of the availability and accessibility of public space is provided.

KEY MESSAGES

1. Due to rapid sprawl expansion in many cities, much of the demand for municipal services comes from the population living outside the Municipal Council (MC) boundary. Kandy MC, for example, has a population of 113,000, but also serves an additional urban fringe population of 117,000. This creates many challenges, including providing equitable service coverage to MCs and surrounding urban and rural areas; coordinating the provision, upgrading and/or maintenance of key services across highly integrated urban systems managed by different local authorities; and places strains on the financial resources of MCs that provide services for people living outside their jurisdiction.
2. Sri Lanka's Provincial Capitals provide key social services to their population and beyond, but access varies across regions. In Kurunegala, 9.1 per cent of built-up area is allocated to health and education compared to just 3.1 per cent in Badulla.
3. Significant investment is required to upgrade WASH systems. Less than 30 per cent of households across the Provincial Capitals report a piped sewerage connection, instead relying on vulnerable on-site disposal methods.
4. Sri Lanka's cities have significant areas of public open space. However, in fringe urban areas there is a need to safeguard areas for future public open space and recreational facilities – accessible to all – as cities grow.

6.1 Cities and municipal services

Urban centres provide key services that underpin Sri Lanka's socioeconomic development. Cities provide government administration functions, such as vehicle registration services, access to social protection schemes, and a range of additional services (see Chapter 9). They also include services to facilitate social recreational activities and promote community cohesion, such as libraries, community centres and other public spaces. Perhaps most importantly, urban centres provide residents with health and education services: providing equitable access to quality healthcare and education is a crucial component of *a better urban future for all Sri Lankans*.

To assess the provision of municipal services across Sri Lanka's 9 Provincial Capitals, a spatial analysis identified the proportion of land use dedicated to such activities as a percentage of the total MC built-up area.¹ This analysis revealed that on average around 8.6 per cent of all land use was allocated to the provision of municipal services, with around 4.7 per cent of all land use being used for health and/or education purposes. The sizeable portion of land

dedicated to such uses underscores the key social service functions played by cities, which serve both the MC populations, and those in fringe areas. In this regard, the large fringe populations associated with many MCs creates a range of challenges to effective and equitable service delivery (Box 6.1). There are also variations in the distribution of municipal services across urban centres. Figures ranged from a high in Kurunegala, where municipal services accounted for 13.9 per cent of all land use, to a low of around 5.2 per cent in Badulla and Kotte (Fig 6.1).

Focusing on the health and education as pivotal factors in Sri Lanka's socioeconomic development, the results suggest wide variations in the provision of such services between cities, from a high of around 9 per cent in Kurunegala and Kandy, to around 3 per cent in the more remote central, eastern and northern areas of the country (Fig 6.2). In the main, these results mirror patterns of educational attainment by MC population detailed in Chapter 3.

The suburban MCs adjoining Colombo, Kotte and Dehiwala, have a low coverage of health and education services because their populations can access the services of

¹ An alternative method applied by the research team was to calculate the MC population by the area of municipal service land use. However, this method produced skewed results in areas with high population density and high competition for land. For example, Colombo has a high population density, high competition and prices for land, which are reflected in concentrated public building land use patterns. Consequently, Colombo's population to public land use ratio is by far the lowest in the group, with very high population and municipal service buildings consolidated over a small area in multi-storey buildings. Using land area recognises that different cities have building densities relative to their different land market characteristics, and so is more representative of the relative availability of services across the sample cities.

Box 6.1: The mismatch between MC boundaries and municipal services demand

An important issue in the provision of public services is related to city boundaries. Many basic public services and the maintenance of key infrastructure is the responsibility of MC authorities. However, because of rapid sprawl expansion a large proportion of urban residents and users of MC services and infrastructure live outside of the MC boundary. Notable examples of this trend include Galle, which has an MC population of 104,000, but also serves an additional fringe population of 263,000, and Kandy, which has a population of 113,000, but also serves an additional urban fringe population of 116,000. Table 2.1 in Chapter 2 provides details of MC and fringe populations across the Provincial Capitals.

The large proportion of urban residents living outside the MC boundary has major impacts on public service coverage, cost and quality. A key issue is that outside of MC areas, local authorities, often rural Pradeshiya Sabhas, are responsible for providing key urban services. These local authorities can lack the financial and technical capacity of the MCs, and so service provision and maintenance of key infrastructure can be lower capacity compared to adjoining MCs, despite the fact that physical and socioeconomic economic characteristics – and the corresponding demand for services – are similar in both areas.

There are also issues related to the financial sustainability of MCs providing services to a large number of users outside their boundaries. Residents in peripheral areas commute into adjoining MCs to use healthcare, education, transport and a range of other services. The large demand put pressures on these services. Moreover, as these users do not live in the local authority area, they do not contribute to the costs of such services in relation to public revenue collection.

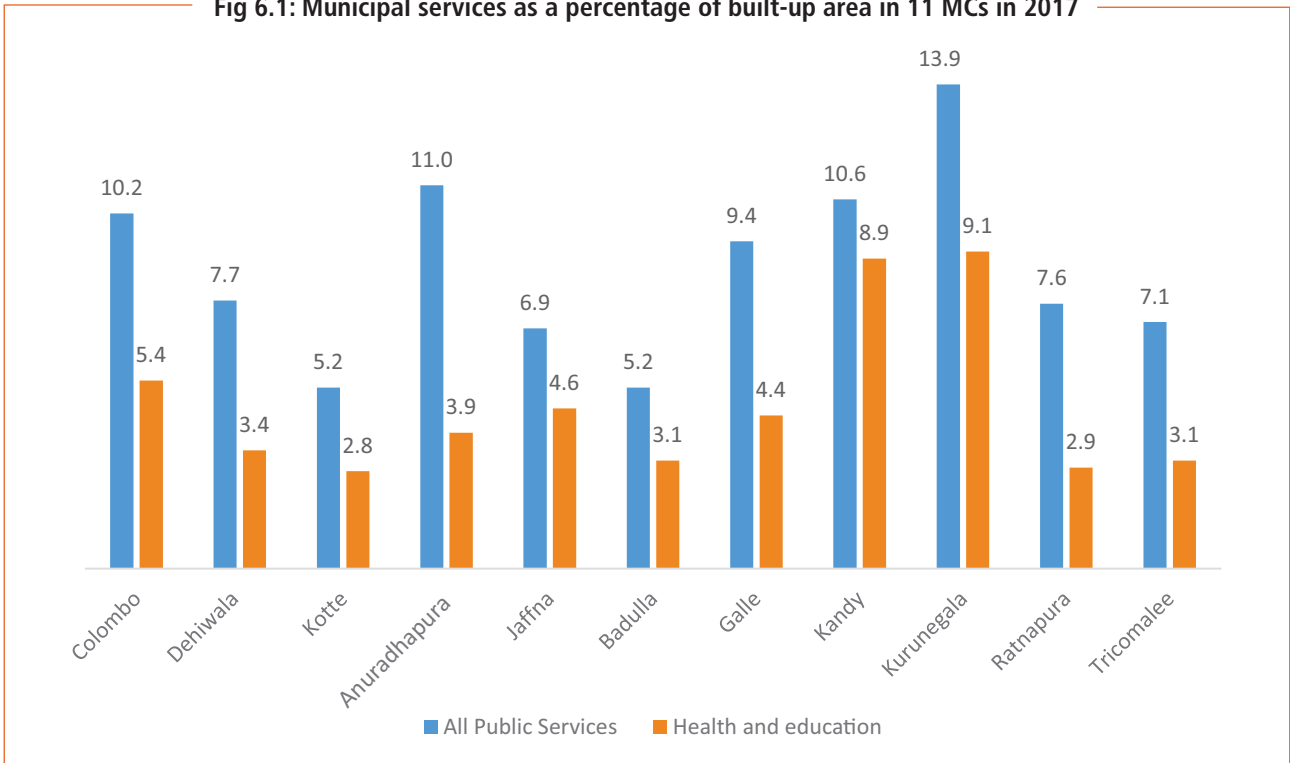
A key issue in the provision of effective municipal services is coordination in their provision, upgrading and maintenance. Coordination is particularly important in cities because urban systems are highly integrated – both spatially and across sectors. In large cities, such as the WRM, where service provision falls into the purview of a variety of different local authorities, coordination becomes a challenge, constraining the effective implementation of integrated city-wide municipal services.

Waste collection in Colombo MC



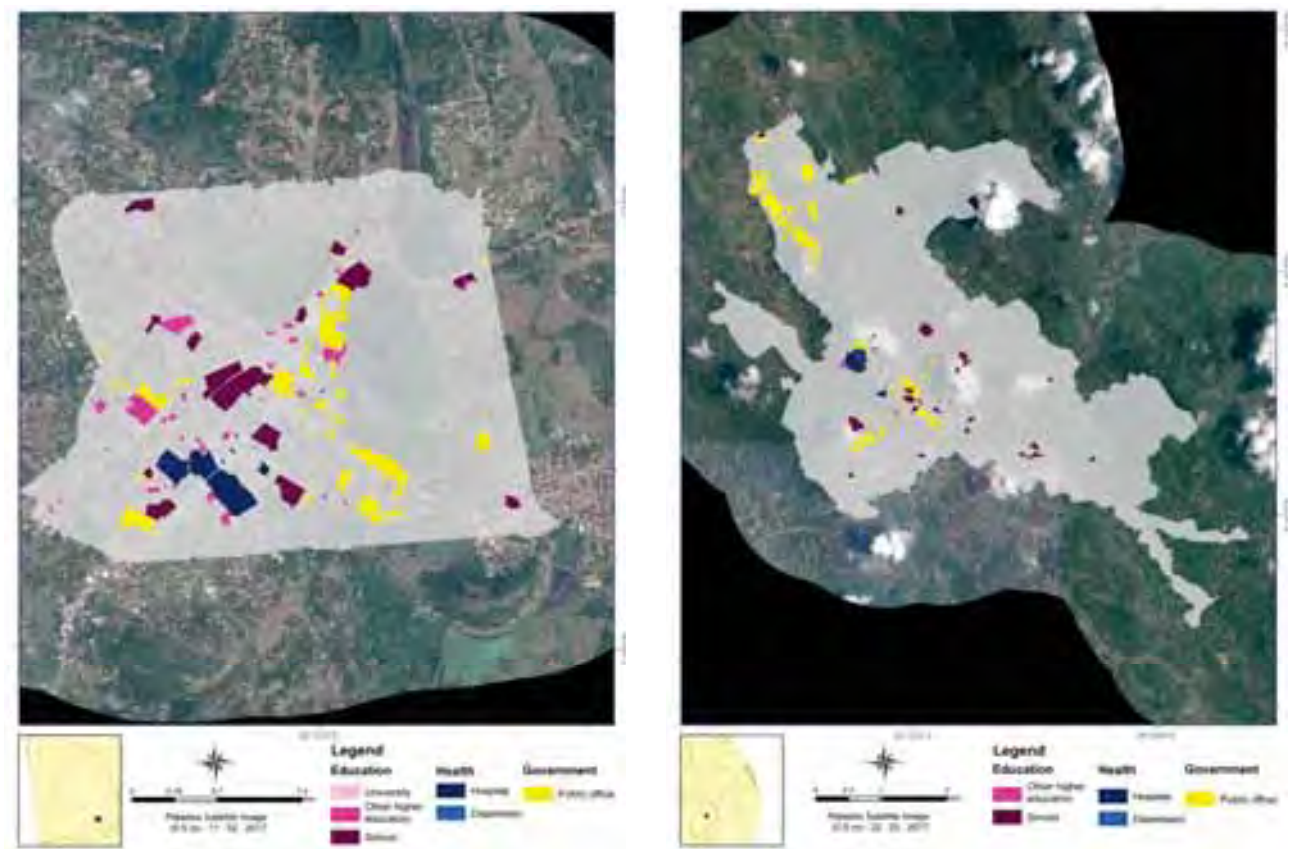
Source: UN-Habitat/Charlene Liao

Fig 6.1: Municipal services as a percentage of built-up area in 11 MCs in 2017



Source: SoSLC Project

Fig 6.2: Distribution of municipal services in Kurunegala (L) and Ratnapura (R) in 2017



Source: SoSLC Project

Table 6.1: Poverty incidence (2016) and municipal service provision

Municipal Council (Ranked by health and education service provision)	District Poverty Incidence (Per cent)	Province Poverty Incidence (Per cent)
1. Kurunegala	2.3	2.7
2. Kandy	4.2	5.4
3. Colombo	0.6	1.7
4. Jaffna	6.0	7.7
5. Galle	2.0	3.0
6. Anuradhapura	2.7	3.3
7. Badulla	5.9	6.5
8. Trincomalee	6.8	7.3
9. Ratnapura	4.8	6.7

Source: Data from SoSLC and DCS (2017)

Colombo MC, which can create challenges in the sustainable provision of public services (see Box 6.1). It is important to note that the 5.4 per cent health and education land use in Colombo MC likely underrepresents the extent of hospitals and schools in the city, which are often located in high-rise buildings, because their vertical extent is not captured in land use mapping. For example, Colombo's Durdans and Lanka hospitals are both over 10 floors.

Given the key role of health and education plays in citizens' socioeconomic development, the variation between Provincial Capitals is a policy challenge in promoting inclusive cities. In particular, addressing the relative lack of services in more remote areas constrains the GoSL aim of balanced long-term economic development across the county, and increasing the competitiveness of Sri Lanka's more peripheral urban centres.

Accessing tertiary education

Unpacking the health and education land use category reveal where the key policy challenges lie. In relation to access to primary healthcare and education services, Sri Lanka is often regarded as a success story in South Asia (Hewa, 2011). Primary school enrolment is 99 per cent and secondary enrolment rates are amongst the highest in the region (Dundar et al., 2017), while multiple health indicators – most notably maternal health – have improved markedly in recent years because of widening access to healthcare services (Banik, 2017). A priority challenge, however, is extending access to appropriate tertiary education and vocational training to provide the workforce with the necessary skills to drive economic growth and reduce poverty; providing these services to unemployed youth is a

particularly pressing social issue, as well as being imperative to economic development (GoSL, 2017; Hewa, 2011).

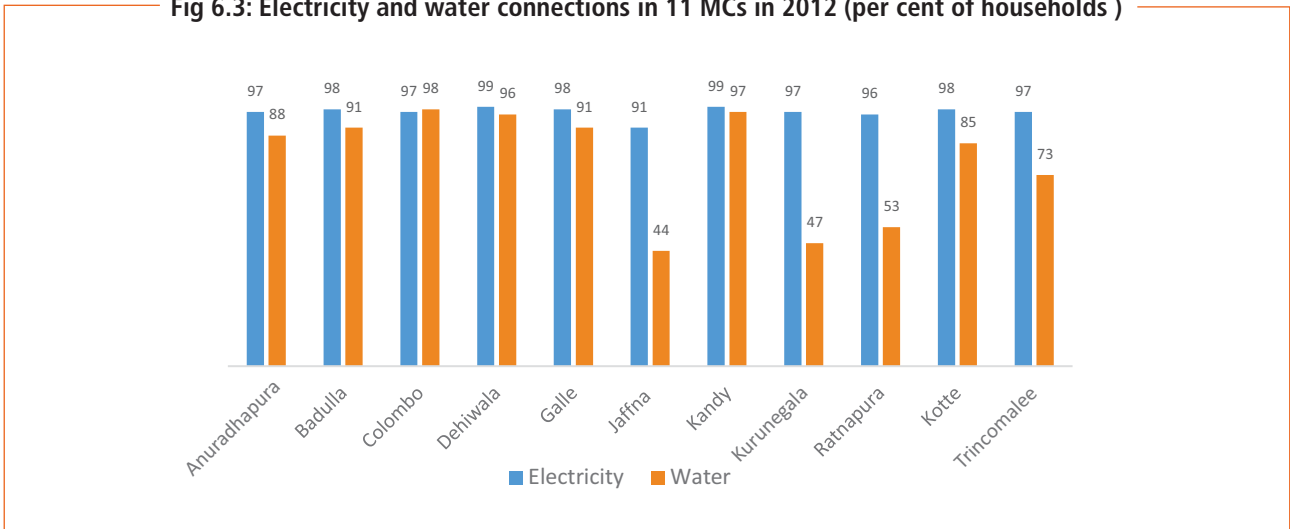
Currently, there exists considerable variation in the availability of higher education facilities across the country's cities. Out of Sri Lanka's 15 registered universities, for example, 6 are located in the WRM, including the University of Colombo, the University of Kelaniya, and the University of Moratuwa, amongst others.

Variations in tertiary education provision are also evident in the distribution of vocational training colleges across the 9 cities. Technical and Vocational Education and Training (TVET) Centres are an emerging tertiary education pathway, viewed by the GoSL and development partners as a key mechanism to appropriately equip the labour force with the skills that employer's demand. According to the GoSL's *Public Investment Programme 2017-2020*, there are 501 government operated TVET centres; an additional 611 are privately operated and registered with the government. In total, these centres catered to an intake of 182,829 students in 2014 (GoSL, 2017). SoSLC spatial analysis captured TVET centres in the 'other higher education' land use classification. It was found that cities in the Western, North Western and Southern Provinces had the highest proportion of land allocated to such activities: Kurunegala included around 14 ha of such land use, accounting for 1.4 per cent of all land use. In comparison, Ratnapura included just 1.5 ha of such land use, accounting for 0.07 per cent of all land use.

The variation in tertiary education and training provision across the 9 Provincial Capitals has implications beyond the city-scale, because urban centres serve residents beyond their municipal limits. In this regard, it is important to note the wider socioeconomic context in which disparities in municipal service provision persist. An important issue is that the differences appear to mirror district and provincial rates of poverty: those living in the districts and provinces with the highest poverty incidence live in the vicinity of cities with the least amount of municipal service (health and education) land use (Table 6.1). This again underscores the importance of equitable access to education and health in securing inclusive development across Sri Lanka, and contributing to the competitiveness of cities to stimulate local economic development. The main exception to this trend was Jaffna, which has a high poverty incidence but also a long history as a centre of education, which was interrupted by the conflict.

It is also of note that the poverty incidence in districts in the immediate vicinity of the 9 Provincial Capitals are in all cases lower than the provincial rates of poverty; the provincial figures also include more peripheral populations that are a greater distance from the services of cities. This trend has implications for our understandings of cities and socioeconomic development in Sri Lanka. First, that even in

Fig 6.3: Electricity and water connections in 11 MCs in 2012 (per cent of households)



Source: Data provided by DCS

Electricity meter on self-built dwelling



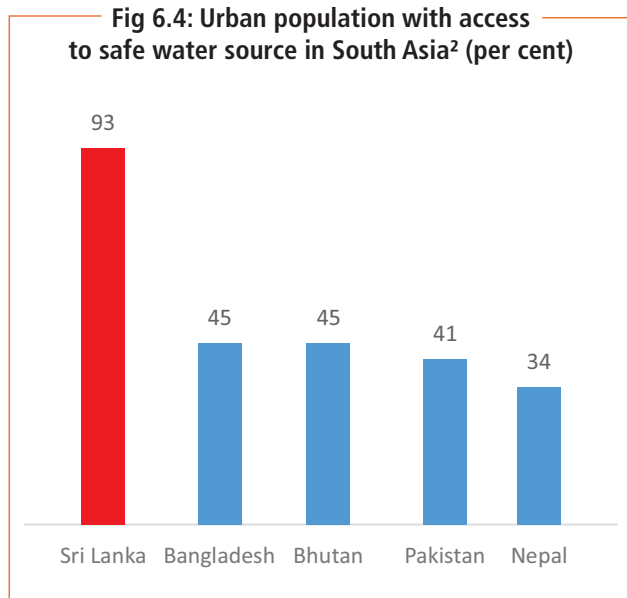
Source: UN-Habitat/Ben Flower

the most remote parts of the country, cities are hubs of socioeconomic development, which can be leveraged to stimulate growth and reduce poverty. Second, that those living in the most peripheral locations with the highest rates of poverty have the least access to urban services, highlighting the importance of rural-urban connectivity (see Chapter 7).

In some cases, the education and training functions of cities reach nationwide, which also has implications for city planners. Kurunegala, for example, is widely viewed as a national hub for TVET and other types of tertiary education

and training. The city's functionality in this regard was explored by the SoSLC team in Focus Group Discussions with MC officials in the city. In these discussions, education was highlighted as a key social service provided by the city as well as a driver of the urban economy: private education was identified by officials as the leading industry in Kurunegala. While municipal officials noted the benefits that the booming education sector brought to Kurunegala, they also highlighted several challenges. In particular, the presence of a substantial transitory population, which either commuted or located in the city for educational purposes and relocated following completion of their training. This transitory

Fig 6.4: Urban population with access to safe water source in South Asia² (per cent)



Source: World Bank (2018)

population placed stress on the provision of other municipal services by local authorities, through increasing demand and creating revenue collection challenges. The pressure applied on secondary urban systems to the education industry, therefore, has implications for sustainability of urban systems if remedial action is not taken. More broadly, the mismatch between MC boundaries and municipal service provision manifests in many urban planning challenges (see Box 6.1).

Rebalancing service provision across the country, particularly in regards to tertiary education and training infrastructure, is a core component of securing a *better urban future for all Sri Lankans*. Consequently, the GoSL is currently extending TVET and committing to other investments to increase the quality of education across the country, particularly in remote and high-poverty areas, including cities in central, eastern and northern areas (GoSL, 2017). However, there are challenges in providing incentives for skilled instructors to be based in these regions, and linking curricula to labour market demands and local economic activity in these more peripheral regions. In this context, alternative modes of education and training provision should be considered, including e-learning and innovative responsive mechanisms for curricula development that link to local labour market demands.

6.2 Cities and public utilities

The provision of public utilities in Sri Lanka's cities has improved markedly in Sri Lanka over the past decade. According to data from the Ministry of Power and Energy, Sri Lanka's grid connectivity increased from 70 per cent in 2005

to 98 per cent in 2015 (GoSL, 2015). The government is now focusing beyond the universal provision of electrification, to optimise energy infrastructure with new technologies, becoming energy self-sufficient in the medium term, and transitioning from coal-and oil-based electricity generation, to renewable energy sources.

Mirroring national level trends, census data reveals that the vast majority of households in the 11 MCs connected to grid electricity in 2012 (Fig 6.3). This is true for planned residential, commercial and public buildings, and also for informal settlements. The picture adjacent, for example, shows a Ceylon Electricity Board meter affixed to the front of a dwelling in Kandy's biggest informal settlement, Mahaiyawa.

While most urban households benefit from electricity connections, the census data shows variation in the proportion of households whose dwellings are connected to piped water. According to the 2012 census, the cities of Jaffna, Kurunegala and Ratnapura included large populations without piped water connections to their residence. In Jaffna, Focus Group Discussions revealed that lack of piped water connections presented significant hardships to some residents, particularly during times of drought (see Chapter 8). Households without a piped water connection directly to their dwelling usually have access to an improved water source: according to World Bank data, 93 per cent of Sri Lanka's urban households had access to a secure water source – more than double the figure for many other South Asian nations (Fig 6.4).

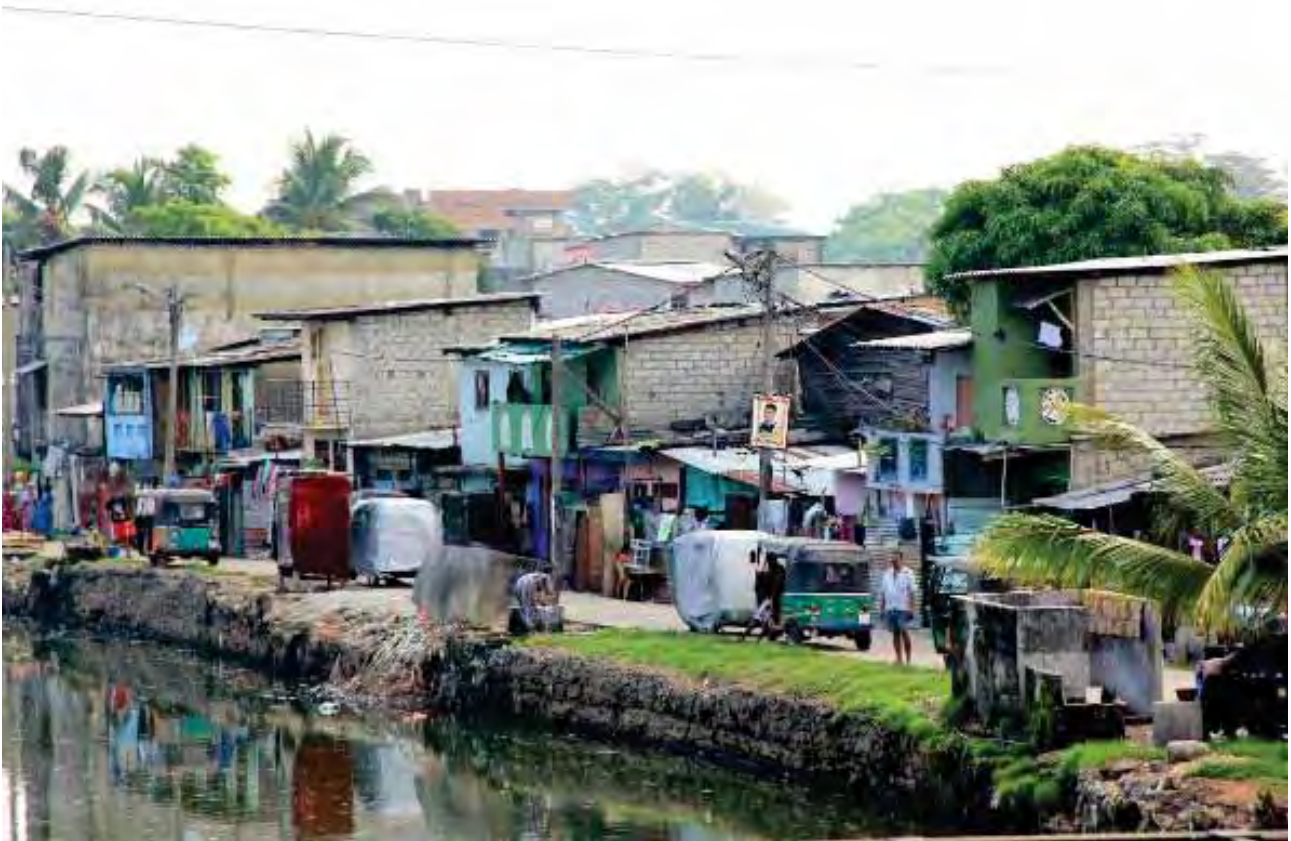
Wastewater management

While Sri Lanka's cities generally measure up well in working towards universal access to electricity and safe water, there are other areas where significant challenges remain. Focus Group Discussions with municipal officials revealed wastewater management as a priority issue.

Wastewater or sewage in Sri Lanka falls into one of two categories, black water (from sanitary facilities) and grey water (e.g. from kitchen, laundry and bathing). Unlike effluents from industrial or health facilities, wastewater from domestic sources usually does not have toxic content. Therefore, managing domestic wastewater is mainly a matter of disposal in hygienic and environmentally friendly manner. However, given the magnitude of wastewater generated in urban areas where population and economic activities are concentrated within a limited space, proper disposal is a challenging task that requires substantial investments to construct sewerage infrastructure and operations, and to ensure their appropriate maintenance.

²The percentage of people using drinking water from an improved source that is accessible on premises, available when needed and free from faecal and priority chemical contamination. Original data source WHO/UNICEF Joint Monitoring Programme for WASH. Figures not available for India and Maldives.

Polluted waterbody in Colombo area



Source: UN-Habitat/Charmalee Jayasinghe

Wastewater management strategies available to urban residents include offsite and onsite disposal. In general, offsite disposal refers to piped connections with or without centralized treatment facilities. This method of disposal is practiced more widely in modern cities in developed as well as developing countries. Onsite disposal refers to the disposal of waste in self-contained systems, such as latrines or related facilities. Offsite disposal of wastewater with centralized treatment facilities is considered the more effective to promoting safe cities, because onsite disposal can create health hazards in urban centres, particularly those with high population densities.

Wastewater management is particularly important for Sri Lankan policy makers because of commitments made in GoSL policy documents to provide adequate sanitation to all urban households, which is also a crucial component of SDG 11, Sustainable Cities. However, Sri Lanka's urban policy makers face major challenges to effective wastewater management, both in relation to offsite and onsite disposal.

A key issue is that onsite wastewater disposal is prevalent in urban areas across the country. According to the 2012 census, less than 30 per cent of households had a piped sewerage connection to their dwellings (Table 6.2). This includes the MCs associated with the Colombo urban area, Dehiwala and Kotte; around 42 per cent of households in Colombo MC also practice onsite waste disposal.

The census data includes four types of onsite sanitation methods of which water-sealed toilets connected to septic tanks are most typical. Other studies, however, indicate that this category appears to be comprised of two major forms, dual chamber septic tanks and open bottom soakage pits, with the latter being more common (Bandara 2014). In Gampaha district, which along with Colombo and Kalutra districts comprise the WRM, the respective shares of open bottom soakage pits and septic tanks were 18 per cent and 82 per cent (ibid.).

The prevalence of onsite disposal presents both human health hazards and contamination risks to urban ecological habitats, because such systems are prone to leakage, particularly in waterlogged conditions. Consequently, onsite waste management practices have implications for urban resilience to disasters and climate change, which expose vulnerable systems to floods of increasing severity, duration and with increasing frequency (See Chapter 8). In this context, residents of low-income settlements are most at risk to contaminated wastewater, given they often have the lowest capacity onsite systems and live in peripheral areas prone to flooding (see Chapter 5 and Chapter 8).

There are also challenges to implementing an appropriate system of offsite wastewater management in Sri Lanka's cities. Colombo MC is the only one of the 9 Provincial Capitals to have an operational municipal sewerage system. Consequently, census data shows the city has the highest coverage of piped sewer connections in the country, with 58 per cent of households reporting a piped sewer connection to their dwelling. Colombo's sewerage system consists of two pipe connection networks established in northern and southern sections of the city (Fig 6.5). These two networks include over 250 km gravity lines and 15 pumping stations, which collect and courses wastewater to the sea through two outfalls located in Modara (Northern Sea Outfall) and

Wellawatte (Southern Sea Outfall). Originally constructed during the Colonial period, the expansion and upgrading of the system has been slow and haphazard: over 80 per cent of the system has not been upgraded from the network established in 1902; sections of the system are in poor condition, and require urgent renovation (CMC, 2018). Moreover, the system does not have treatment facilities and so pumps untreated waste directly into the sea. This practice has significant implications for marine life, and conflicts with the GoSL's commitment to the Sustainable Development Goals, particularly Goal 14, Life Below Water.

There are also issues relating to the types of systems present in households reporting piped sewerage connections in contexts where there exists no municipal sewerage service. In these cases, untreated waste is often piped directly into water bodies, including rivers, canals, lakes and wetlands (World Bank, 2013). This practice is prevalent in the Colombo area, particularly in peri-urban areas with no municipal sewerage coverage. As is the case with other inappropriate wastewater management methods, contaminating urban ecological habitats has severe implications for the sustainable development of the urban environment and poses health risks for urban residents, particularly during periods of flood, and for informal settlements in flood prone locations (Chapter 8).

Low income settlement in Kandy



Source: UN-Habitat/Charlene Liao

Fig 6.5: Colombo MC sewerage system in 2017



Source: Data from UDA

Table 6.2: Wastewater management in Sri Lanka's cities in 2012

Province	MC/UC	No. HH	Connected to Piped Sewer System (Number of HH & % HH)		Onsite Disposal (Number of HH & % HH)					Total (%)
			No.	%	No. Septic tanks (water sealed)	No. Pour Flush	No. Direct Pit	No. Other	No. Without Toilet	
Western Province		1,482,221	126,649	8.5	1,311,882	21,733	17,892	2,193	1,872	91.5
Colombo MC		122,421	71,109	58.1	48,501	966	1,093	749	78	42.0
Dehiwala MC		47,264	7,261	8.6	41,813	429	786	40	15	91.2
Kotte MC		27,583	1,775	6.4	24,875	628	313	26	1	93.7
Eastern Province		397,083	12,245	3.1	335,189	14,776	9,740	224	24,909	96.9
Trincomalee UC		12,928	1,177	9.1	10,781	1,337	331	6	25	96.5
North Western Province		646,145	12,805	2.0	601,595	9,373	11,050	233	11,089	98.0
Kurunegala MC		5,774	280	4.8	5,425	44	12	-	22	95.3
Central Province		658,911	29,554	4.5	569,085	19,932	30,442	439	9,459	95.5
Kandy MC		24,229	2,258	9.3	21,186	375	417	7	13	90.8
Sabaragamuwa Province		506,642	17,390	3.4	459,376	10,060	16,740	211	2,865	96.6
Ratnapura MC		10,563	1,119	10.6	9,125	233	104	1	8	89.7
Southern Province		636,406	12,386	1.9	599,862	7,820	13,950	284	2,104	98.1
Galle MC		19,269	1,080	5.6	17,302	759	101	15	12	94.4
Uva Province		335,037	12,408	3.7	292,271	8,512	17,134	190	4,522	96.3
Badulla MC		10,521	280	2.7	9,649	26	14	1	5	97.3
North Central Province		342,366	9,708	2.8	301,996	8,092	15,067	159	7,344	97.2
Anuradhapura MC		16,334	845	5.2	15,220	53	166	-	50	94.8
Northern Province		259,471	7,177	2.8	211,992	11,434	4,529	221	24,118	97.2
Jaffna MC		18,348	266	1.4	17,321	364	338	4	95	98.6

Source: Data from DCS

Solid waste management

Effective solid waste management is another key challenge area for Sri Lanka's cities. Unlike piped water supply and wastewater management, where national agencies play an increasingly important role, the major responsibility of urban solid waste management still lies with local authorities. Collection and proper disposal of garbage has become a major challenge for municipal authorities across the country; the challenge is likely to become greater given the trend of urban expansion and changing consumption patterns in Sri Lanka's population. It has been projected that average per capita generation of waste would increase up to 1.0 kg/person/day by 2025 (Bandara & Hettiarachchi, 2010).

The waste management practices of urban authorities and residents varies across cities. Table 6.3 draws on 2012 census data to present solid waste disposal methods used by households across the 9 Provincial Capitals. The highest proportion of waste collected by authorities was reported in Colombo (98.3 per cent) followed closely by Dehiwala and Kotte. The lowest proportion was reported in northern and central cities, with the lowest share reported in Ratnapura (27.8 per cent).

The data on waste management reveals key challenges for local authorities. These challenges relate to both offsite and onsite solid waste management.

The first is the prevalence and practices of onsite disposal in some urban areas. Table 6.3 shows that the burning and burying of garbage is common in urban areas where local authorities fail to collect waste, including Ratnapura, Anuradhapura and Jaffna. Burning of garbage in densely populated urban areas contributes to air pollution: residents often incinerate polythene and plastic, releasing toxic gases to the atmosphere. Pollution is also caused by the dumping of uncollected garbage in the vicinity of dwellings, which can become breeding grounds for mosquitos, exposing populations to dengue and other mosquito-borne diseases (See Chapter 8). Discarded waste also exposes urban residents to a range of other health risks and is often dispersed by animals and washed off by rain into surrounding water sources, and can become particularly hazardous to human health during periods of flood. Resultantly, onsite disposal practices have severe implications for the safety of Sri Lanka's cities, the sustainability of urban systems, and ultimately, the livability of cities.

Municipal refuse collection in Kandy



Source: UN-Habitat/Charlene Liau

Table 6.3: Solid waste collection and disposal in Sri Lanka's cities in 2012

Province	MC/UC	No. HH	Collected by Authorities (Number of HH & % HH)			Disposed by Occupants (Number of HH & % HH)					Total (%)
			No.	%	No. Burn	No. Burry	No. Composting	No. Open Dumping	No. Other		
Western Province		1,482,221	618,269	41.7	593,413	202,000	58,266	5,683	4,590	58.3	
	Colombo MC	122,421	120,313	98.3	522	321	67	634	564	1.7	
	Dehiwala MC	47,264	45,694	96.7	976	226	171	184	13	3.3	
	Kotte MC	27,583	26,838	97.3	317	243	169	18	5	2.7	
Eastern Province		397,083	152,495	38.4	152,815	80,565	9,110	1,958	140	61.6	
	Trincomalee UC	12,928	10,178	78.7	3,077	83	30	31	5	25.0	
North Western Province		646,145	44,955	7.0	395,732	166,300	36,764	1,869	525	93.0	
	Kurunegala MC	5,774	5,190	89.9	340	79	164	1	-	10.1	
Central Province		658,911	84,522	12.8	279,670	177,659	83,777	25,004	8,279	87.2	
	Kandy MC	24,229	20,292	83.8	2,080	1,004	590	97	166	16.2	
Sabaragamuwa Province		506,642	33,230	6.6	218,899	201,238	49,121	3,207	947	93.4	
	Ratnapura MC	10,563	2,941	27.8	3,719	2,804	783	152	36	70.9	
Southern Province		636,406	68,895	10.8	309,611	186,556	68,044	2,438	862	89.2	
	Galle MC	19,269	14,315	74.3	2,999	1,081	627	14	5	24.5	
Uva Province		335,037	22,021	6.6	162,239	95,772	48,784	4,352	1,869	93.4	
	Badulla MC	10,521	7,411	70.4	1,380	1,168	530	27	5	29.6	
North Central Province		342,366	19,192	5.6	227,383	70,050	25,255	228	258	94.4	
	Anuradhapura MC	16,334	7,612	46.6	6,878	1,144	607	78	15	53.4	
Northern Province		259,471	34,371	13.2	146,866	48,611	27,485	1,787	351	86.8	
	Jaffna MC	18,348	10,208	55.6	5,661	1,485	98	107	49	40.3	

Source: Data from DCS

Table 6.4: Waste collection in the provincial capitals in 2016³

Municipal Council	Waste collection (Tons/day)
Colombo	775
Dehiwala	170
Kotte	100
Trincomalee	26
Kurunegala	48
Kandy	130
Ratnapura	32
Badulla	28
Anuradhapura	25
Jaffna	69

Source: JICA (2016)

The second issue is related to local authorities' capacity to dispose collected waste. All municipal authorities have a substantial volume of solid waste to manage daily, although this varied markedly between cities, with those with the largest populations producing the most waste. The daily solid waste collection requirements of Colombo MC was the by far the highest and amounted to around 750 tons per day (JICA, 2016; Table 6.4). The poor management of this collected garbage by local authorities is a major factor increasing urban environmental and health risks in Sri Lanka's cities.

The common method of disposal adopted by municipal authorities is open dumping in around 350 final garbage

disposal sites across the country (JICA, 2016). Open dumping of garbage by local authorities leads to numerous environmental and health issues. It leads to increases of vector populations such as mosquitos, causes problems of odor in surrounding areas and impacts the aesthetic value of the landscape. Leachate seeps into sub-surface and nearby water sources, polluting water sources such as groundwater wells. Often, dumping sites are located close to wetlands in low-lying flood retention areas: aside from polluting wetland habitats, converting wetlands to dumpsites reduces the flood retention services of wetlands, and makes surrounding areas more vulnerable to flash flooding (Chapter 8).

The most tragic manifestation of weak solid waste management systems was the collapse of the Meethotamulla dump that took place in April 2017. The dump was a key solid waste disposal site for the Colombo area, and had grown dramatically in size over the decade preceding its collapse (Fig 6.6). According to officials reported in the media, the dump had far exceeded its designed storage capacity: the 21 acre site had been filled to a 48.5 meter depth of waste, but was only designed to be filled to 30 meters. A project undertaken by an NGO prior to the collapse reported that the Meethotamulla area comprised of a settlement inhabited by low-income families who suffered severe hardships due to the garbage mound. According to the NBRO, the garbage heap was located on marsh land, the periphery of which had been occupied by self-built dwellings prior to 1990. The dump collapse in 2017 resulted in 32 deaths, 60 dwellings were destroyed and 27 suffered damage, and 100 families were displaced from the area.

A garbage collection vehicle in Kotte



Source: UN-Habitat/Isuru Prabha

³Data for Galle is not available.

Fig 6.6: Meethotamulla dump in Dec 2004 (L) and just prior to the collapse in April 2017 (R)



Source: Google Earth

6.3 Municipal public spaces

Inclusive, accessible and maintained public spaces are a key municipal service that provide many important functions. Public space takes many spatial forms, including parks, streets, sidewalks, footpaths, squares and playgrounds (UN, 2015). They are spaces which serve a multitude of purposes, including formal and informal social, cultural and economic activities, and provide opportunities to build social capital (WHO, 2016). Public spaces, like parks and squares, can also positively impact physical activity, social and psychological well-being, improve air quality and reduce exposure to noise (ibid.). The SDGs recognise the importance of public spaces in creating inclusive, safe and sustainable cities with target 11.7, which highlights the need to provide universal access to safe, inclusive and accessible, green and public spaces.

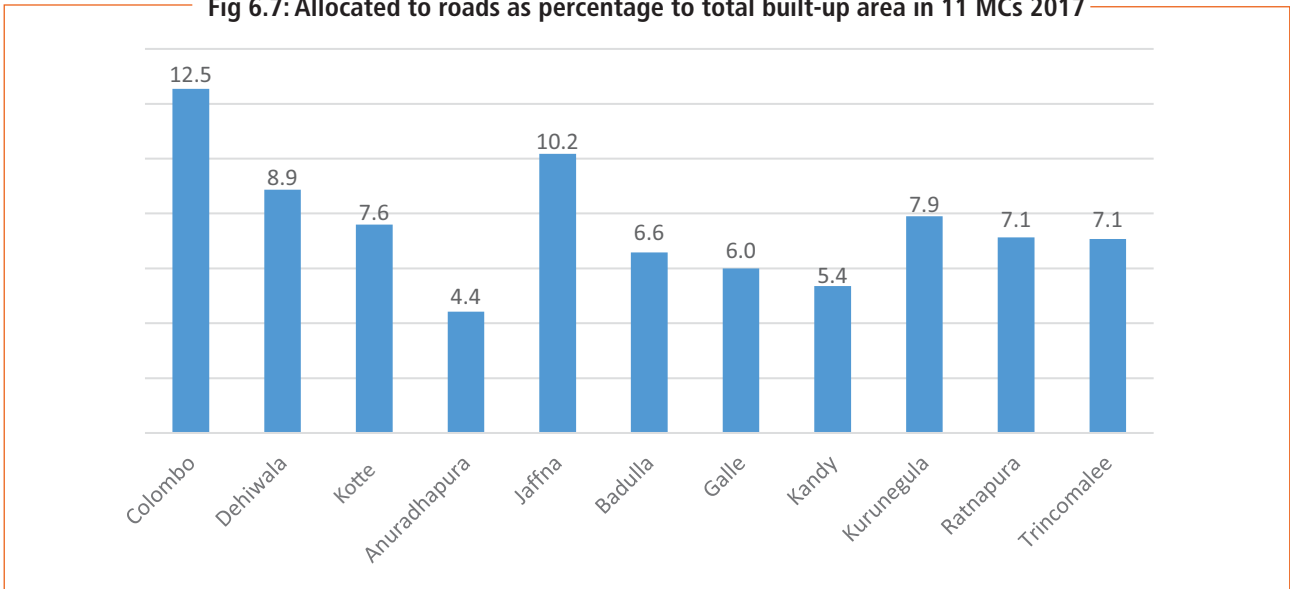
Streets and footpaths are a key component of urban public space. They also play an integral part in a city formation and determine how people use and access the city. A well connected area of the city improves accessibility to services, goods and economic opportunities (UN-Habitat, 2013). A defining physical characteristic of informal settlements is the lack of streets, which constrain equitable access to water supply, storm drainage, sanitation/waste collection and power supply, as the absence of streets hinders accessibility and infrastructure provision in these areas of the city. Good street connectivity helps to reduce traffic congestion, commuting time, motor vehicle commuters, but also reduces fares, fuel consumption, traffic fatalities and greenhouse gas emissions (ibid.). In addition to this street vending also supports entrepreneurship which contribute to economic activity, but if poorly managed, can increase transport conflicts by contributing to congestion or reducing walkability of areas.

SoSLC spatial analysis shows that the city with the highest proportion of roads as a proportion to its built-up area is Colombo (12.5 per cent) followed by Jaffna (10.2 per cent) and Kurunegala (7.9 per cent) (Fig 6.7). Globally, these figures are relatively low, as research by UN-Habitat has found that most city cores have 25 per cent of land allocated to streets while in suburban areas it is less than 15 per cent (UN-Habitat 2013). It is important to note that simply identifying land allocated to streets does not give a full picture of street connectivity. To better understand street connectivity, a combination of variables is required: proportion of land allocated to streets, street density and intersection density (ibid.). Hence, further research needs to be undertaken to better understand the dynamics of street connectivity; it is an important issue that needs to be considered in city planning as a valuable stock of public space, and as a driver of other types of social and economic development.

Another critical issue is the need to plan for and protect public spaces when planning city extensions, city infill development and slum upgrading activities. In this regard, a WHO (2016) study highlighted key indicators associated with the availability, accessibility and usage of public spaces. Availability measures quantify open space without distinguishing what is publically available and without consideration to the proximity of the space to residents. Accessibility considers the proximity of the space to potential users, whether the space is publicly accessible (with or without entry fee), and specific access points. Usage measures look in detail at how people or communities use the space and can be subjective.

The SoSLC spatial analysis provides insights into the availability and accessibility of public spaces. In this regard, the definition of public space used in the spatial analysis

Fig 6.7: Allocated to roads as percentage to total built-up area in 11 MCs 2017



Source: SoSLC Project

comprises: parks, sports grounds and cemeteries (Fig 6.8). Parks include spaces that are usually free to use, or if a fee is payable, access is open to the public. On the other hand, sportsgrounds are spaces where a fee is payable to use and/or access the space and may require membership. Some cemeteries may also be used by the public in the same manner as a park, for example the Second World War Cemetery in Kandy. These overlapping definitions highlight the complexities in considering what constitutes a public open space. The land use mapping also identified urban ecosystems, such as wetlands and forests, some of which are publically accessible. An analysis of these land uses are included in Chapter 8.

The city with the highest proportion of public space in proportion to built-up area is jointly Kandy and Colombo; Kandy has the highest proportion of parks of all the MC areas, making up 4.19 per cent of its total built up area (Fig 6.8). It also has the second highest proportion of cemeteries and the third highest proportion of sportsgrounds. The Colombo suburbs of Kotte and Dehiwala also have low public space coverage, underscoring the fact that users of Colombo MC services are often from outside the MC. The lowest outside the WRM is Ratnapura. It should be noted, however, that Ratnapura has large urban ecological habitats, some of which may be accessible to the public, which have been categorised as urban ecosystems in land use analysis (see Chapter 8). These overlapping functions of urban systems again underscore the complexity of defining public space.

There were also variations in the distribution of free-access public space. For example, sportsgrounds make up the majority of public space in Trincomalee and Colombo. This

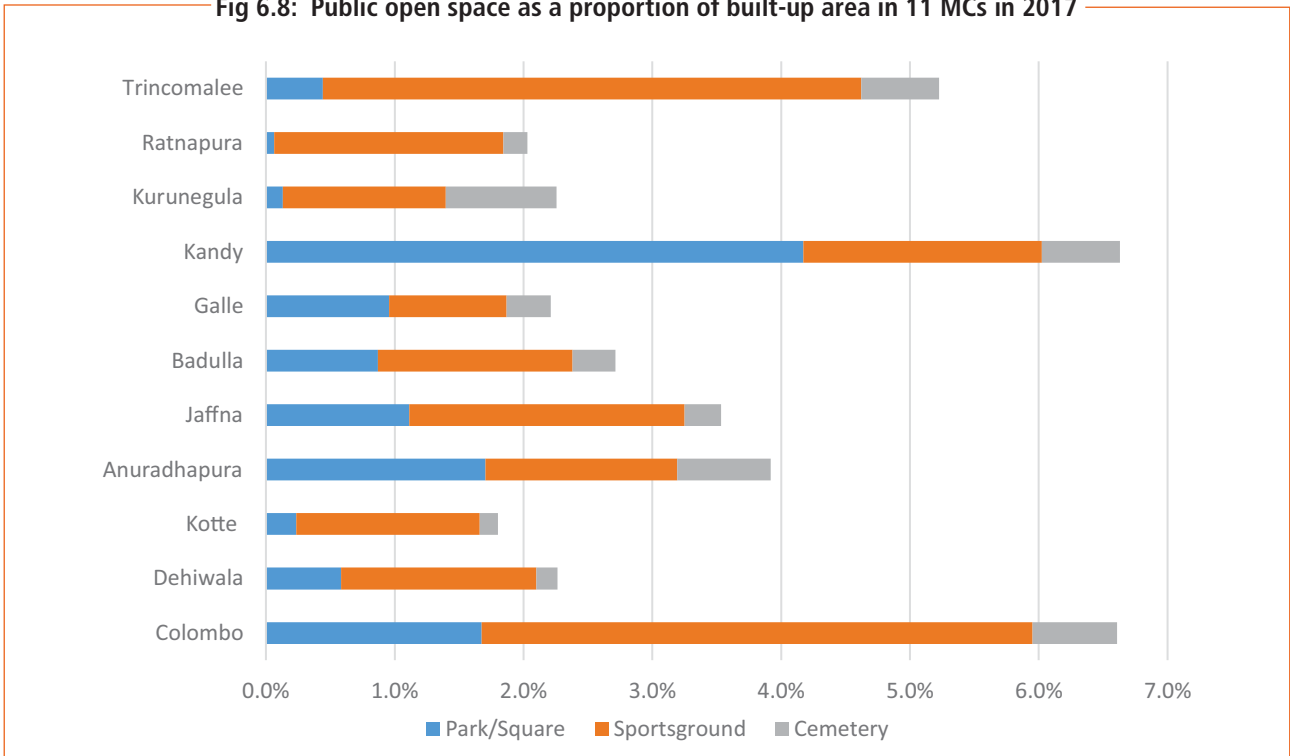
raises inclusiveness issues for these cities as sportsgrounds are defined as spaces which requires a payment and may have restricted access. In contrast, the larger proportion of Kandy public space was publically accessible.

The benefits of public spaces means that they should be accessible for all population groups and distributed equitably within the city. Studies have shown that the health benefits aligned with access to green space may be strongest among the lowest socioeconomic groups (WHO, 2016). Often low-income groups are the most exposed to poorer air quality and urban environments. Improved access to public green spaces can also help mitigate air pollution and in coping with extreme temperatures. Jenerette et al. (2011) suggest that wealthier people have more means to cope with extreme temperatures due to access to cooling systems while lower-income populations rely more on what is publically available. As such, cooling vegetation is especially important for the urban poor. Given the importance of public space, the WHO recommends an 'urban green space'⁴ with a minimum size of 0.5 ha is available within 300 metres of residents (WHO, 2016). The size of a green space is important as it is likely to influence the levels and types of activities people undertake. Larger parks are preferable than smaller parks as they increase the types and levels of physical activity (ibid.).

In Colombo MC, the SoSLC project has assessed the population density within 300 metres of a publically accessible park (refer to Fig 6.9). The largest area of parks greater than 0.5 ha are concentrated in areas where there is no resident population (around Galle Face) or within the wealthier suburb of Colombo 7. However, near the informal settlements located around the north of Colombo, there is

⁴Defined as publically accessible with no fee.

Fig 6.8: Public open space as a proportion of built-up area in 11 MCs in 2017



Source: SoSLC Project

population density but relatively little public space. This poses considerable equity concerns as Colombo’s population continues to increase and spread.

Equitable considerations are not just limited to accessibility of a public area but also in the design and maintenance of public spaces. Poorly maintained and designed public spaces

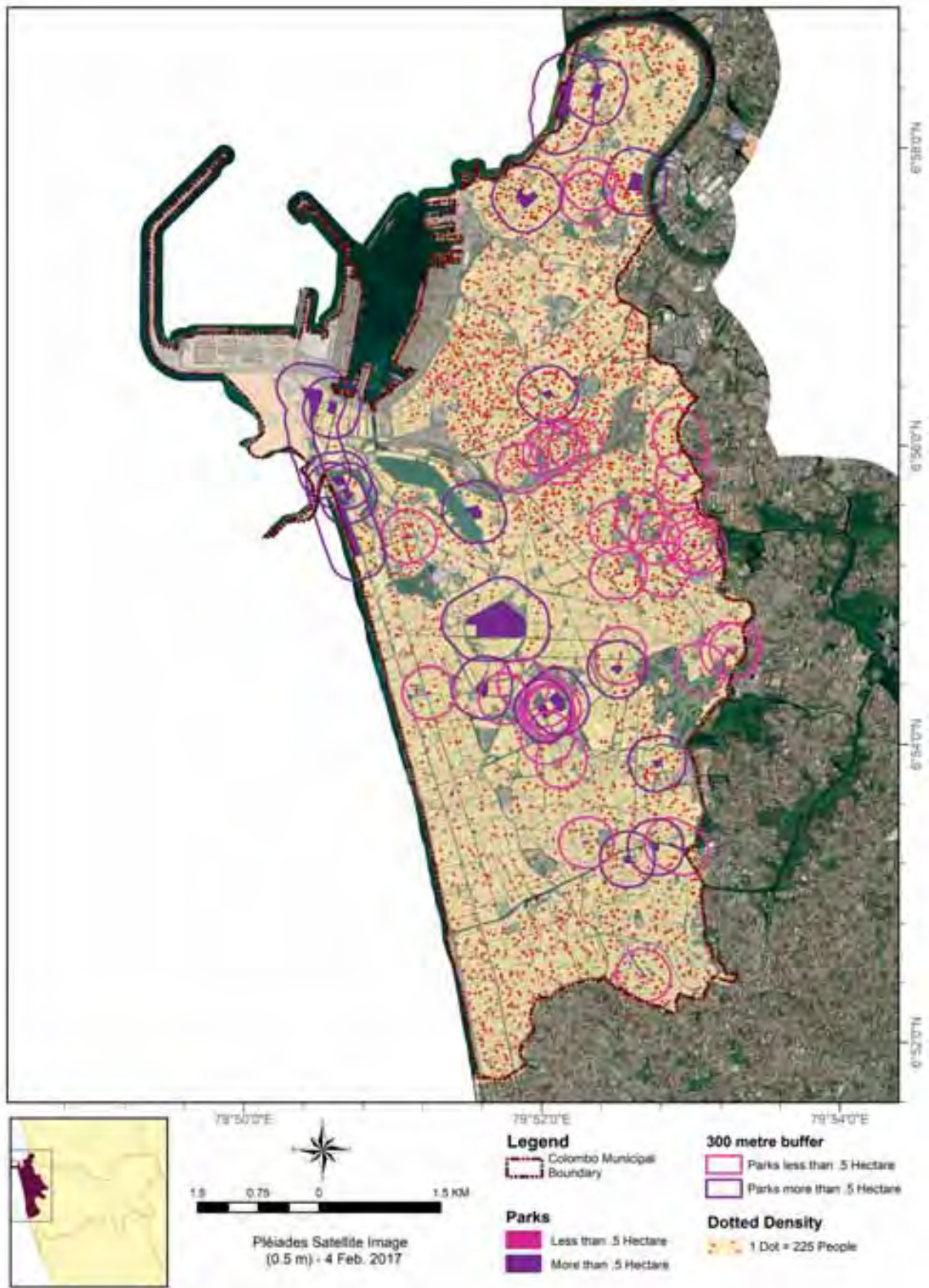
reduces urban vitality and social cohesion (Falu 2018). Gender considerations are important as women perceive open public spaces to be more vulnerable spaces than men. Incorporation of greater lighting, emergency phone booths and ensuring that vegetation is trimmed to maintain greater lines of sight, especially around corners, can help increase perceptions of safety.

A game of cricket in a Municipal park in Galle



Source: UN-Habitat/Charlene Liou

Fig 6.9: Access to parks in Colombo MC in 2017



Source: SoSLC Project

6.4 Municipal services and a better urban future for all Sri Lankans

Equitable and efficient delivery of municipal services are crucial for the social and economic development of cities and the wellbeing of their populations, and contribute to a *better urban future for all Sri Lankans*.

City outcome	Contribution of municipal services and utilities
Competitive	<p>Providing appropriate training services to up-skill the workforce in Sri Lanka's cities will drive economic development and encourage investment.</p> <p>Providing high quality WASH services will improve the liveability of cities, stimulating business and investment.</p> <p>Public spaces are used for a multitude of purposes including entrepreneurial street vending which helps drive economic activity. In addition to this, public spaces can help attract and retain a skilled workforce that value the liveability aspects of a city.</p>
Inclusive	<p>Extending high quality education and training programmes across urban centres promotes inclusive social and economic development, and works towards poverty reduction.</p> <p>Adequate WASH infrastructure in peripheral areas promotes equitable social development in the country's most vulnerable urban populations.</p> <p>Public spaces spread equitably throughout the city and accessible for all, particularly women and the elderly, promote inclusive urban development.</p>
Resilient	<p>Up-skilling urban residents insulates them from economic shocks.</p> <p>Appropriate WASH services increase urban resilience to disasters and climate change, particularly in relation to reducing exposure to contaminated urban flood waters.</p>
Safe	<p>Robust WASH systems reduce exposure to disease.</p> <p>Public space helps to improve the health and wellbeing of residents with research showing that the greatest improvements in these areas are among the urban poor.</p>
Sustainable	<p>Sustainable urban development is underpinned by an appropriately skilled workforce and training infrastructure that can respond to changing labour market demands.</p> <p>High quality WASH services are crucial for the environmental sustainability of cities, particularly in relation to reducing contamination of Sri Lanka's urban ecological habitats.</p>

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An aerial photograph of a coastal urban area. A multi-lane road on the left is filled with various vehicles including cars, motorcycles, and a white bus. To the right of the road are railway tracks with a blue and orange train. Further right is a sidewalk with a billboard, and then a dense line of palm trees. The ocean is visible on the far right. A white text box is overlaid on the right side of the image.

CHAPTER 7

URBAN CONNECTIVITY AND MUNICIPAL TRANSPORT

This chapter provides an overview of urban connectivity and municipal transport in Sri Lanka's 9 Provincial Capitals, drawing on spatial analysis and transport surveys conducted by the SoSLC project. First, the state of intercity connectivity is assessed, highlighting the coverage of key hard and soft infrastructure connecting cities across the island and beyond, and attributes of rural-urban connectivity that link deprived populations in remote areas to the opportunities of urban centres. Second, the chapter focuses on municipal transport, identifying issues associated with private motorised vehicle usage, in addition to public and non-motorised forms of urban mobility.

KEY MESSAGES

1. Connectivity between Sri Lankan cities by road and rail is improving. Travel times to Galle are now around 2 hours 30 minutes from Colombo Fort, rather than up to 4 hours via the old Galle Road. However, many parts of the country, particularly poverty-stricken and remote rural areas, have long travel times to access basic urban services.
2. Urban sprawl is a factor driving increased usage of private vehicles, which is contributing to the rising congestion, social, environmental and health problems, especially air pollution, increased accident fatalities and longer travel times, particularly in Colombo.
3. There is a need for upgrading, increased coverage, safety and management of urban public transport systems, use of smart transport infrastructure, cycle paths and walkways, promotion of public transport usage and protection of road corridors from encroachment, to improve urban mobility.
4. Internet connectivity is low and needs to be upgraded. Download speeds to public agencies in the 9 Provincial Capitals are just 2 Mbps, compared to a global average of 9 Mbps.

7.1 Intercity and rural-urban connectivity

Sri Lanka's cities are nodes that facilitate national, regional and global connectivity. At the global and regional scale, increasing connectivity between cities will foster economic and social development, plugging Sri Lanka into global networks of knowledge and capital. At the national scale, increasing the connectivity between cities, particularly those in more remote locations, and between rural and urban populations, can widen access to social and economic opportunities. Because of this, connectivity is central to key GoSL strategic aims: to promote economic growth, and to rebalance growth across the country's 9 provinces.

Intercity transport and logistics

Sri Lankan Provincial Capitals play a crucial role as economic and logistics hubs providing access to the supply chains that maintain the country's economy. The road, rail, airport, ports, waterways and telecommunications infrastructure are vital to supporting the efficient and effective collection and distribution of a wide range of goods and services. In this regard, land use mapping undertaken for the SoSLC report highlights the role of cities as hubs of transport and nodes of connectivity (Fig 7.1). The capital, Colombo MC, has by far the greatest proportion of built-up area for transport land use. Nearly 23 per cent of Colombo MC's built-up area is

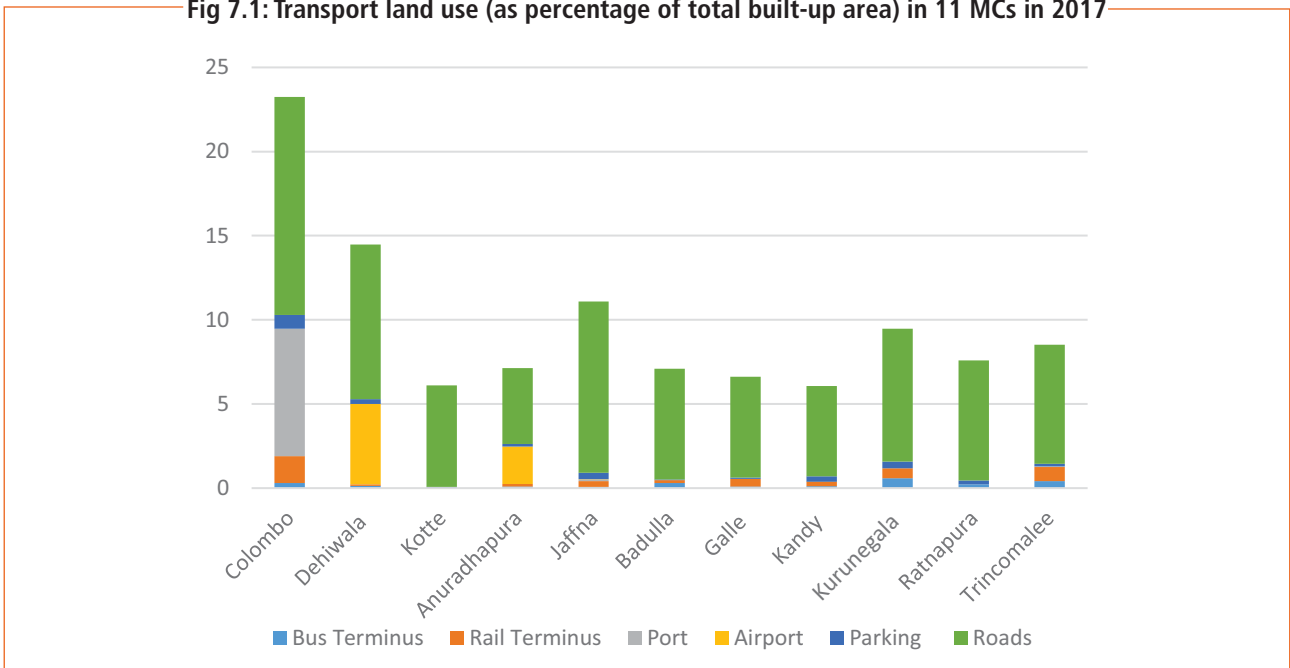
allocated to transport infrastructure – more than double of any other MC outside of the WRM – that connects the city's social and economic infrastructure across the nation, region and globe. Colombo MC includes a 300 ha international port, which accounts for around 8 per cent of Colombo MC's built-up area, highlighting the city as a node for transnational trade and important access point for regional and global supply chains. Nearly 2 per cent of all land in the MC was used as bus and rail termini – more than double any other MC – highlighting the importance of Colombo as a national transport hub. A dense network of roads radiate from the MC out across the country, and connect the city to the international airport to the north of the MC via an expressway. Nearby Dehiwala MC also includes an airport, used by the Sri Lankan Air Force and for domestic flights.

Other areas with high proportions of transport land use include Jaffna, Kurunegala and Trincomalee.¹ Jaffna and Trincomalee operate as important gateways to the more remote Northern and Eastern provinces, while Kurunegala, strategically situated in the centre of the country, is well known as a major transport hub.

Sri Lanka's Provincial Capitals are connected to Colombo via road and rail – except Ratnapura, which is not served by the rail network (Fig 7.2). The most well-connected cities are in the southern and western areas of the country. In particular,

¹ Trincomalee's large port is only partially located in the MC; if the port is included the transport land use as proportion of built-up area would be higher.

Fig 7.1: Transport land use (as percentage of total built-up area) in 11 MCs in 2017



Source: SoSLC Project

Colombo and Galle are connected by the Southern expressway: a dual carriageway that has replaced the single carriageway Galle Road as the major road connection between the two cities. Travel times to Galle are now around 2 hours 30 minutes from Colombo Fort (Fig 7.3), rather than up to 4 hours via the old Galle Road. Colombo and Galle are also connected by a frequent rail service, with 10 connections a day taking a little over 2 hours. Kurunegala is also well connected to the capital, with 14 train services departing to the city from the capital daily, which on average are under 2 hours in duration. The single carriageway road to Kurunegala, however, runs through much of the urban WRM, which can be subject to traffic, increasing travel times, and can be hazardous because of overtaking. A similar situation characterises travel between Colombo and the second city of

Kandy: the route is served by a regular (although often congested) train service, but the single carriage road connecting the cities can result in tailbacks and long travel times.

The cities of Badulla, Trincomalee and Jaffna register the longest travel times due to relatively large distances from the capital (Fig 7.3). Currently, these cities require travel times of over 5 hours from the capital. They are connected by single carriageway roads and are also not served by frequent train services: there is only one direct daily train to Trincomalee, which takes around 8 hours; 4 to Badulla taking around 10 hours due to the mountainous terrain, and 4 to Jaffna – a shorter journey of around 6 hours, despite the longer distance.

Passengers waiting at Jaffna train station



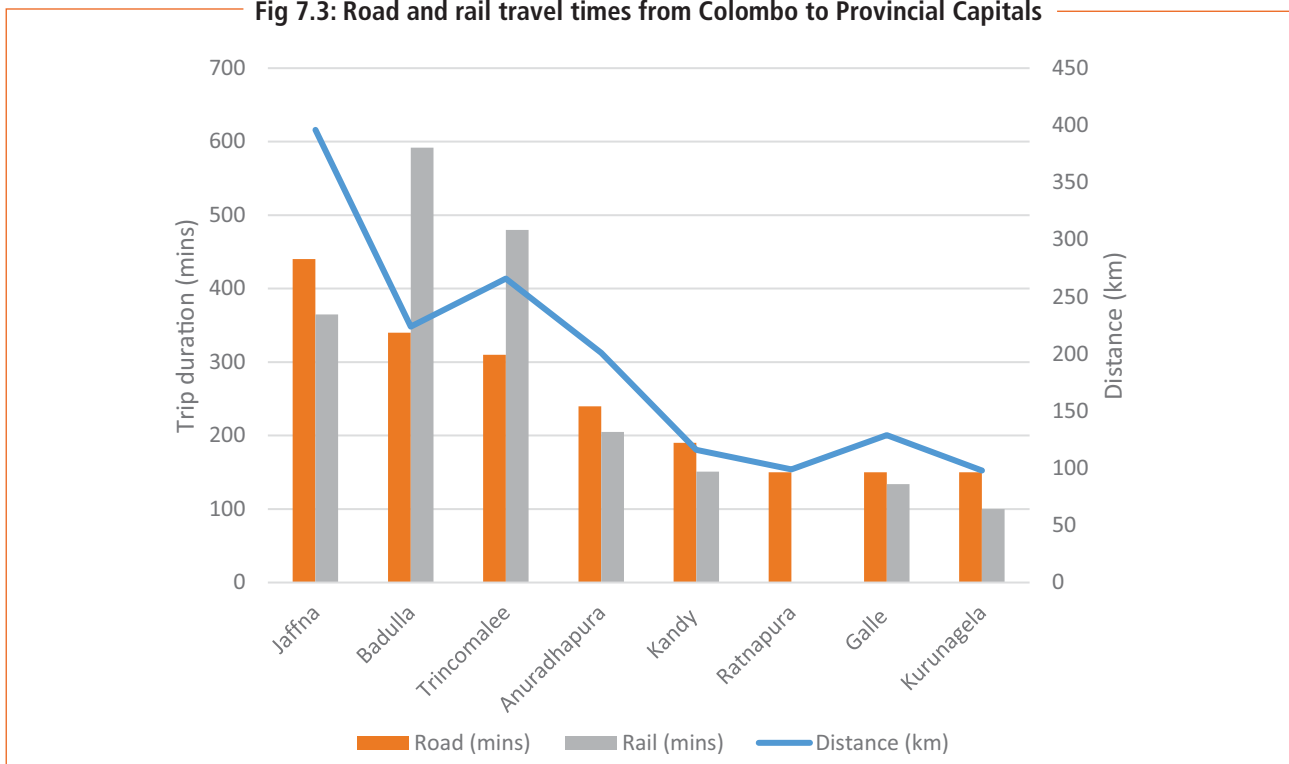
Source: UN-Habitat/Charlene Liao

Fig 7.2: Intercity road and rail network



Source: SoSLC Project

Fig 7.3: Road and rail travel times from Colombo to Provincial Capitals



Source: Data from Google Earth and Sri Lanka Railways

There have been significant improvements to the road and port networks linking the 9 Provincial Capitals to each other and internationally, although several challenges remain. A key issue is low capacity logistics networks. A study deploying a Logistics Performance Index (LPI) reported low levels of service delivery performance, finding that firms engaged in logistics activities failed to utilize modern systems and infrastructure facilities effectively (Edirisinghe, 2013). A key issue is the lack of integration of transportation modes, such as road, rail, air and sea ports, at a national and local level. This adds time and costs to travel, and constrains businesses accessing supply chains. The development of integrated transport systems, therefore, is crucial to reducing time and transaction costs, and facilitating the smooth movement of goods and services between the systems of cities within the country. In this regard, the Provincial Capitals can develop smart infrastructure and multimodal logistics hubs, which will ensure improved access to industry supply chains and their development as the catalyst and drivers in supporting local and regional economic growth and development (ADB, 2012).

Another area where investments could benefit intercity connectivity is air travel. Sri Lanka has a well-developed and competitive international airline service centred on Colombo, but other alternative capital city airports such as Jaffna and Trincomalee have not been developed to provide international services to other Asian countries. These airports could be developed as competitive hubs for trade and tourism. National intercity air services have been criticised as

not competitive, expensive, poor quality and not well coordinated with other modes of ground transport at the city level (Ekanayake, 2016; Gayathri, 2016). Hence, the Provincial Capital airports need upgrading and terminal improvements to support the growth of the nation's tourism industry as set out in the *Sri Lanka Tourism Strategic Plan 2017-2020* (GoSL, 2017).

Increasing intercity connectivity is an important policy priority for the GoSL. A flagship project in this regard is the construction of the Central Expressway, which will run from Colombo to the city of Dambulla via the Provincial Capitals of Kurunegala and Kandy. This intervention will greatly reduce travel times to these cities, and other central cities, including Anuradhapura, and the eastern city of Trincomalee. The Colombo Suburban Railway Project will also include widening a stretch of line towards Kurunegala and Kandy, further increasing intercity connectivity to central areas. Complimentary investments in logistical capacity are also on-going so use of upgraded infrastructure is optimised: the Strategic Cities Development Programme (SCDP), implemented by the Ministry of Megapolis and Western Development, involves the development of a multi-modal transport hub in Kandy city centre to facilitate increased public transport provision on intercity routes. It is envisaged that these proposed investments will create a Colombo-Trincomalee economic corridor. In tandem, the GoSL has launched a master plan for promoting Trincomalee as the Eastern Gateway to Sri Lanka, with expansion of the city's port and the construction of an international airport to

Peak hour train in Colombo



Source: UN-Habitat/Ben Flower

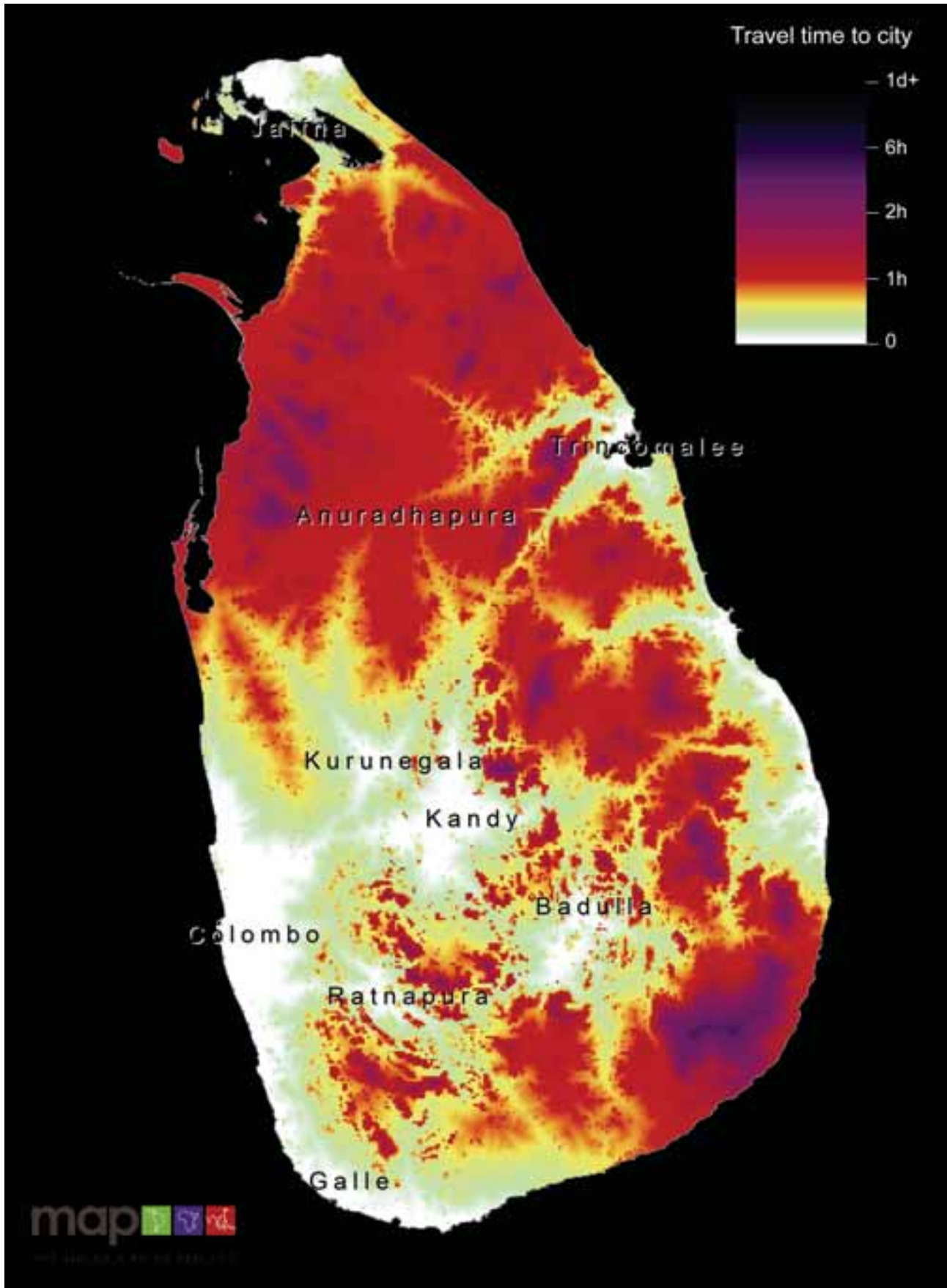
promote trade, investment and tourism. These investments will help to correct imbalances in economic development across the country – a major strategic aim of government.

Promoting rural-urban connectivity

Promoting intercity connectivity will ensure urban areas become catalysts of social and economic development across the country, promoting the rebalancing of growth and fostering inclusive development. An important issue, therefore, is to ensure that those living in rural areas can access the social and economic services and opportunities associated with cities by increasing rural-urban connectivity,

particularly in more remote areas with high poverty – as noted in Chapter 6, the districts and provinces associated with least developed Provincial Capitals are some of the poorest in the country. Currently, however, residents in such poverty-stricken areas are the most disconnected from urban centres (Fig 7.4). Residents of remote rural areas in the northern, eastern and some central areas suffer limited access to cities due to long travel times and infrastructure deficits, such as low quality roads that can be rendered impassable in times of flood, and low-capacity logistics services, including infrequent bus services and other forms of transport.

Fig 7.4: Rural-urban travel times in Sri Lanka



Source: Weiss et al. (2018)

Digital connectivity

The internet is the infrastructure that will drive the development of the economies in the 21st Century, just as electricity and freeways did in the 20th Century and railways in the century before. The internet will play an increasingly important role in the development and functioning of Sri Lankan provincial towns and cities, especially in reducing transaction costs for access to goods and services. The increasing use of the internet will bring about disruptions and rapid changes in almost every aspect of urban and rural development. It will entail changes in the modality and delivery of education, health, business and government in Sri Lanka. Learning how to use the internet to boost local economic development must become a priority of local governments in provincial towns and cities across the country.

High capacity broadband and Wi-Fi services are key to internet connectivity and crucial elements of soft infrastructure connecting cities. Currently, however, Sri Lankan Provincial Capitals are poorly linked serviced by such services. Fixed broadband penetration in Sri Lanka remains very low compared to other countries in the region. Sri Lanka ranks 114th in the world and 29th in the Asian region with 4.1 fixed broadband subscriptions per 100 people, compared to a median of 10 in the region (International Telecommunication Union, 2018).

Many developing countries, such as Rwanda and Kenya, are rolling out broadband to secondary cities, recognising the crucial role it will play in economic development, and the delivery of improved health, education and other key urban services. A national and local broadband/Wi-Fi network is important to support e-governance, e-education, e-information, e-health, e-safety and security (especially for women) and e-commerce. In addition to these services, good internet services enable disadvantaged regions and cities to gain access to the internet of things, and the localization of ICT based manufacturing and 3-D printing.

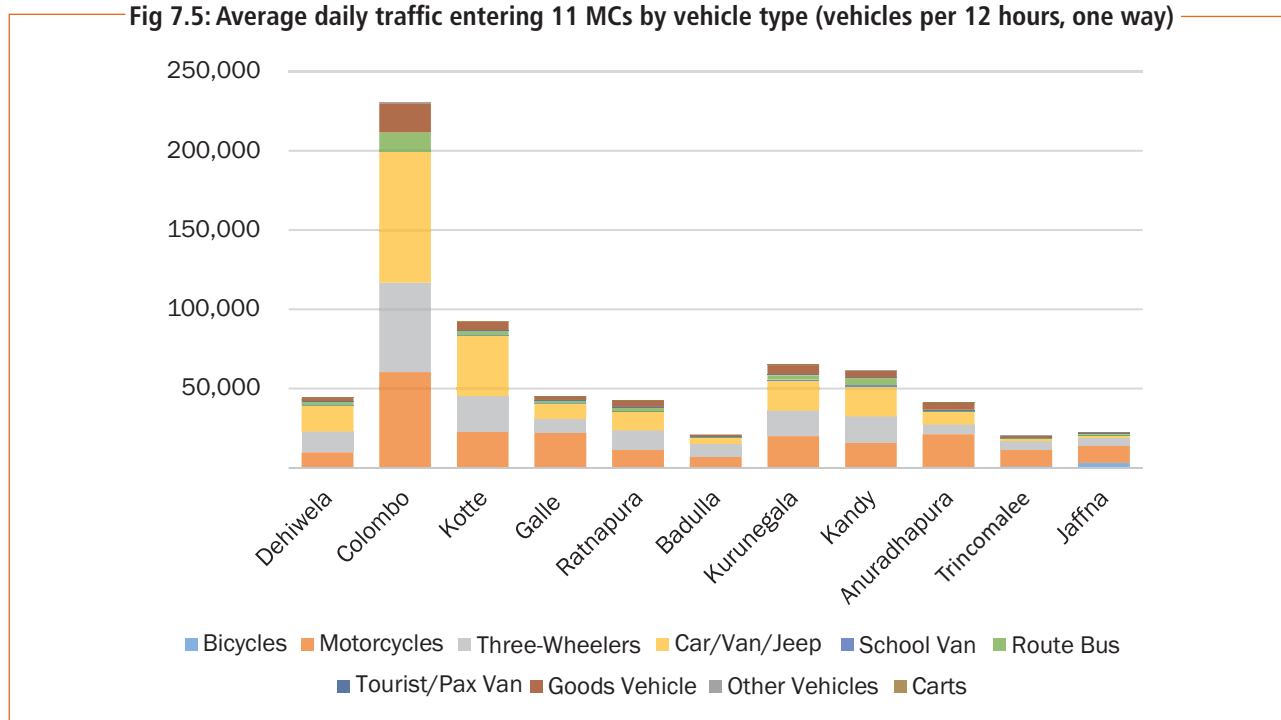
The GoSL recognises the importance of improved internet regional services and has put in place a policy and strategies to improve broadband and Wi-Fi internet services (International Telecommunication Union, 2012, 2017). However, progress on the implementation of internet services to the Provincial Capitals and other cities is slow, and quality of services poor. Download speeds to public agencies in the 9 Provincial Capitals are 2 Mbps (GoSL, 2018a), which is well below the global average of 9 Mbps (Cable, 2009). The rollout of improved internet services to provincial towns and cities must be accelerated if Sri Lanka is to avoid falling behind other nations in the region. Without improved internet access across the whole country, the gap in the knowledge, employment, development and information divide between the Colombo and other provincial cities, towns and rural areas will widen.

An off-peak bus journey in Kandy MC



Source: UN-Habitat/Charlene Liao

Fig 7.5: Average daily traffic entering 11 MCs by vehicle type (vehicles per 12 hours, one way)



Source: SoSLC traffic survey

7.2 Municipal transport

A functioning urban transportation system is an important component of a sustainable city. In this regard, reducing commuting times, promoting green forms of transport and increasing the provision of public transport services are key goals for urban planners across the globe. This section looks at the attributes of municipal transport in Sri Lanka's cities, and highlights constraints to achieving a sustainable municipal transportation system. Many of the constraints identified are linked to the issue of urban sprawl, which has been highlighted throughout this report as an undesirable form of urban expansion.

The prevalence of private motorised transport

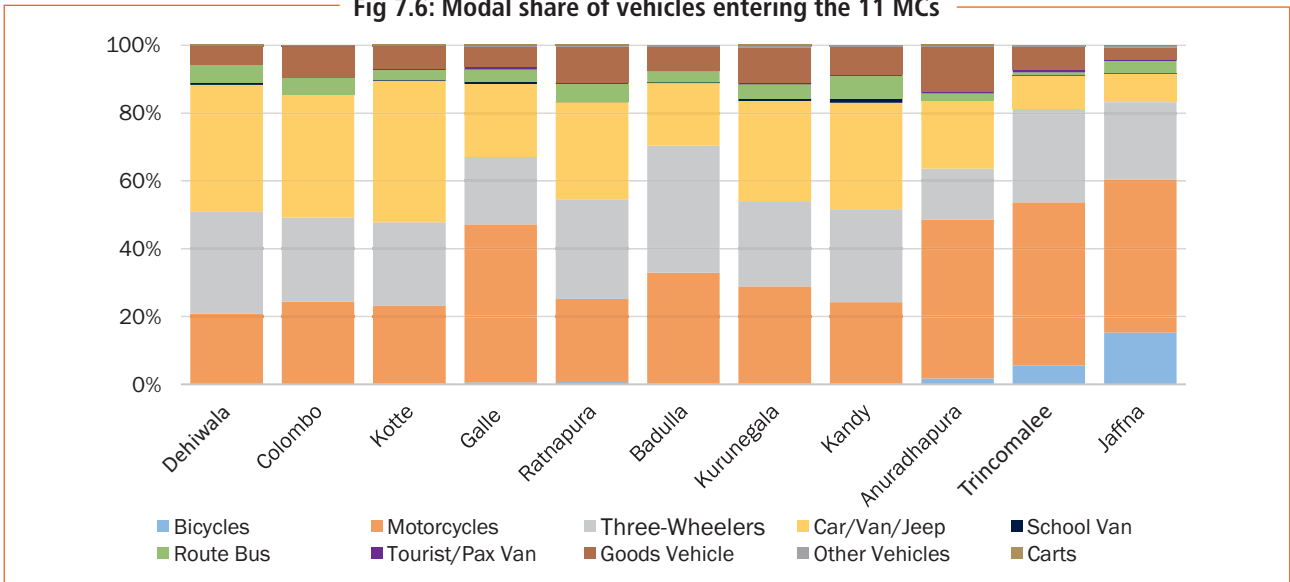
Sri Lanka is experiencing a period of mass-motorization, particularly with regards to private vehicle usage. The number of cars on Sri Lanka's roads increased from 528,098 in 2013 to 756,856 in 2017 – an increase of over 40 per cent in 5 years. During the same period the number of three-wheelers (commonly referred to as trishaws or tuk tuks) increased from 850,457 to 1,139,524 and motorcycles 2,715,727 to 4,044,010, registering increases of 34 per cent and 49 per cent respectively (GoSL, 2018b).

The trend of private vehicle usage has become a major urban planning issue in Sri Lanka's cities, where increasing vehicle usage has resulted in traffic and long commute times becoming the norm. Increased vehicle usage has been particularly acute in urban areas for a number of reasons. As noted in Chapter 2, the pattern of urban expansion that has occurred in Sri Lanka – low density sprawl – is associated

with increased private vehicle usage, because of the greater distances required to travel (Ewing, Pendall, & Chen, 2003). Private vehicle ownership is also associated with increased wealth, and is therefore related to economic growth and the changing consumption patterns of urban residents (Brown, 2005). There have been attempts in recent years by successive governments experimenting with increasing taxation for various categories of motor vehicles to try to curb the steady increase.

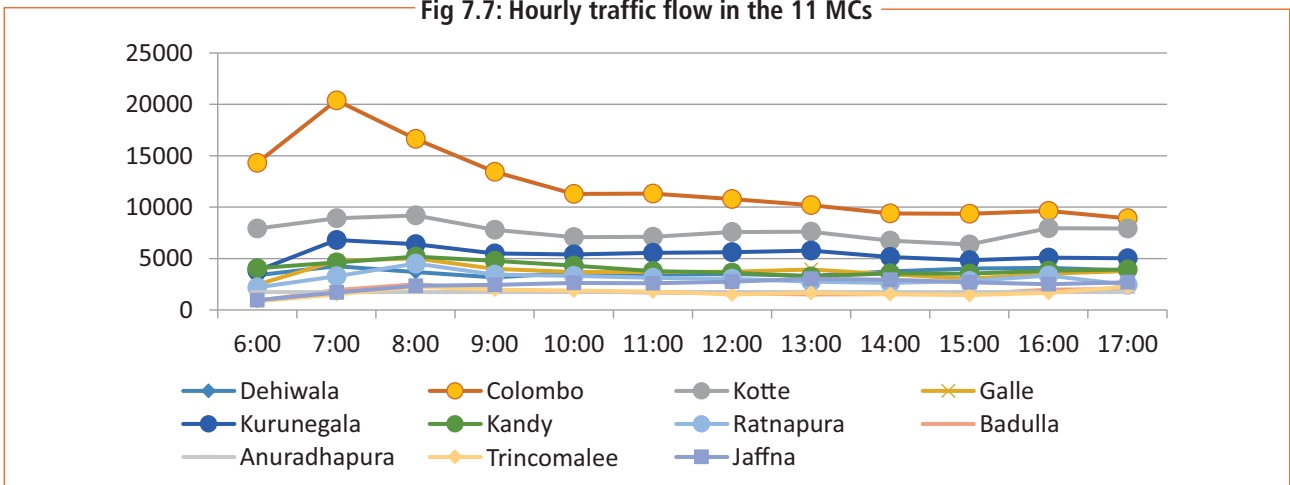
To explore the characteristics and impacts of mass-motorization on Sri Lanka's cities, the SoSLC project conducted traffic surveys in the 11 MCs associated with the Provincial Capitals. The surveys were carried out for 12 hours from 6 am to 6 pm to obtain a comprehensive understanding of day-time traffic patterns. The surveys recorded the vehicle type entering the respective MCs on national roads. The results show a very large variation in the volume of vehicles recorded entering the various MCs. Around 230,000 vehicles were recorded entering Colombo MC (Fig 7.5) via the main arteries, including Galle Road (A002), Kandy Road (A001), Horana Road (B084), Low Level Road (B435), High Level Road (A004) and Negombo Road (A003). In contrast, the volume of traffic entering more remote cities, such as Badulla and Trincomalee, was far lower: around 20,000 vehicles were recorded during the reference period. This variation underscores that Colombo is the commercial and service hub of the nation, with a large suburban workforce commuting to the city every day, while Badulla and Trincomalee are far more remote and provide fewer visitor attractions. Other strategic transport hubs, such as Kotte and Kurunegala, also recorded high volumes of daily traffic, although far less than Colombo MC.

Fig 7.6: Modal share of vehicles entering the 11 MCs



Source: SoSLC traffic survey

Fig 7.7: Hourly traffic flow in the 11 MCs

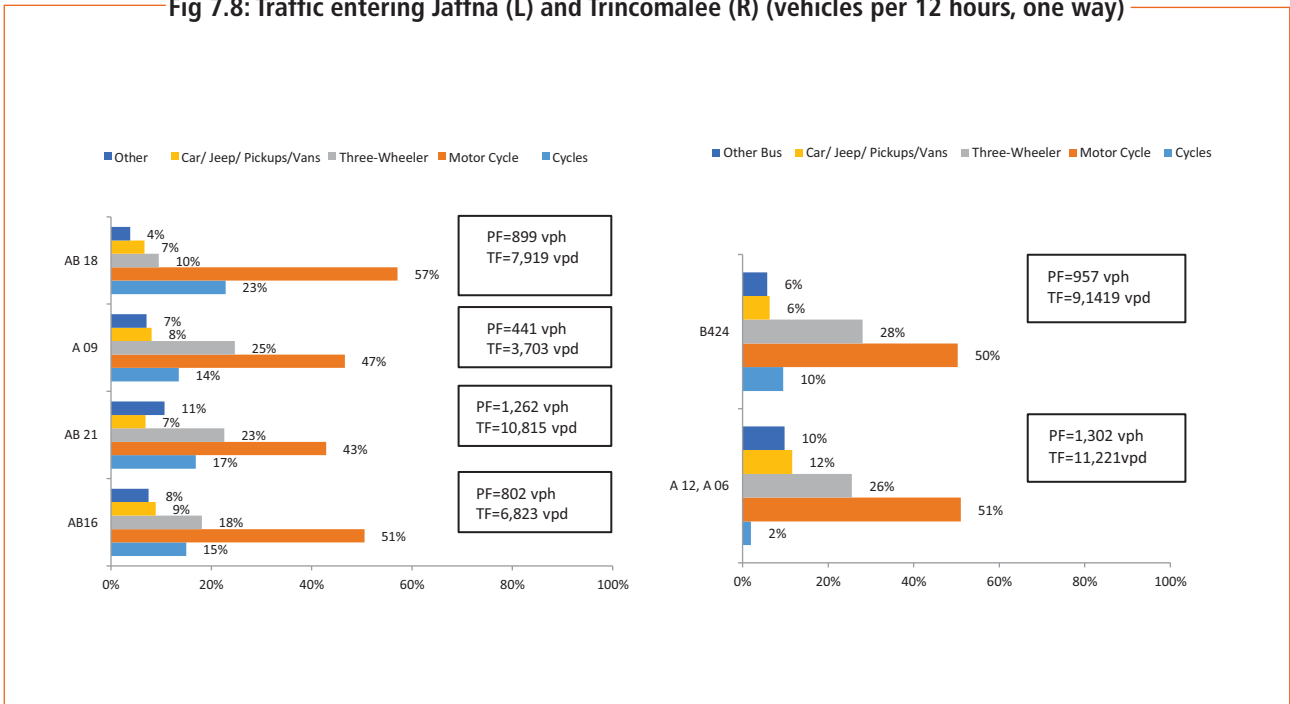


Source: SoSLC traffic survey

A second aspect of the results is that private motorised transport, including cars, motorcycles and three-wheelers, comprised the vast majority of vehicles entering the MCs during the reference period (Fig 7.6). Motorcycles comprised around half of the vehicles entering many MCs, including Galle (47 per cent), Anuradhapura (47 per cent), Trincomalee (48 per cent) and Jaffna (45 per cent). Cars were also prominent, particularly in the more affluent WRM, including the MCs of Colombo (36 per cent), Kotte (42 per cent), and Dehiwala (37 per cent), and also in Sri Lanka’s second city, Kandy (31 per cent). Three-wheelers accounted for a sizeable share of the vehicle count: between 15 and 37 per cent across the MCs. In contrast, public and non-motorised transport (buses and bicycles) accounted for only a fraction of vehicles. The exception to this trend was Jaffna, where bicycles accounted for 15 per cent of all traffic – double the recorded frequency of cars entering the MC.

The high volume of vehicles has manifested as slow traffic and long commute times for many urban residents, which has emerged as a particularly pressing policy issue in Colombo and the WRM during peak times. In this regard, Fig 7.7 provides the hourly traffic flow data for the each MC. In Colombo there is a very pronounced trend: during the peak period, the number of vehicles entering Colombo MC between 7 am and 8 am is around 20,000 vehicles per hour; more than double the number during off-peak hours. This variation in flow is the result of commuters entering the MC for work, education or to access other social and economic services. It is particularly significant in the case of Colombo because a large proportion of the commuting vehicles are cars (Fig 7.6), translating to heavy volume of traffic and more congestion. In the Colombo suburb, Kotte, a peak in traffic flow also occurs in the early evening as commuters return from Colombo.

Fig 7.8: Traffic entering Jaffna (L) and Trincomalee (R) (vehicles per 12 hours, one way)



Source: SoSLC traffic survey
 Note: PF=Peak Flow; TF=Total Flow; vph=Vehicles per hour; vpd=Vehicles per day

In more remote MCs, daily variations in transport were less pronounced (Fig 7.8). In Jaffna, for example, around 22,000 vehicles enter the MC area between 6 am and 6 pm; during peak periods the average vehicle count ranges between 441 vehicles per hour for the AB 21, which connects Jaffna MC to the north of Jaffna and nearby islands, to 1,262 vehicles per hour on the A 09, which is the main arterial road into the MC area that connects to major cities in the south (Fig 7.8). These figures are significantly lower than busier MCs like Colombo, Kotte, Dehiwala, Kandy and Kurunegala. Moreover, only a relatively small proportion of vehicles are cars (less than 10 per cent); around 75 per cent of traffic is comprised of three-wheelers and motorcycles. A relatively large proportion (15 per cent) of the vehicles entering the city comprised of bicycles. A similar trend was observed in Trincomalee, albeit with fewer bicycles recorded.

The pollution associated with motor vehicle usage is linked with a number of negative public health impacts in urban areas. Studies have shown that increased vehicle usage associated with urban sprawl development is correlated with increased frequency of fatal traffic accidents (Ewing, Schieber, & Zegeer, 2003). This trend appears to be evident in Sri Lanka’s cities. As Table 7.1 shows, the number of fatal vehicle crashes has increased markedly: between 2014 and 2016 fatalities increased by 22 per cent. As noted in this chapter and elsewhere in the report, during the same period sprawl expansion and increased private vehicle usage have also occurred (see Chapter 2). It is also notable that some of the areas with the highest recorded fatalities, such as

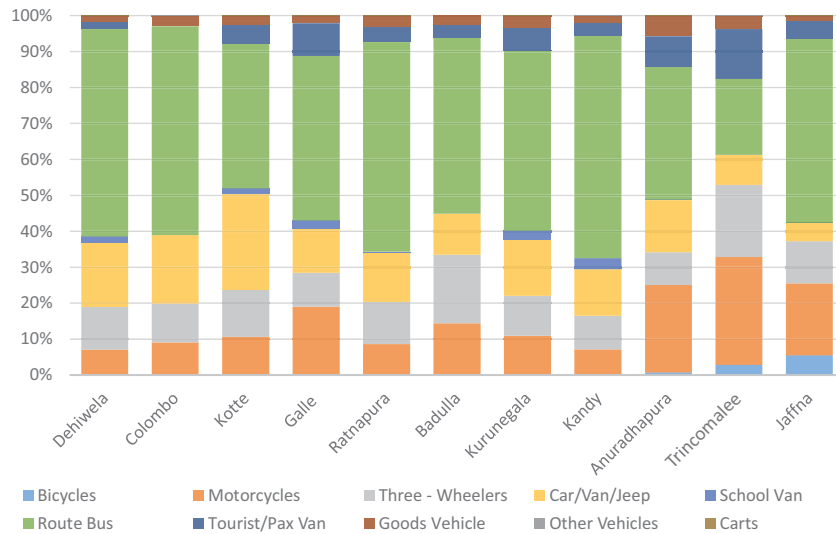
Kurunegala, Anuradhapura and Kotte have major intercity arterial roads crossing them, where vehicles tend to pass at high speed, increasing the risk of fatal collisions.

Table 7.1: Accident statistics by Police Divisions

Municipal Council	No of Fatal Casualties		
	2014	2015	2016
Dehiwala	62	56	67
Colombo	52	55	62
Kotte	103	116	146
Galle	85	75	84
Ratnapura	136	138	127
Badulla	37	44	39
Kurunagala	113	118	163
Kandy	90	86	111
Anuradhapura	128	181	145
Trincomalee	26	33	30
Jaffna	56	51	66

Source: Data from Sri Lanka Police Department

Fig 7.9: Modal share by passenger volume (per cent)



Source: SoSLC traffic survey

In addition to increased accident-related fatalities and injuries, air and noise pollution are also related to increased vehicle usage, and have been shown to have detrimental impacts on the liveability of cities and the health of their residents (King, Roland-Mieszkowski, Jason, & Rainham, 2012; Nandasena, Wickremasinghe, & Sathiakumar, 2010). Both short-term and long-term exposure to air and noise pollution has been shown to lead to the deterioration of respiratory and cardiovascular systems, decreases in life expectancy, affect people’s mental well-being and interfere in people’s daily activities (WHO 2015).

The main source of ambient air pollution in Sri Lanka is vehicle emissions, which contribute to over 60 per cent of total emissions in Colombo (Nandasena, Wickremasinghe and Sathiakumar, 2010). Recent studies by the International Agency for Research on Cancer, a WHO organisation, have also shown a confirmed link between particulate matter produced in the combustion of fuel (known as PM2.5 and PM10) and cancer along with heart disease (WHO, 2015). Colombo currently has a PM2.5 annual exposure of 36µg/m³ which is 3.6 times higher than the recommended WHO guideline of 10 µg/m³ (WHO, 2018). Nitrogen dioxide (NO₂) and sulphur dioxide (SO₂) are other harmful air pollutants. NO₂ is associated with combustion related pollutants particularly road traffic and indoor combustion sources, while SO₂ is associated with fossil fuel combustion at power plants, some vehicular traffic and other industrial facilities (WHO 2015). A recent study by the NBRO found average NO₂ and SO₂ levels in Colombo, Galle and Kandy exceeded the WHO’s guideline levels (Fernando, 2017).

Noise pollution from vehicles is also an issue affecting urban residents. According to Sri Lanka’s National Environmental (Noise Control) Regulations No. 1 of 199, the permitted noise level within Municipal Council or Urban Council limits is 63 dB during the day and 50 dB at night. In a designated silent zone, the upper limit is 50 dB by day and 45 dB at night. Although there is no published data available for all cities, a report of a Central Environment Agency study in Colombo suggested that noise levels exceeded 65 dB between 10 am and 8 pm, and during peak traffic hours, the noise level on Galle Road and along Parliament Road reached between 75 dB and 78 dB (Sathisraja, 2017).

7.3 Public and non-motorised transport

Promoting a modal shift towards sustainable municipal transport is highlighted in the United Nations New Urban Agenda, and is a core component of green growth strategies in cities across the globe. In this regard, increasing the coverage and usage of municipal public and non-motorised transport is key.

Sri Lanka’s main modes of public transport are bus and train; across the 9 Provincial Capitals bus travel is the most often used, despite issues of poor service quality and performance. The SoSLC traffic survey suggests that buses transport over 50 per cent of people entering the MC in many cities (Fig 7.9) even though the bus share was only 4-5 per cent of the total daily traffic flow (see Fig 7.6). In Colombo, the figures are particularly large: 58 per cent of road users entering the MC by bus, accounting for over 510,000 visitors (Table 7.2). This figure dwarfs the number of people transported by bus into any of the other MCs.

Table 7.2: Number of buses and passengers entering MCs (24 hours)

Municipal Council	In-bound (24 Hrs)	
	No of Buses	No of Passengers
Anuradhapura	1078	41826
Badulla	867	33632
Colombo	13356	518221
Dehiwela	2771	107511
Galle	1849	71745
Jaffna	946	36705
Kandy	4799	186213
Kotte	3024	117327
Kurunegala	3181	123431
Ratnapura	2679	103934
Trincomalee	252	9774

Source: SoSLC traffic survey

Note: 24 hour figures calculated from traffic survey data

Rail is also an important mode of municipal transport although bus travel is far more significant in terms of numbers. According to Department of Railway data there were a total of 9.8 million passengers transiting via Colombo Fort station in 2016 (including intercity travellers) – a number that the municipality’s bus network moves into the city every 28 days. A major ADB project is currently rehabilitating Colombo’s suburban rail network, with a view to increasing passenger carrying capacity and transition the service to a more viable mass-transit system. Railway electrification is also being considered to increase the capacity and the speed of the service.

Actions have also been taken by the GoSL to increase the quality of bus services by introducing services such as Gami Sariya and Sisu Sariya, Sahasara and bus priority measures (i.e. bus lanes), but have so far only been implemented in limited areas. The Sahasara bus service piloted in Kandy increased the efficiency and quality of service to a great extent, and the government has recently taken measures to promote this service island wide. Bus Priority lanes have been introduced in the Colombo and Kotte Municipal Council areas to improve the speed and the quality of the service by the Ministry of Megapolis and Western Development.

Despite these initiatives, there continue to be a number of factors that discourage public transport use and make the

experience unpleasant for many users. A key concern is safety for women travellers. The SoSLC project carried out a survey of over 60 women public transport users, finding 70 per cent of respondents reported fearing for their safety after suffering a form of harassment, including staring, verbal harassment (comments, whistling etc.), physical harassment (touching, groping), flashing, and stalking. Respondents highlighted several primary risk factors for harassment, including overcrowding on buses/trains, which provided opportunities for harassment, and poor lighting in transport terminals and other risks associated with walking from the transport terminal to their destination, and the lack of proper decorum of public transport users and workers. In addition, other contributory factors noted were the lack of published information on transport services, a lack of integration between modes and smooth transfers, low frequency of buses and trains, which meant waiting in poorly lit terminals or other spaces where they were vulnerable to harassment.

As a result of the personal safety risks associated with travelling on public transport, many women users have opted to use private transport with more frequency. Around 58 per cent of respondents reported transitioning to private vehicles, such as private car or motorcycle, to avoid such sexual harassment. A further 22 per cent reported using services provided by their employer with greater frequency. The SoSLC survey mirrored the findings of a UNFPA study, which found that 90 per cent of women using public transport have been subjected to sexual harassment (UNFPA, 2017). The study also noted that the lack of awareness and weak enforcement of regulations on women’s safety on public transport meant that few victims report harassment to law enforcement (UNFPA, 2017).

Linked to the issue of women’s safety is the accessibility of the public transport network in relation to the distance between terminal and final destination. To assess accessibility, the SoSLC project mapped suburban train and bus routes in the WRM area onto the 2017 urban extent map (Fig 7.10). The results suggests comprehensive public transport coverage in central areas, where commuters are rarely further than 1500m from a train station, while numerous bus routes criss-cross the area. In the sprawling periphery, however, accessibility is a much bigger issue, with large sections of urban area not adequately served by bus or railway. Those living in such areas may opt for private transport, because travelling to the nearest public transport terminal is too far to walk or represents a personal safety risk, particularly for women. This issue is compounded by the lack of integration between modes of municipal public transport, particularly in relation to coordinated timetables to enable smooth intermodal travel, which add more time to commutes and present greater safety concerns for women commuters.

Fig 7.10: Accessibility of public transport in the WRM area



Source: SoSLC Project

A core component of a green municipal transport sector is non-motorised urban mobility. There are, however, several constraints to increasing non-motorised mobility in Sri Lanka's cities. For cyclists, a key issue is the lack of cycle paths across the MCs, meaning that cyclists are forced to use the carriageway. In heavily congested cities, such as Colombo and Kandy, this carries a risk of accident and health issues arising from the exposure to air pollution. Correspondingly, the transport survey vehicle counts in congested MCs recorded very few cyclists. In cities with less busy roads, most notably Jaffna, cycling was more commonplace. There is also a strong cycling culture in Jaffna, among both men and women for daily travel, which planners are currently promoting through the construction of cycling infrastructure as part of the SCDP implemented by the Ministry of Megapolis and Western Development.

Pedestrian mobility is constrained because a lack of sidewalk space and/or unmaintained walkways. There are design standards setting minimum sidewalk widths, but these are not widely enforced – particularly outside of Colombo MC. The lack of usable sidewalk space means pedestrians often use the carriageway, increasing their exposure to traffic accidents. An additional issue is that the material used to construct sidewalks are of variable quality meaning that walkways are often not even: this presents particular challenges to people with disabilities. The SCDP is working to promote walking as an attractive mode of urban mobility in a number of cities: for example, in Galle the project is developing a coastline walking path linking the Fort area to other tourist attractions and infrastructure.

7.4 Connectivity and a better urban future for all Sri Lankans

Intercity, rural-urban and municipal connectivity are key to Sri Lanka's social and economic development; in particular, increasing connectivity in remote areas is requisite to promoting balanced growth across the country. By providing an evidenced-based assessment of urban connectivity and municipal transport, this chapter contributes to *a better urban future for all Sri Lankans* by promoting the competitiveness, inclusivity, resilience, safety and sustainability of Sri Lanka's cities.

City outcome	Contribution of urban connectivity and municipal transport
Competitive	Well-connected cities provide access to markets for producers, reduce transport costs, stimulating growth. Improving municipal transport reduces costs associated with long commuting times, and increases the liveability of a city, making it an attractive destination for business.
Inclusive	Connecting Sri Lanka's more remote urban areas to the capital offers a chance for peripheral populations there to benefit from social and economic opportunities; increasing rural-urban linkages will extend these opportunities to those in rural areas with high poverty. Increasing coverage of safe, reliable, accessible and affordable public transport will enable all urban residents to participate in urban life.
Resilient	High-quality transport infrastructure, such as paved roads, are important assets that increase resilience of urban systems to disasters and climate change.
Safe	Reducing the number of motorised vehicles, and better-regulating their usage, is key to reducing the number of traffic accidents, fatalities and important for a range of other public health issues. Public transport services must be improved to ensure the safety of women; currently, women face a variety of personal safety risks.
Sustainable	Reducing the number of motorised vehicles and promoting green transport protects the environment from harmful emissions.

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CHAPTER 8

CLIMATE RISK AND RESILIENCE
IN SRI LANKA'S CITIES



This chapter assesses climate risk and resilience in Sri Lanka's 9 Provincial Capitals. First, the exposure of urban residents to climate risk is explored by highlighting key current and future threats that include floods, landslides, droughts and temperature extremes. Second, specific attributes of urban vulnerability are explored, including those related to urban form and the socioeconomic characteristics of urban residents. Third, urban resilience to climate risk is examined by focusing on past interventions and future policy directions. The analysis draws on spatial data analysis, GoSL statistical data, and site visits to vulnerable communities.

KEY MESSAGES

1. Sri Lanka's Provincial Capitals are exposed to a variety of climate risks, with landslides, floods and associated diseases outbreaks being the most severe. In Kandy, for example, 14 per cent of built-up area is located on areas of moderate landslide risk, and 0.4 per cent (or 6 ha) is located in high-risk areas.
2. Climate change is expected to exacerbate existing risks, and bring new threats, such as sea level rise and extreme temperatures. In Galle, projected sea level rises by 2100 threaten 10 per cent of the Municipal Council's built-up area.
3. Urban sprawl, associated with rapid land use change, has led to increased risks of flooding in urban areas and loss of important ecological wetlands. The Attidiya wetland, an important flood retention area for the Colombo area, has been reduced by 24 per cent since 2004, while the number of buildings has increased by 46 per cent.
4. Ecosystem-based adaptation provides opportunities to increase urban resilience and protect important ecological habitats.

8.1 Exposure to climate risk in Sri Lanka's cities

Exposure describes the external climate risks that impact populations (Füssel & Klein, 2006). From a global perspective, the main risks to urban areas include floods, cyclones, droughts, and their associated public health impacts (IPCC, 2014). Other risks from climate change are emerging, such as those associated with sea level rises, extreme heat events and ecological disturbances. This section assesses the exposure to key climate risks in Sri Lanka's 9 Provincial Capitals.

What are the current risks affecting the 9 Provincial Capitals?

Cumulatively, more than 36 million Sri Lankans have been affected by natural hazards (i.e. floods, landslides, cyclones and droughts) over a period of 40 years to 2016, with an average of over 900,000 persons (approximately 4.1 per cent of the population) affected annually (GoSL, 2016a: 4). It is estimated that long-term financial losses from such events are LKR 50 billion annually (World Bank, 2016). The severity of these risks has resulted in Sri Lanka ranking 4th in the 2018 Global Climate Risk Index (Eckstein, Künzel, & Schäfer, 2017).

The extent to which Sri Lanka's 9 Provincial Capitals are exposed to climate risks is evidenced in the GoSL's Disaster

Management Centre (DMC) database (Table 8.1). These records of historical disaster events (including those related to climate risks) span the period 1974 to 2017, and are accessible on the DMC data website (www.desinventar.lk). Although the records are not broken down by MC area, data is available at the divisional administrative level, which in the majority of the 9 Provincial Capitals, cover a similar area to the MC boundary. In the case of the WRM, data for the Western Province is presented. It should be noted that in many cities, sprawl expansion has resulted in the urban area extending beyond the MC boundary into surrounding 'rural' areas (see Chapter 2). Therefore, the figures in Table 8.1 may underestimate exposure risk in the 9 Provincial Capitals. Despite this, the data shows that over the past 35 years, cumulatively millions of urban residents have been affected by flooding, landslides, droughts and cyclones; hundreds have perished. Floods and landslides have caused by far the most fatalities, accounting for 369 deaths between 1974 and 2017. Overall, floods appear to be the greatest climate risk, affecting over 4 million people and leading to the deaths of 234 people in the reference period. Droughts have also impacted urban populations by diminishing agricultural output, and presenting challenges in accessing safe water.

All four risks have secondary effects. Although not captured in the DMC database, disease outbreaks associated with periods of flood and drought are also an important source of climate-related risk for urban populations. The dengue

Table 8.1: Climate risk exposure in 9 Provincial Capitals 1974-2017

	Flood		Landslide		Drought		Cyclone	
	Affected	Deaths	Affected	Deaths	Affected	Deaths	Affected	Deaths
Badulla	2,251	–	6,424	41	–	–	–	–
Galle	27,206	–	23	4	–	–	–	–
Ratnapura	113,260	9	6,969	47	4,313	–	–	–
Jaffna	40,268	–	–	–	2,150	–	–	–
Kurunegala	2,774	2	–	–	141,074	–	–	–
Anuradhapura	4,030	–	–	–	19,645	–	–	–
Trincomalee	33,535	–	–	–	18,187	–	75,000	–
Kandy	505	–	2,615	7	–	–	–	–
WRM	3,807,394	223	2,084	36	530,763	–	9,355	3
TOTAL	4,031,223	234	18,115	135	716,132	0	84,355	3

Source: Data from DMC disaster database

outbreak of 2017 followed the May floods, with the number of new cases reported peaking in June and July, and was particularly severe in urban areas. By 11 July 2017, a WHO situation report revealed that 43 per cent of all cases and over half of the then 250 recorded deaths had occurred in the WRM, despite the area accounting for less than 30 per cent Sri Lanka’s total population (WHO, 2017). The number of deaths attributable to the dengue fever outbreak of 2017 surpassed the total number of people killed by floods and landslides in the same year, underscoring the severity of the threat of disease.

How is risk distributed across the 9 capitals?

Exposure to climate risk varies spatially across the 9 Provincial Capitals, and is closely related to the distribution of rainfall across Sri Lanka (Table 8.2). In this regard, the distribution of cities across the tropical island’s three climatic zones impacts their exposure risk. The wet zone, which includes Kandy, Ratnapura, Galle and Colombo, receives high mean annual rainfall (over 2500 mm) and does not have a pronounced dry season; these areas are more exposed to floods and landslides (Karunaweera, Galappaththy, & Wirth, 2014). The cities of Badulla and Kurunegala fall into the intermediate zone and receive a mean annual rainfall between 1,750 to 2,500 mm with a short and less prominent dry season; such areas also

experience floods and landslides. The dry zone, covering Jaffna, Anuradhapura and Trincomalee, receives a mean annual rainfall of less than 1,750 mm, and a pronounced dry season, which can result in drought.

Table 8.2: Climatic zone and risk exposure in 9 Provincial Capitals

City	Climatic Zone	Exposure
Jaffna	Dry	Drought, flood, cyclone
Anuradhapura	Dry	Drought
Kurunegala	Intermediate	Drought
Trincomalee	Dry	Drought, flood, cyclone,
Kandy	Wet	landslides
Ratnapura	Wet	Flood, landslides, drought
Galle	Wet	Flood, landslide
Badulla	Intermediate	Flood, landslides
Colombo/WRM	Wet	Flood

Source: Adapted from GoSL (2016); GoSL-UNDP (2012)

Risk exposure also varies spatially according to the island's diverse topography. Cities in mountainous central areas, including Ratnapura, Badulla and Kandy, are highly exposed to landslides. The risk of landslides is so severe in the central mountains that Sri Lanka ranks as one of the most landslide-prone countries on earth. According to an analysis of the Durham Fatal Landslide Database (DFLD), it is ranked as the 16th most landslide prone country in the world according to total landslide fatalities (Oven, 2005): when viewed as per capita risk, Sri Lanka ranks as one of the most landslide-prone countries on earth. In contrast, low lying coastal areas, including the WRM, Trincomalee and Jaffna, are more exposed to flooding and cyclone risks.

The exposure of Sri Lanka's cities to risk is also seasonal and related to monsoonal variations in inter-annual rainfall intensity. The Southwest monsoon brings rainfall to the country's western and southern regions from May to September; while the Northeast monsoon affects the northern and eastern part of Sri Lanka and often lasts from October to January (GoSL, 2016a). There is also an inter-monsoonal period in October and November during which rain and thunderstorms occur frequently across the island. This results in annual rainfall being concentrated into relatively short, intense periods of precipitation. This rainfall pattern is significant because periods of intense precipitation are regarded as a major cause of high urban flood risk globally (IPCC, 2014) and a key determinant of landslide risk (Ray & Jacobs, 2007).

To explore the relationship between rainfall patterns and their risk to Sri Lankan urban areas, the SoSLC project obtained monthly rainfall data from the GoSL's Department of Meteorology for the 9 Provincial Capitals covering the period 2012-2017 (Fig 8.1). The data suggest a clear link between periods of intense rainfall and exposure to urban flood and landslide risk. In May 2016, for example, the data shows that the WRM experienced the heaviest period of rainfall of the five year reference period. Correspondingly, the DMC data records the floods of that year causing the deaths of at least 15 people and damaged over ten thousand dwellings. In May 2017, nearly 1,000 mm of rain fell in Ratnapura, triggering devastating landslides and floods in the town, and further downstream in the WRM; the dengue outbreak that followed (see above) caused the deaths of over a hundred people.

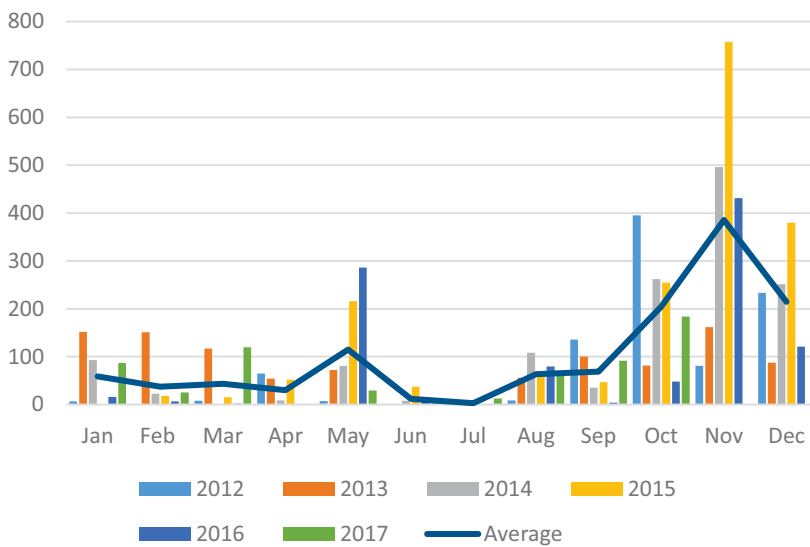
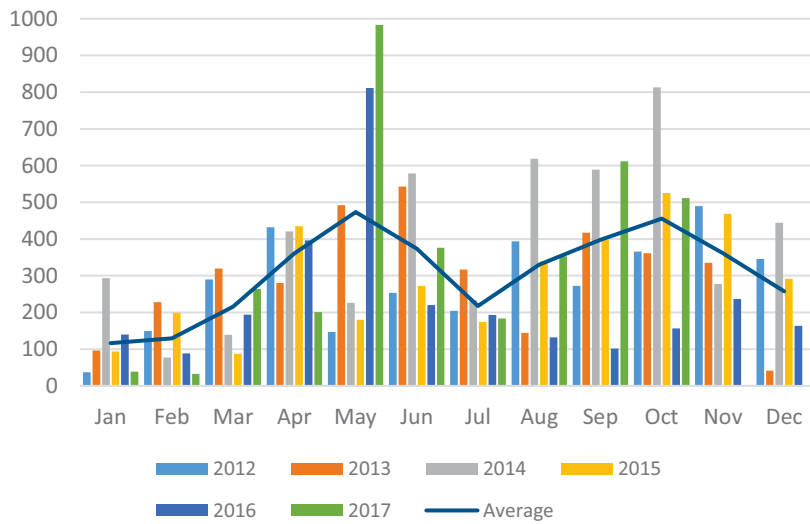
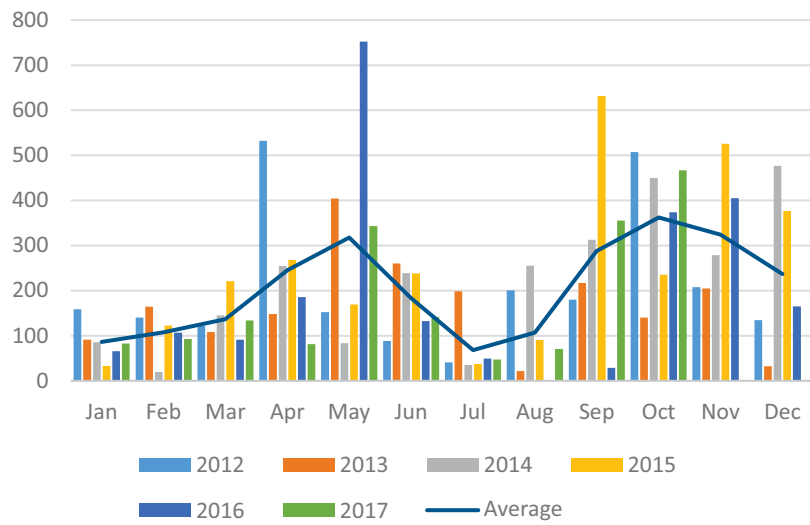
In contrast, the city of Jaffna, which is located in the Dry Zone, receives far less rainfall and is drought prone. In 2014, below average rainfall was recorded for much of the year (Fig 8.1). This led to a drought which affected 1,783 households in the city (according to the DMC database). The more recent 2017 drought was also related to below average rainfall and affected 367 people in the city. Occasionally, however, heavy rains strike Jaffna: in 2015, for example, nearly 800 mm of rain fell in the city (Fig 8.1), with severe flooding causing damage to property.

Diyasuru Uyana Wetland park in Kotte



Source: UN-Habitat/Charmalee Jayasinghe

Fig 8.1: Monthly precipitation in WRM, Ratnapura and Jaffna (top to bottom)



Source: Data from the Department of Meteorology (note: Nov/Dec 2017 data not included)

What does climate change mean for exposure risk?

Climate change is expected to increase the exposure of Sri Lanka's urban areas to climate risks (GoSL 2016b). A major threat is the trend of more frequent extreme precipitation events. An analysis by the WHO and UNFCCC, projects the number of days with 20mm precipitation or more to increase by around 10 days on average between 1990 and 2010 under a high emission scenario (WHO, 2015). In this context, there is a direct, empirically observed relationship between shifting patterns of rainfall due to climate change and landslide risk in Sri Lanka: a study plotting temporal changes in rainfall intensities against landslide incidence found a strong correlation between landslide frequency and increased rainfall intensity in the country (Ratnayake and Herath, 2005). The GoSL's *National Adaptation Plan* (NAP 2016-2025) predicts that changes in rainfall patterns will also increase flood risk in cities and identifies secondary effects including outbreaks of vector-borne disease.

Flooded street in Colombo



Source: UN-Habitat/Charmalee Jayasinghe

In addition, rising temperatures may expose urban residents to direct physical stress, drought intensification and associated public health risks. The IPCC's 5th assessment projected rising average temperatures and periods of temperature extremes affecting the South Asian region, highlighting the impact on food security, safe water availability, and illness resulting from heat, water-contamination and vector-borne diseases as areas of concern. Studies focusing on Sri Lanka have demonstrated an increasing temperature trend over the last century (Sathischandra, Marambe, & Punyawardena, 2014), further indicating that increased temperatures could be an important feature of future climate change on the island.

Sri Lanka's cities are also at risk from the global trend of climate-related sea level change, which poses major threats

to cities throughout Asia (Hanson et al., 2011). The 5th IPCC report projects sea level rises of between 28 cm to 98 cm by 2100, presenting a significant risk to low-lying coastal urban areas. The impacts of sea level rise on Sri Lanka's cities will be discussed in relation to the distribution of urban assets in the following section.

8.2 Why are Sri Lanka's cities vulnerable to climate risks?

While exposure describes the external threats to systems, urban vulnerability describes the potential impact of these external threats in reference to the attributes of cities (Füssel & Klein, 2006). In this section, the attributes of Sri Lanka's cities that render them vulnerable to climate risks are identified.

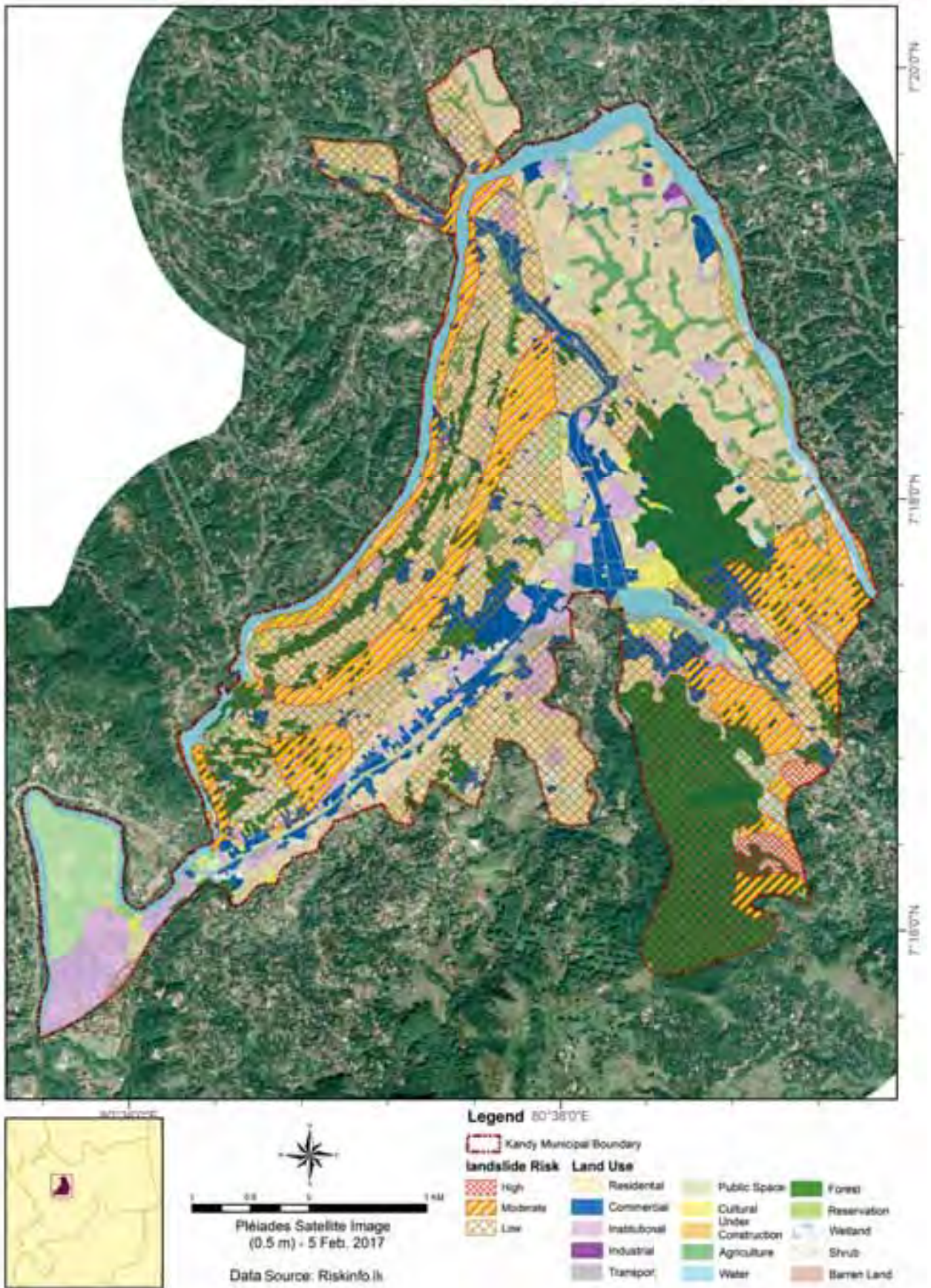
The distribution of urban infrastructure and assets in risk-prone areas

Cities often represent a concentration of key social, political and economic resources in areas exposed to climate risks, constituting an important source of climate vulnerability globally (Dodman, Bicknell, & Satterthwaite, 2012; Hallegatte & Corfee-Morlot, 2011). Globally, the concentration of economic activities in these hazard-prone low-lying port cities, for example, present a significant source of vulnerability for the global economy, and could result in asset exposure equal to 9 per cent of global GDP by 2070 (Hanson et al., 2011).

In Sri Lanka, the SoSLC report has identified urban areas as sites of key public and private assets, which provide multiple socioeconomic functions that are crucial to the development of the country. To assess urban asset vulnerability in the 9 Provincial Capitals, the SoSLC project mapped risk-prone areas in relation to urban land use. The exercise was conducted for the current climate risks that threaten urban assets, floods and landslides, as well as the future risk of sea level rise.

Landslides pose serious risks to urban assets in Ratnapura, Badulla and Kandy. In Kandy, the proportion of urban assets exposed to risk is particularly large. More than half of residential land use is located on land that the GoSL's NBRO classifies as at risk from landslides (Fig 8.2; Table 8.3). Nearly 6 ha of residential properties are located in high-risk areas – which is significant considering that landslides are 'to be expected' in these areas, and that their impacts are often fatal. Nearly 17 per cent of all residential, 15 per cent of all industrial, 12 per cent of transport, 11 per cent of commercial and 8 per cent of institutional (public offices, schools, hospitals etc.) land use is located in moderate risk areas.

Fig 8.2: Distribution of landslide risk in Kandy



Source: SoSLC Project

Table 8.3: Urban assets and landslide risk in Kandy

	Landslide Risk Zone (per cent of land use)				
	High	Moderate	Low	No risk	Total
Residential	0.6	16.9	45.6	36.8	100.0
Commercial	-	10.8	47.0	42.2	100.0
Institutional	-	8.3	28.7	63.0	100.0
Industrial	-	14.9	14.9	70.2	100.0
Transport	-	11.9	35.9	52.2	100.0
Public Space	-	4.8	16.9	78.3	100.0
Cultural	-	6.0	38.5	55.5	100.0
Under Construction	-	15.4	25.6	59.0	100.0
Total built-up	0.4	13.7	41.2	44.7	100.0
Total non-built-up	2.1	11.8	44.3	41.8	100.0

Source: SoSLC project

Some urban assets and infrastructure are particularly important for residents of cities (and surrounding areas) during climate-related disasters. These include hospitals, emergency services, and potential shelters, such as school buildings, for those left homeless. Maintaining mobility is also important, so affected residents can receive aid and access services. The SoSLC hazard mapping exercise looked at the impact of the most severe climate risk currently affecting Sri Lanka's cities – flooding – in relation to key urban services. It was found that essential infrastructure needed to respond to floods can be rendered inoperable by inundation. In Ratnapura MC, for example, vulnerable transport infrastructure means that those in need of urgent medical attention will struggle to access essential services and hospitals may be unable to provide appropriate care because their facilities are in flood-prone areas and may be compromised (Fig 8.3). Health systems vulnerability to flooding is a serious issue across Sri Lanka: during the 2017 floods, services provided by 16 hospitals across the country were compromised as a result of power cuts and premises evacuations (WHO, 2017).

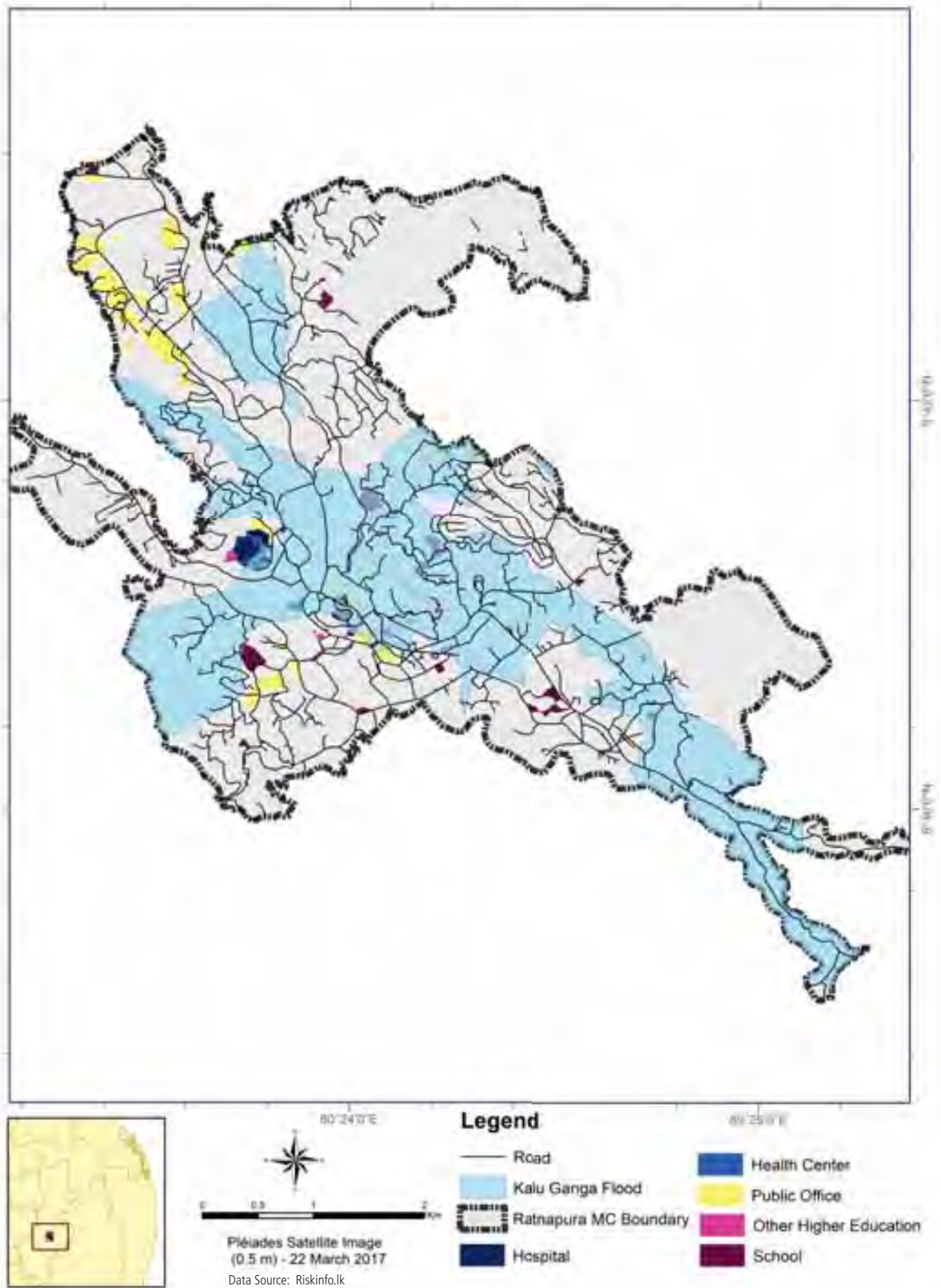
In response to the flood risk in Ratnapura, many government offices and frontline services, such as police and emergency departments, have relocated from flood-prone areas to safe areas (Churchill & Hutchinson, 1984). Many of the city's public offices (in yellow, Fig 8.3), for example, are located in safe areas in the north west of the city. Despite this, their utility is restricted due to limited mobility in times of flood because of inundation of the municipal transportation network.

An emerging source of climate vulnerability relates to urban assets affected by climate-related sea level (SL) rises. To assess vulnerability, the GoSL modelled the impact of future SL rise on Sri Lanka's coast line (GoSL-UNDP, 2012). This model is based on SL rise projections in the 4th IPCC assessment; this predicted a maximum SL increase of 0.59 metres in 100 years due to climate change. The SL rise was modelled in relation to the topographical profile of the country's coast line; the resulting SL inundation layer is now publically accessible via the DMC's riskinfo.lk website in GIS format.

The SoSLC project overlaid a GoSL 100 year SL layer onto land use maps to assess the potential impact on urban assets. The results show that of the 9 Provincial Capitals, Colombo, Galle, Jaffna and Trincomalee are likely to be affected by climate change-related SL rise. Out of these 4, Colombo and Trincomalee MCs would be the least affected areas because their steeper coastline topography would reduce inundation severity. In contrast, SL rise may have a substantial impact on important urban assets and infrastructure in Jaffna and Galle (Table 8.4). Over 10 per cent of the built-up area in each city could be submerged, comprising a range of land use types.

It is notable that in both cities a high proportion of land categorised as currently 'under construction' is vulnerable to SL rise: around a third of such land use will be submerged according to the projections. This suggests two processes: first, that new buildings are being built on more hazard-prone low-lying areas that are vulnerable to waterlogging;

Fig 8.3: Flood extent and key urban infrastructure in Ratnapura



Source: SoSLC project

second, that climate change projections do not currently play a decisive role in determining the form of urban expansion.

An important area of social, economic and cultural importance threatened by sea level rise is the Galle bay area (Fig 8.4). Galle is an important site of international tourism centred on Galle Fort, which is a UNESCO World Heritage Site; the Fort includes many commercial properties, including hotels and restaurants. The bay area is also an important industrial and commercial hub, including Galle harbour and related infrastructure. These activities could be threatened by projected SL rises.

Table 8.4: Vulnerability to sea level rise, Jaffna and Galle (per cent of land use)

	Jaffna		Galle	
	At risk	Not at risk	At risk	Not at risk
Residential	-	100	7.6	92.4
Institutional	16.3	83.7	13.3	86.7
Industrial	7.9	92.1	13.5	86.5
Transport	6.1	93.9	14.2	85.8
Public space	29.4	70.6	26.8	73.2
Cultural	21.6	78.4	14.8	85.2
Under construction	32.7	67.3	34.5	65.5
Total built-up	10.3	89.7	10.4	89.6
Total non-built up	16.3	83.7	32.7	67.3

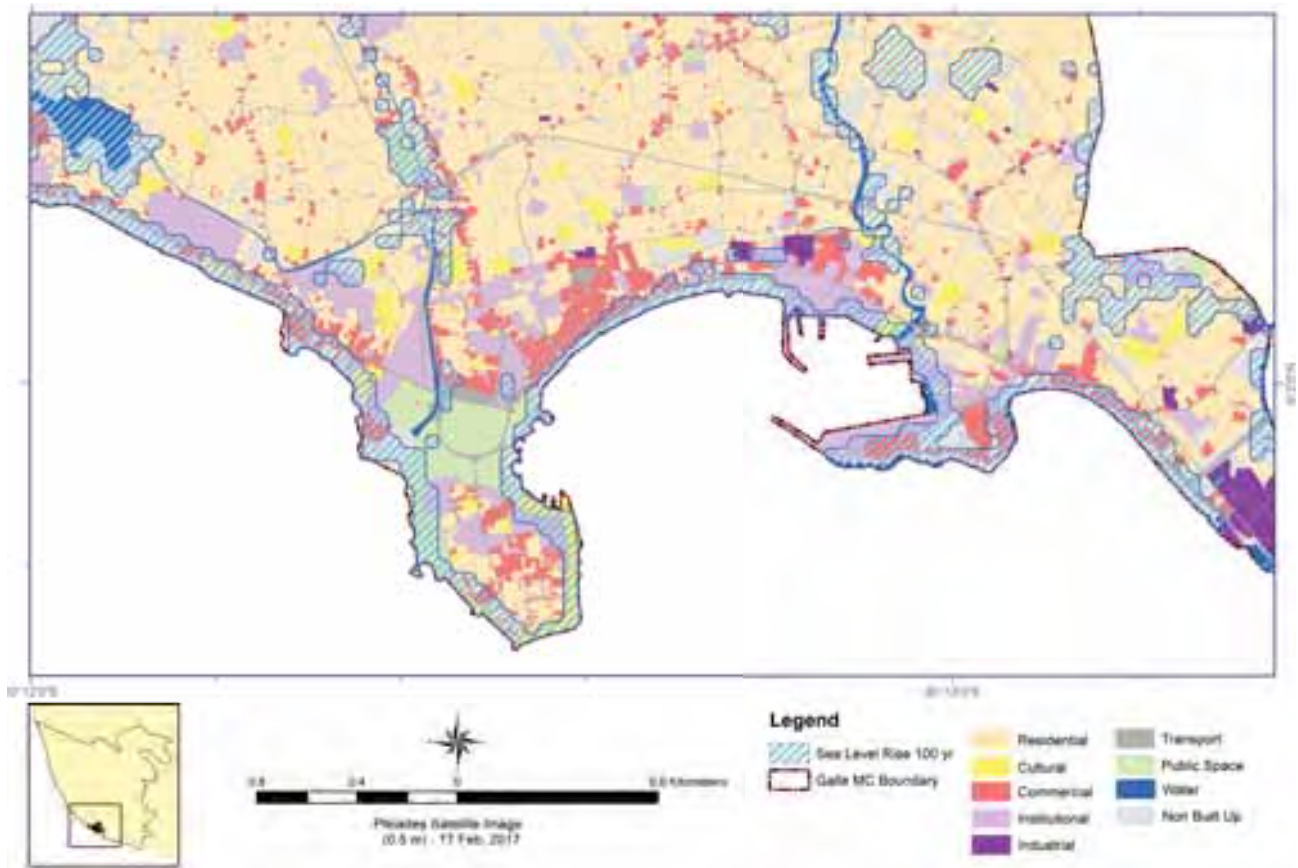
Source: SoSLC project

Municipal Beach in Galle



Source: UN-Habitat/Charmalee Jayasinghe

Fig 8.4: Impact of sea level rise in Galle bay area



Source: SoSLC project

It should be noted that the sea-level layer used in the GoSL (and SoSLC) assessment may underestimate SL rise resulting from climate change. The 5th IPCC assessment revised up SL rise projections from 0.5 m to 0.98 m, rendering the urban assets located on the country’s coastline even more vulnerable than the land use maps generated for this report suggest.

Urban form and vulnerability

Rapid urban sprawl is a feature of urban expansion in many Sri Lankan cities (see Chapter 2). Urban sprawl synergises with climate change in a number of ways to increase the vulnerability residents to climate risks. Globally, studies have shown that low density expansion results in increased coverage of impermeable concrete surfaces, leading to more surface run-off being concentrated into diminishing drainage reservoirs, increasing flood risk in many rapidly expanding cities across the world (Johnson, 2001).

In conjunction with these processes, rapid urban expansion results in an increasing population residing in flood prone areas and experiencing more frequent, longer-lasting precipitation and riverine floods, often contaminated with

harmful pollutants (Douglas et al., 2008). As climate change results in increased rainfall intensity in many parts of the globe, and a greater frequency of extreme weather events, greater pressure is exerted onto urban drainage systems (both natural and engineered), further exacerbating flood vulnerability (Douglas et al., 2008).

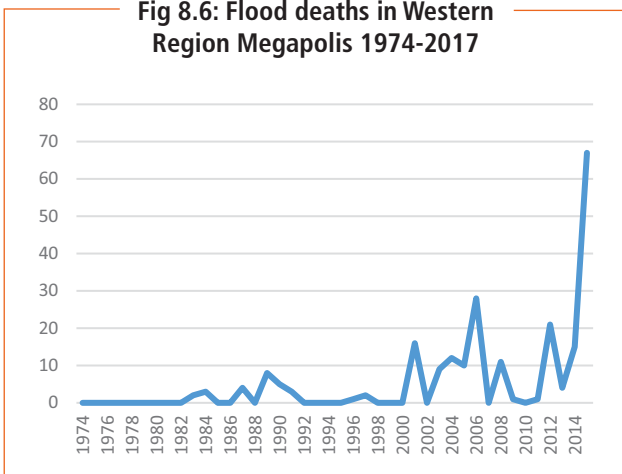
Urban expansion and flood vulnerability has been explored by the SoSLC project through the mapping of flood extent against urban expansion. This exercise was conducted for the WRM, which experienced rapid sprawl development in the periphery between 1995 and 2017 (see Chapter 2). The SoSLC project overlaid a map of the extent of a 2010 flood event (available on the GoSL’s riskinfo.lk website) onto the urban expansion maps to assess the spatial distribution of flood risk (2010 and 2017 were the most severe floods to affect Colombo in recent years, but data for the 2017 flood was not available). The result shows that the peripheral urban area – added between 1995 and 2017 – is most vulnerable to flooding (Fig 8.5). Flooding in the periphery must also be considered in relation to the urban service deficits in fringe areas, which renders the impacts of flooding more severe (see Chapter 6).

Fig 8.5: Flood extent and urban expansion in Western Region Megapolis



Source: SoSLC project

Fig 8.6: Flood deaths in Western Region Megapolis 1974-2017



Source: Data from DMC (2018)

A striking indicator that links vulnerability to urban expansion is historical flood deaths in the WRM; more deaths have occurred as the urban area expanded. In the 20 year period from 1974 (when records began) to 1994 there were 25 recorded deaths; in the 22 year period from 1995 to 2017, during which SoSLC research revealed significant urban expansion, there were 198 recorded deaths (Fig 8.6). In addition, many more have died from associated disease outbreaks, including the dengue fever epidemic of 2017 which killed at least 100 people in the area.

Urban sprawl is also related to extreme temperatures resultant of the 'urban heat island' effect. Sprawling cities are more susceptible to extreme heat events than compact cities, resultant of the enhanced surface temperature associated with low density urban development (Stone, Hess, & Frumkin, 2010). In this context, urban sprawl renders Sri Lanka's cities more vulnerable to the temperature increases associated with climate change. Increasing urban temperatures and extreme heat events are linked to a variety of public health issues, from heat stroke to vector-borne diseases such as dengue fever. Increased temperatures and extreme events synergise with high vehicle usage in sprawling cities, to contribute to increased air pollution and associated public health risks (See Chapter 7).

The urban heat island effect is also linked to extreme precipitation. A recent study of Colombo modelled the relationship between extreme rainfall events and urban expansion, finding a positive link between the expansion of urban area and extreme rainfall, linked to the urban heat island effect (Pathirana, Denekeew, Veerbeek, Zevenbergen, & Banda, 2014).

Socio-spatial aspects of urban vulnerability

Vulnerability is also related to the socioeconomic profile of cities. In cities across the globe, climate vulnerability is distributed towards low income groups, with the urban poor

impacted the hardest (IPCC, 2014). Low-income urban dwellers often live in peripheral hazard-prone areas, such as on river banks and low-lying wetland areas (Dodman & Satterthwaite, 2008). These residents may be more likely to have less durable assets (such as self-built homes) easily damaged in disasters; they may also find it difficult to pay for health care, home repairs or other costs incurred during a disaster event. In particular, women face challenges, because of their roles in unpaid domestic work increases.

There are clear indicators of socio-spatial variations in vulnerability in Sri Lanka's cities. In Colombo, for instance, a survey included in the city's Wetland Management Strategy found that those living in flood-prone wetland areas reported household incomes of 40 per cent below the city average (GoSL, 2016b). In this case, income is related to vulnerability by restricting low income groups to low cost land and/or housing in hazard-prone areas, rendering them more vulnerable to climate change than other urban dwellers. As discussed in Chapter 6, residents in peripheral areas lack access to key municipal utility and service coverage, such as appropriate waste management. This poses threats to urban ecosystems and to the health of residents, particularly during times of flood.

Bellanwila Attidiya Wetland



Source: UN-Habitat/Charmalee Jayasinghe

Low-lying low income settlement in Colombo MC



Source: UN-Habitat/Charmalee Jayasinghe

Importantly understanding the socio-spatial aspects of urban climate vulnerability in the 9 Provincial Capitals are currently constrained by data gaps. A key issue is the location and magnitude of informal settlements and/or self-built housing, and the challenges faced by those located in hazard-prone areas, is not well understood. In the WRM, for example, systematic, detailed data relating to the location and characteristics of informal settlements is available only for Colombo MC (see Chapter 5). Therefore, more research on the socio-spatial dynamics of urban vulnerability to climate change is urgently needed.

8.3 Climate resilient cities: time for an ecosystems-based approach?

As this chapter has outlined, Sri Lanka's cities are exposed to a variety of risks; the current trajectory of rapid urban expansion and climate change are exacerbating these risks, increasing the vulnerability of cities and their populations. In this context, the GoSL are increasingly engaging in the policy issue of urban resilience. Both the *Western Region Megapolis Master plan* and *Vision 2025* highlight of flooding in the WRM as an issue requiring action to ensure the city transitions to a competitive centre and regional hub for trade and investment (GoSL, 2016a; 2016b). In addition, the GoSL's *National Adaptation Plan* identifies cities as key sites where adaptive interventions are needed if Sri Lanka is

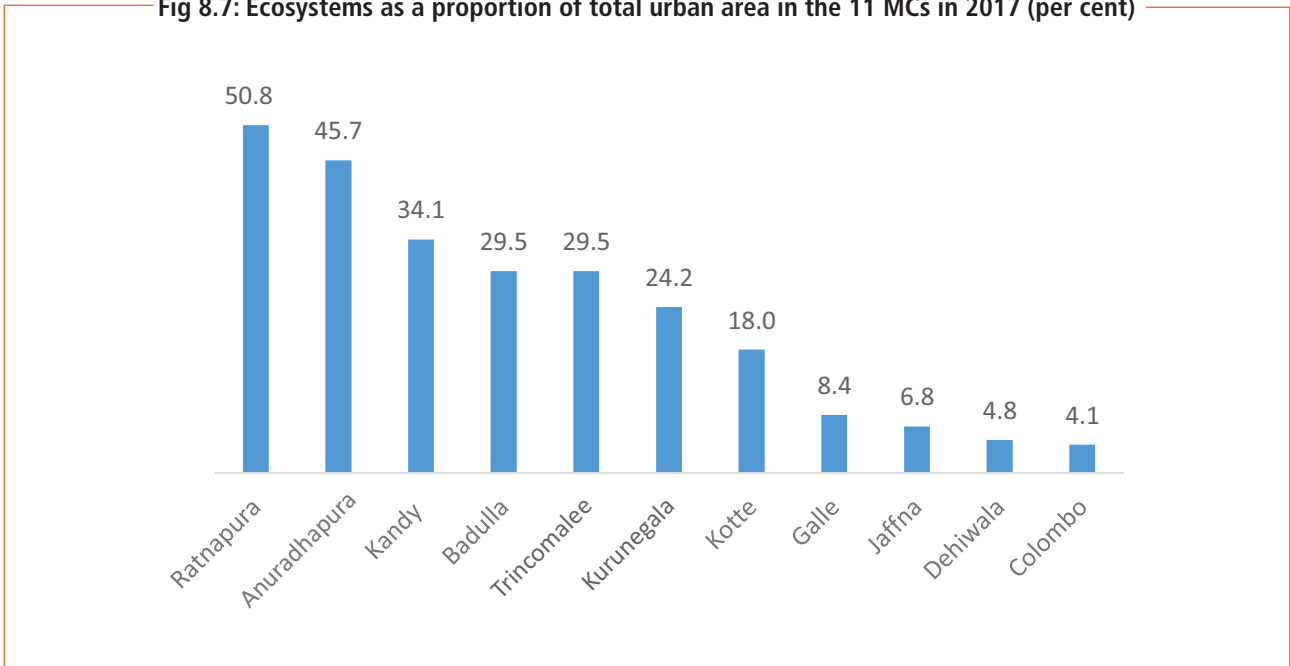
to increase its climate resilience. The key question for policy makers is: how can Sri Lanka's cities be resilient in the face of increasing climate risks?

Approaches to increasing urban resilience

In the climate change context, resilience is typically defined as the ability of systems to withstand and overcome shocks (Adger, 2000). Recent literature has highlighted a transformative element of programmes that have successfully built urban resilience, where vulnerable communities are socially and economically empowered to challenge the structures that perpetuate vulnerability, and in doing so, are able to successfully adapt in the long-term to climate risks (Bahadur & Tanner, 2014). In Sri Lanka, there have been a range of government responses aiming to build the resilience of urban systems to enable them to withstand and overcome climate risks; some of these approaches have included 'transformative' elements. These responses fall into three broad categories.

The first includes large-scale engineered investments. They include infrastructure investments in flood defences or the installation of Early Warning Systems for floods and landslides. These projects, often funded by the World Bank, Asian Development Bank and Asian Infrastructure Development Bank, have invested hundreds of millions of

Fig 8.7: Ecosystems as a proportion of total urban area in the 11 MCs in 2017 (per cent)



Source: SoSLC project

dollars in such activities. Major projects include Metro Colombo Urban Development Project (MCUDP) and Climate Resilience Improvement Projects 1 and 2 (CRIP 1 and 2).

The second includes community-based infrastructure projects focused at vulnerable communities. UN-Habitat and other development partners have increased resilience of disaster-affected communities through community-based responses. These have included settlement upgrading following disasters using the build-back-better approach. A transformative aspect of this has been the community-based approach related to *The People’s Process*, by empowering people and communities with the support of authorities to make decisions and take resilience-building actions (See Chapter 5).

Third, an emerging urban resilience strategy that is gaining traction globally (and increasingly so in Sri Lanka) is an ecosystem-centred approach – commonly referred to as ecosystem-based adaptation to climate change. Globally, ecosystems are used to strengthen urban resilience to floods and sea level rises, storm surges and other climate risks (Brink et al., 2016). Typical interventions include leveraging wetland ecosystems to build resilience to urban flooding, or mangroves to protect communities from storm surges during cyclonic weather systems.

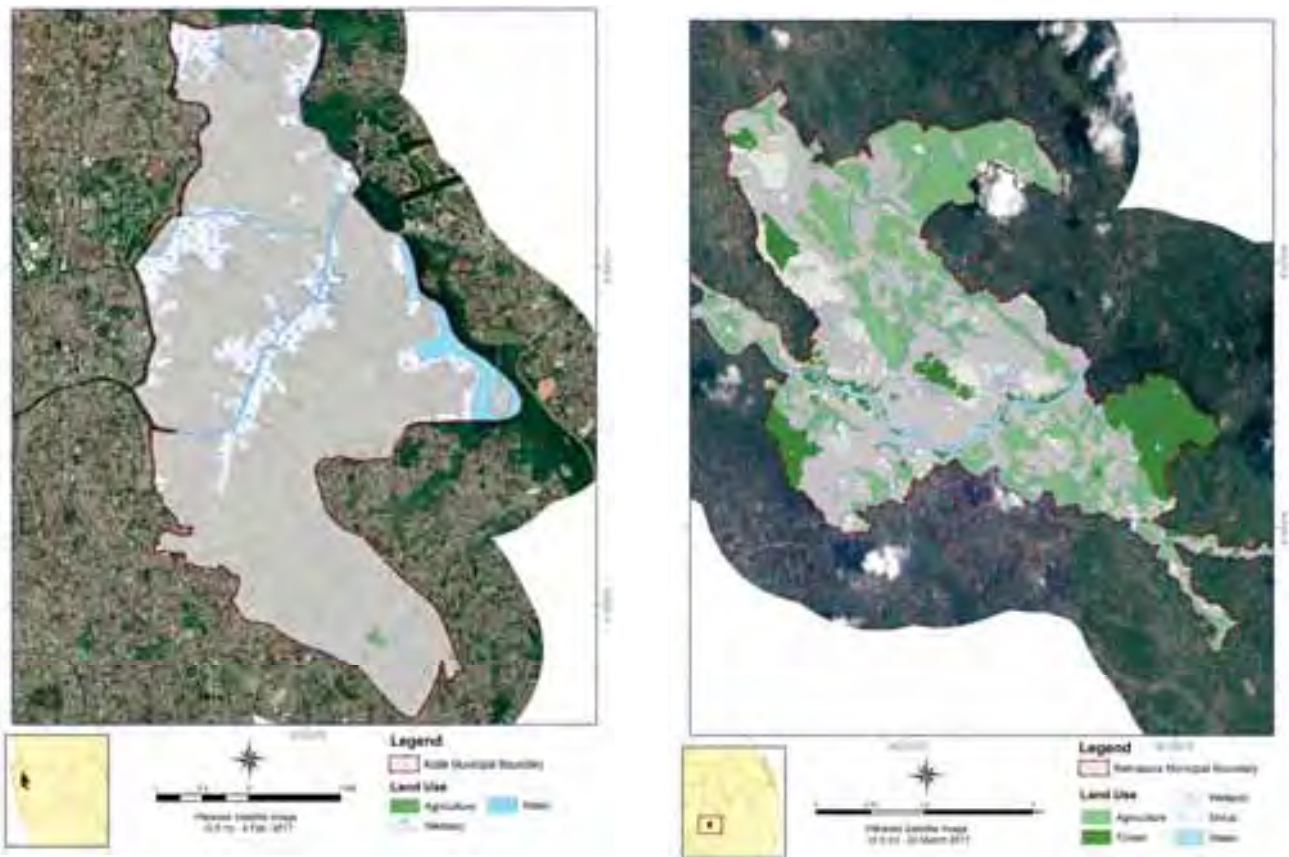
Ecosystem services in Sri Lanka’s cities

The SoSLC land use mapping revealed various urban ecosystems and related green spaces that provide important

ecosystem services. These urban ecosystems were included as 5 land use categories: wetland, shrub, agriculture, forest and water. The categories were not fixed, but subject to seasonal changes. For example, shrub areas and adjoining wetlands become waterlogged at certain times of year, blurring the boundaries between land use classes. Moreover, agriculture, shrub and wetlands are often part of the same urban ecosystems. A study of the Colombo Flood Detention Area wetlands, for example, defined the system as a ‘large network of freshwater marshes, open waterways, lakes and paddy land scattered across metropolitan Colombo’ (Hettiarachchi et al., 2014). Hence, the 5 land use categories should be thought of as interlinked ecosystems.

Land use mapping reveal that many of Sri Lanka’s cities include important ecosystem services (Fig 8.7; 8.8). In Ratnapura more than half of land use is ecosystem based, with forest and agriculture accounting for the largest share, followed by shrub, wetland and/or water. Kandy also includes a large stock of forest, some of which has footpaths and other recreational activities that could be considered public space (See Chapter 6). Colombo and Dehiwala include the lowest stock of ecosystem areas, but are linked to other ecosystems in the WRM, which provide the area with flood resilience services. Kotte, for example, borders Colombo MC, and includes a large proportion of urban wetlands, which provide important ecosystem services in the form of flood drainage (Fig 8.8).

Fig 8.8: Distribution of ecosystems in Kotte (L) and Ratnapura (R) in 2017



Source: SoSLC project

Urban public green space and Diyawanna lake in Kotte



Source: UN-Habitat/Charmalee Jayasinghe

Solid waste contamination in urban wetland



Source: UN-Habitat/Charmalee Jayasinghe

Urban wetlands for ecosystem-based adaptation: a case study of Bellanwila-Attidiya wetland

To assess the challenges and opportunities for ecosystem-based adaptation, the SoSLC project undertook an in-depth assessment of Bellanwila-Attidiya wetland: a 370 ha freshwater marsh in the WRM located south of Colombo MC (GoSL, 2016c). This site was chosen because there has been little recent research on the area. It is also a site identified in the CEA's 2006 Wetlands Inventory as being under severe risk from urban expansion (GoSL, 2006).

The 2006 Wetlands Inventory report notes various ecosystem services provided by Attidiya: the ecosystem acts as an important flood drainage reservoir and has rich biodiversity, including 152 vertebrates and 75 species of butterfly, some of which are threatened species. The marsh also provides a variety of recreational and education services: its wildlife and green space are important sources of leisure activities for urban residents, and the area is also used for education purposes – it is a popular field site for school children and university students, particularly in relation to the study of bird life. The wetland also supports the livelihood of the local community: reeds are collected for the making of mats, artisanal fishing and shrimping, and small-scale agriculture is practiced in some areas. The report also notes, however, that the wetland faced many threats related to urban development. The main issues reported

included untreated sewage, garbage and industrial waste contaminating the area, as well as land filling for urban development. The report concluded that 'urgent actions' were required to address these threats (GoSL, 2006: 43).

A 2017 assessment by the SoSLC project also found the ecosystem services of Attidiya to be under threat from urban expansion. Time-series land use mapping of the Greater Attidiya Area in 2004 and 2017 was conducted to assess land use change in the area (Fig 8.9). The results show that significant land use change from ecosystem to built-up area. Over the 13 year period, there was a 24 per cent reduction in the Attidiya ecosystem area. This equates to an average annual rate of reduction of 2.1 per cent.

Detailed building footprint mapping was undertaken within the official demarcated Attidiya wetland to explore the dynamics of land use change over time in the protected area. This process involved mapping all building footprints in 2004, and again in 2017, to assess the change in the number and area of buildings. The analysis reveals the number of structures increased from 5,158 in 2004 to 7,524 in 2017, as plots were subdivided, sold and developed (Fig 8.10). This represents a 46 per cent increase in the number of buildings, or an increase of around 2.95 per cent per year, in the period 2004 to 2017. Correspondingly, the protected wetland areas has been diminished.

Fig 8.9: Land use change in the Greater Attidiya Area 2004-2017



Source: SoSLC Project

Fig 8.10: Increase in buildings in Attidiya 2004-2017

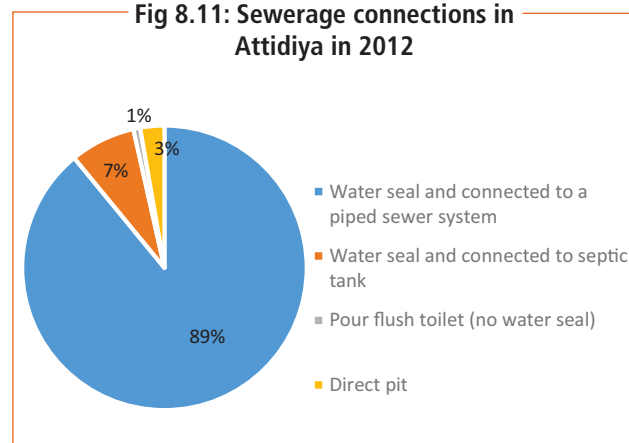


Source: SoSLC Project

The characteristics of urban development also threatens ecosystem services provided by Attidiya, and lessens the wetland's climate resilience attributes. In this regard, the SoSLC project assessed WASH coverage to identify potential contamination and associated public health risks. Census data from 2012 for the GNs located within the Attidiya boundary show that 89 per cent of respondents reported a piped sewerage connection with the remainder reporting on-site disposal via latrines or other systems (Fig 8.11). The high proportion of households reporting a piped sewerage connection is surprising for two reasons: first, the figure is far higher than the average in the adjoining Dehiwala MC, where only 8 per cent of households reported a piped sewerage connection (see Chapter 6); second, because there is no known municipal sewerage system in the Attidiya area – only Colombo MC is served with comprehensive municipal sewerage system, and even there only 58 per cent of households report a piped sewerage system (see Chapter 6). Further research and actions is needed to ensure that local 'piped' sewerage systems do not contaminate the wetland ecosystems.

In addition to wastewater contamination, the wetland is threatened by solid waste dumping in the area. This also poses additional public health risks, as dumping sites are well known to be mosquito breeding sites bringing the risk of dengue fever and other vector-borne diseases (Sirisena & Noordeen, 2014), as well as introducing toxic material to the system. Consequently, dumping sites present contamination risks especially in periods of flood, putting residents at risk of diseases such as diarrhoea, which pose risks to vulnerable sub-groups, such as young children.

Fig 8.11: Sewerage connections in Attidiya in 2012



Source: Data from DCS

Solid waste dumping in Attidiya



Source: UN-Habitat/Charmalee Jayasinghe

While the loss and contamination of wetland areas present a range of risks to urban residents, their sustainable use provides a range of benefits to urban systems. Aside from the climate resilience functions of ecosystems, protecting and enhancing natural and semi-natural environmental assets of Sri Lankan cities can drive the country's burgeoning ecotourism industry. The *Tourism Strategic Plan 2017-2020* recognizes the economic value of ecotourism, noting that 'Sri Lanka can credibly place a strong focus on

ecotourism and realistically aim to be an international leader in ecotourism within a decade.' (GoSL, 2017: 69). One of the projects identified in the strategic plan is the development of an ecosystem trail in the country. There is a significant opportunity to include Attidiya and other important urban wetlands and ecosystems. Already, there is evidence of Attidiya serving local recreation demand, as a thriving bird watching destination.

Examples of urban greenery in Colombo



Source: UN-Habitat/Charlene Liao



Source: UN-Habitat/Charmalee Jayasinghe



8.4 Climate resilient cities and a better urban future for all Sri Lankans

Climate change constitutes one of the main future threats to Sri Lanka's urban systems. It is therefore essential that urban policy makers understand these risks and plan for climate resilient cities. By providing an evidenced-based assessment of climate risk and resilience, this chapter contributes to *a better urban future for all Sri Lankans*: promoting the competitiveness, inclusivity, resilience, safety and sustainability of Sri Lanka's cities.

City outcome	Contribution of climate resilient cities
Competitive	<p>Floods, landslides and other climate risks have severe implications for the economic functionality of cities by restricting mobility and damaging key urban assets and infrastructure.</p> <p>Cities that are vulnerable to climate risks are less liveable, and are thus less attractive destinations for trade, investment and international business.</p> <p>Promoting climate resilient cities through ecosystem-based adaptation, such as wetlands restoration, offer opportunities for long-term, green growth of the urban economy.</p>
Inclusive	<p>Climate risks, and by extension climate change, impact low-income urban residents living in peripheral, risk-prone areas most severely.</p> <p>Ensuring that interventions target low-income residents will have high-impact in reducing climate vulnerability. For example, ecosystem-based adaptation can address vulnerability for low-income communities in flood-prone wetland areas.</p>
Resilient	<p>Mainstreaming climate resilience programming into urban planning strategies will address key sources of vulnerability, including the distribution of assets in risk-prone areas, sprawl expansion, and vulnerability in low-income populations.</p>
Safe	<p>Climate risks pose a threat to the safety of urban residents, both in terms of an immediate threat posed by flood waters, landslides and other rapid-onset events, and secondary threats, such as diseases outbreaks and extreme heat events. In climate resilient cities, these threats are reduced.</p>
Sustainable	<p>Building resilient cities is crucial for the long-term sustainability of urban centres in the face of climate change.</p> <p>Promoting green climate resilience interventions, such as ecosystem-based adaptation, protects important urban ecosystems, contributing to environmental sustainability.</p>

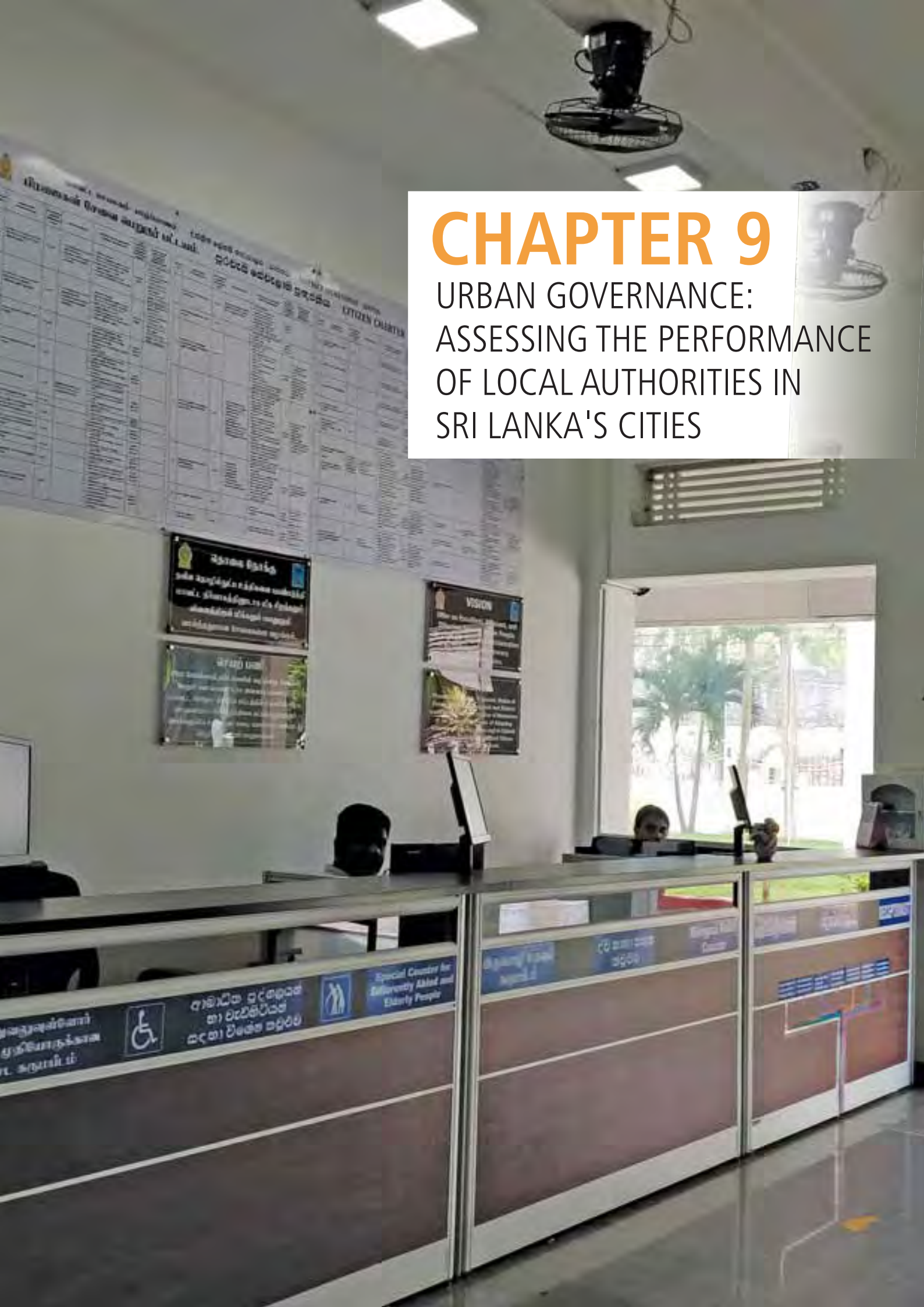
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CHAPTER 9

URBAN GOVERNANCE:
ASSESSING THE PERFORMANCE
OF LOCAL AUTHORITIES IN
SRI LANKA'S CITIES



This chapter assesses local governance capacity in Sri Lanka's cities with a specific focus on the 9 Provincial Capitals. The first section provides a background of urban governance structures in Sri Lanka. A City Governance Index (CGI) is then applied to assess the performance of Local Authorities¹ (LAs) against a range of indicators to enable cross-city comparisons in governance capacity. This is followed by an evaluation of the critical barriers that are hindering effective local governance in Sri Lanka.

KEY MESSAGES

1. Local Authorities (LAs) in the 9 Provincial Capitals face significant financial pressures to raise revenue to fund the development of infrastructure and deliver basic urban services. Only 1.6 to 2.6 per cent of total government revenues are allocated to LAs.
2. LAs have powers to improve revenue streams to fund and improve service delivery but are not using these to good effect.
3. LA performance varies by region: the better connected and more prosperous cities score higher, and more remote less developed cities score lower. Kandy and Colombo scored 57 and 49 (out of 100), respectively, and are categorised as high performing LAs. In contrast, Kurunegala and Ratnapura both scored around 35 and 33, respectively, and are categorised as low performing LAs.
4. A confusing dual governance structure means the roles, responsibilities and financing of services is uncoordinated, resulting in weak governance outcomes. Local government reforms, adjusting urban area boundaries to incorporate fringe urban areas into MCs, greater devolution of planning, development and financial responsibilities to MCs, and collaborative governance, are ways to make more efficient use of public sector resources to improve urban governance and management in the Provincial Capitals and other cities.

9.1 Sri Lanka's urban governance structures

Sri Lanka is governed by a three tier establishment comprised of national, provincial, and local levels. The local government as a third tier is enshrined in the constitution through the 13th amendment, where it is recognized as a subordinate level to the provincial councils. The constitutional amendment declares the following: 'Local authorities will have the powers vested in them under existing law, the Municipal Councils Ordinance and the Urban Councils Ordinance. Pradeshiya sabhas will have the powers vested in them under existing law. It will be open to the provincial council to confer additional powers on local authorities but not to take away their powers.'

The country is divided into 9 Provinces which are governed by the Provincial Councils at the second tier, and 341 units at the third tier governed by the LAs. According to the 2012 census, this included 64 Municipal and Urban Councils (See chapter 1, Table 1.1).

The LAs have been empowered constitutionally through greater decentralization and devolution of legislative, administrative, and fiscal responsibilities. The LAs are responsible for public health, utility services, and rural roads,

whereas, the responsibilities of Provincial Councils include development planning, education, health and social welfare, land use and land development, and local government oversight. LAs are permitted to create by-laws with approval from higher tiers of government. The fiscal decentralization permits LAs to collect local taxes and user fees, revenues on property taxes and rents. Inter-governmental transfers from national and provincial governments contribute towards the operational expenses including salaries.

9.2 Assessing the capacity of Local Authorities using the City Governing Index (CGI)

To assess the capacity of the Provincial Capital's LAs to fulfil their mandate, the SoSLC report deploys a CGI. The CGI assesses LAs against 6 key governance sub-indices each measured through 20 indicators and 42 sub-indicators (Table 9.1). The first is financial resilience of LAs, which includes indicators on the overall financial strength of the LA, their revenue collection capabilities and resource allocation trends. The second is related to policy making capacity, and includes the number of by-laws promulgated by the LA, resources allocated to implement policies and evidence of their implementation. The third and fourth assesses the delivery of key public services, including the

¹ In the context of the 9 Provincial Capitals, LAs, refer to the Municipal Council authorities except in the case of Trincomalee. The respective entity for Trincomalee is the Trincomalee Urban Council

Table 9.1: City Governance Index indices and indicators

	Sub-Index	Indicators	Sub-indicators
City Governance Index	1. Financial Resilience	1.1 Key Financial Indicators	1.1.1 Current Ratio
			1.1.2 Fixed costs as a percentage of total expenditure
			1.1.3 Operating Surplus
			1.1.4 Contribution of own revenue to total revenue
			1.1.5 Contribution to capital expenses from own revenue
			1.1.6 Contribution to staff salaries from own revenue
		1.2 Financial Effectiveness	1.2.1 Own Revenue Collection
			1.2.2 Rate & Taxes Collection
			1.2.3 Rent Collection
			1.2.4 License Collection
			1.2.5 Fees for Service Collection
			1.2.6 Warrant Cost, Fine & Penalties Collection
			1.2.7 Other Revenue Collection
		1.3 Resource Allocation	1.3.1 Capital expenditure as a percentage of own revenue
			1.3.2 Salary expenditure as a percentage of own revenue
		1.4 COPA Evaluation	1.4.1 Score obtained by the LA in the COPA Assessment ²
	2. Policy Enablers	2.1 Enactment of key By-Laws	2.1.1 Number of by-laws adapted out of 55 key bylaws
		2.2 Enactment of policy on Fund Allocation	2.2.1 Evidence of any policy for allocating funds
			2.2.2 Rationale for fund allocation
	2.3 Advisory Committee for private sector engagement	2.3.1 Existence of Advisory Committee for private sector engagement.	
		2.3.2 Proof of operations (meeting minutes)	
	3. Service Delivery Coverage	3.1 Coverage of regulatory services	3.1.1 Number of services delivered out of nine standard regulatory services
		3.2 Coverage of special services	3.2.1 Number of services delivered out of nine standard special services
		3.3 Available staff for mandated positions	3.3.1 Per capita availability of key operational staff for service delivery (Revenue Officers, Technical Officers, Public Health Inspectors and Community Development Officers)
	4. Service Delivery Financing, Efficiency and Effectiveness		4.1 Per Capita Own Revenue
		4.2 Value for money in service delivery	4.2.1 Ratio of per capita cost of administration to total cost of delivering services
			4.3 Development focus of budget
		4.3.2 Percentage of completed development activities against budgeted activities.	
4.4 Effectiveness	4.4.1 Percentage of actual expenditure met out of own revenue against budgeted		
	5.1 Women Representation	5.1.1 Ratio of total women councillors to the total number of councillors	
		5.1.2 Ratio of directly elected women councillors to total number of women councillors	
		5.1.3 Ratio of women councillors selected through PR system to total number of women councillors	
5.2 Inclusion	5.2.1 Percentage of budget allocated for Pro-Poor Related services out of the total budget		
	5.2.2 Percentage of budget allocated for disability related services out of the total budget		
5.3 Openness	5.3.1 Proactive Disclosure of Budgets, and Accounts (number of documents proactively disclosed out of a minimum 6 documents)		
	5.3.2 Proactive Disclosure of Procurement Details (number of documents proactively disclosed out of a minimum 5 documents)		
5.4 Status of General Audit	5.4.1 Display of Audit Report in sub offices and libraries		
	5.4.2 Display of Audit Report in LA website		
	5.4.3 Presentation of Audit Report to Council		
	5.4.4 Display of answers for audit queries in LA website		
6.1 Political participation	6.1.1 Percentage of valid votes cast at last LA election		
	6.1.2 Number of councillors per citizen		
6.2 Citizen participation	6.2.1 Presence of Ward Councils		
	6.2.2 Presence of Advisory Committees		

² In June 2018, the Committee on PublicAccounts (COPA) appointed by the Parliament of Sri Lanka released a report assessing the financial management and performance of 837 public institutions, including 335 local governments. The assessment scored each institution on a scale of 100.

breadth of services, their cost, quality and coverage. The fifth assesses the accountability and equity of LAs, including women's representation, policies targeting vulnerable groups (poor, disabled etc.) and the transparency of LA activities. The sixth assesses political and citizen participation, including indicators on participation rates in local elections and other mechanisms in place to facilitate citizen participation.

The results of the CGI paint a mixed picture of LA capacity in the 9 Provincial Capitals (Fig 9.1). Of the 6 key indicators, 'Service Delivery Coverage' is the highest rated with a score of 75.83 followed by 'Participation' and 'Service Delivery Financing and Targeting' with 47.22 and 36.81 respectively. The remaining indicators, corresponding to the 'Financial Resilience', 'Policy Enablers' and 'Accountability and Equity', register scores below 30.

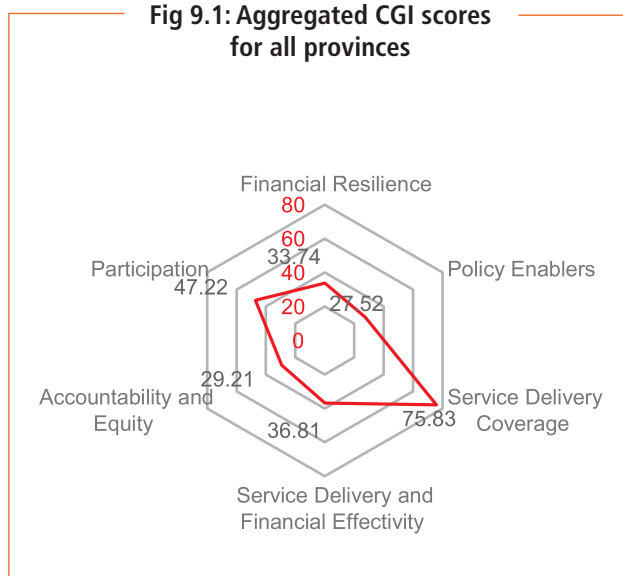
Unpacking the 6 sub-indices reveals numerous points of strength and weakness across LAs (Table 9.2). Considering the 'Financial Resilience' of the Provincial Capitals, Kandy MC leads with a score of 50.71; Kurunegala MC, Galle MC were the only other LAs to score more than the average of 33.74. The remaining 6 cities obtained less than the average score while Rathnapura MC scored the lowest (34.8), indicating very low performance. Similarly, on 'Policy Enablers', no capital city scored more than 50: the highest score was obtained by Colombo MC with 46.57 followed by Kandy MC with 40.91, the rest scored below 30.

The LA scores for 'Accountability and Equity' were also among the weakest. Anuradhapura MC and Kandy MC secured the highest score of 41.67 and Ratnapura MC obtained the lowest score of 15.83. 'Openness' is the weakest among the four sub-indicators used to assess the indicator of 'Accountability and Equity', although all the four sub indicators score below 40 (Fig 9.2).

In contrast, however, 'Participation' records the second highest score among the 6 sub-indices (47.22). Anuradhapura MC, Galle MC and Kandy MC are considered high-performing LAs in this regard, with Kurunegala MC registering the lowest score.

The average score for the sub-index on 'Service Delivery Coverage' for the Provincial Capitals is 75.83, which is the highest score of all the indicators. Focusing on the sub-indicators used to assess the 'Service Delivery Coverage', availability of mandated staff for delivering services is weaker in comparison to the other two factors (Fig 9.3). In contrast, the LAs scored far worse when it came to financing services. For 'Service Delivery Financing and Targeting', the average score is far lower at 36.81: only Kandy MC and Colombo MC have surpassed the average score. Trincomalee UC registered the lowest score of 17.17.

Fig 9.1: Aggregated CGI scores for all provinces



Source: SoSLC project

Aggregating the CGI indices enables the ranking of provincial capitals by overall LA performance (Table 9.3). Kandy MC, with a score of 57.35 out of a maximum 100, ranks first, followed by Colombo (49.14) and Galle (45.44). Ratnapura with a score of 32.84 ranks last. For the most part, the results fit with other assessment of city capacity and performance included in this report: cities in western and southern areas perform well, while those in more remote central, northern and eastern regions require more support. The exception to this is Kurunegala, which is well connected to Colombo and scores well on economic assessments (see Chapter 4).

9.3 Challenges and opportunities for improving local governance

The mixed CGI scores attained by the 9 Provincial Councils relate to constraints facing LAs. This section highlights some of these key constraints, with reference to the 6 CGI sub-indices, and offers suggestions about how these constraints could be removed to improve the performance of the LAs.

Weakness in local governance structures undermines performance across CGI indicators

Sri Lanka follows a confusing double structure of a de-concentrated administrative government arm and a devolved political arm that creates duplication of administrative arrangements and ambiguity regarding roles and responsibilities (Fig 9.4).

The responsibility of delivering services to the people and implementation of development programmes is shared between 1) line ministries and agencies of the central government, through their 'deconcentrated' local administration at the district (District Secretariats) and divisional (Divisional Secretary Divisions) levels; and 2) the

Table 9.2: Disaggregated CGI scores by sub-index and city

Province	CGI	Financial Resilience	Policy Enablers	Service Delivery Coverage	Service Delivery Financing & Targeting	Accountability and Equity	Participation
Kandy	57.35	50.71	40.91	86.67	61.63	41.67	62.5
Colombo	49.14	25.72	46.57	76.76	72.47	38.33	35
Galle	45.44	42.45	26.87	80.09	30.7	30.03	62.5
Badulla	42.53	34.78	27.58	74.72	27.73	20.83	60
Anuradhapura	40.96	13.74	16.67	84.26	26.91	41.67	62.5
Jaffna	37.93	31.75	23.84	82.59	34.41	20	35
Trincomalee	36.12	28.59	29.6	70.09	17.17	33.78	37.5
Kurunegala	34.8	49.78	24.55	59.26	29.41	20.83	25
Ratnapura	32.8	26.14	11.11	68.06	30.87	15.83	45
Average Scores	41.9	33.74	27.52	75.83	36.81	29.22	47.22



Source: SoSLC project

'devolved' government structure, comprising elected LA at the provincial and local level: the Provincial Councils, the Municipal and Urban Councils and the Pradeshiya Sabhas. Overlapping responsibilities across the deconcentrated and devolved units are particularly apparent regarding service provision mandates, where 17 out of 28 main services (including sanitation, public health, roads, and commercial buildings) have shared responsibility across LAs, Provincial Councils, as well as national government. Further, the structural advantage for service delivery lies with the deconcentrated structure as the legacy of under-financing, and understaffing have weakened the capacity of the devolved government structure to adequately deliver services and to respond to the needs of the population, impacting CGI indicators across the board.

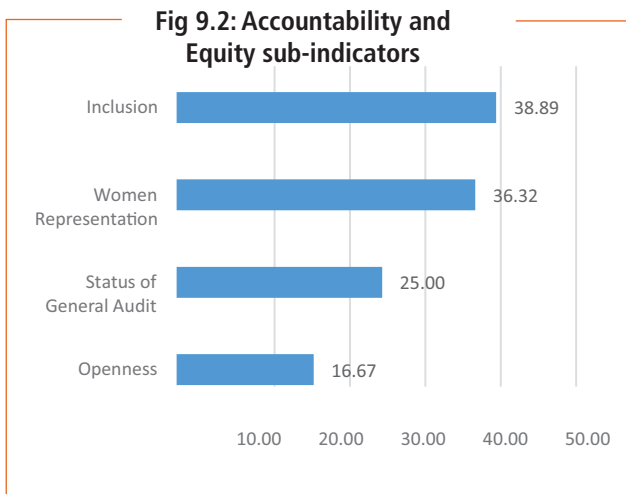
To address some of these issues, a collaborative governance approach could be deployed. There is a strong case for Sri Lankan urban governments to collaborate among themselves to pool and share resources, create horizontal learning networks and foster innovations. Collaborative governance, with appropriate incentives, serves to better meet the needs of citizens, the economy and the environment. Careful mandates should also be put into

place to support transparency and prevent corruption through any collaboration efforts.

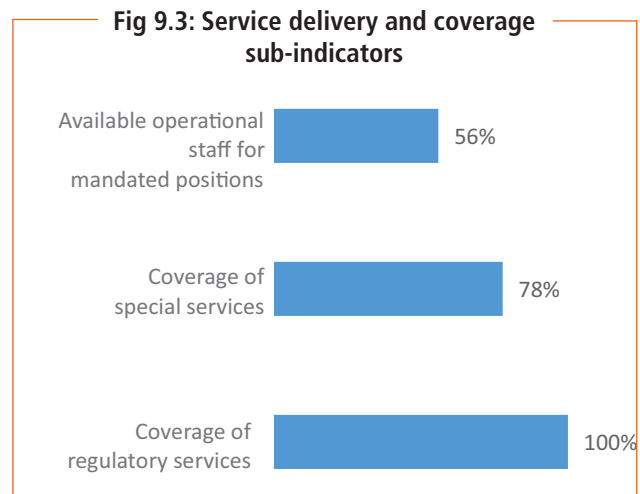
Financial constraints impact CGI scores, particularly those associated with financial resilience and policy enablers.

LAs have limited resources allocated to them under current frameworks. Measured by yield, around 95 to 97 per cent of total revenues are assigned to the national government, 1.4 to 2.4 per cent to Provincial Governments and 1.6 to 2.6 per cent to LAs.³ The design of the fiscal framework for devolution to provinces results in a significant shortfall in revenue over expenditure; the fiscal gaps estimated for provinces and local governments in 2013 were 83 per cent and 51 per cent respectively.⁴ This deficit is financed through the transfer of resources through the allocation of funds annually from the central government's budget. The grants structure does not provide for equalization of fiscal capacity between provinces making the provinces dependent upon the central government, thereby giving the central government extensive financial control over the provinces. Nor is it designed to take account of provincial relativities, either of norms or costs. The decisions by the government

³ Derived from Finance Commission Annual Reports and data obtained from the Ministry of Provincial Councils and Local Government on Local Authority revenue and expenditure for the period 2014-16.
⁴ No. 3 above



Source: SoSLC project

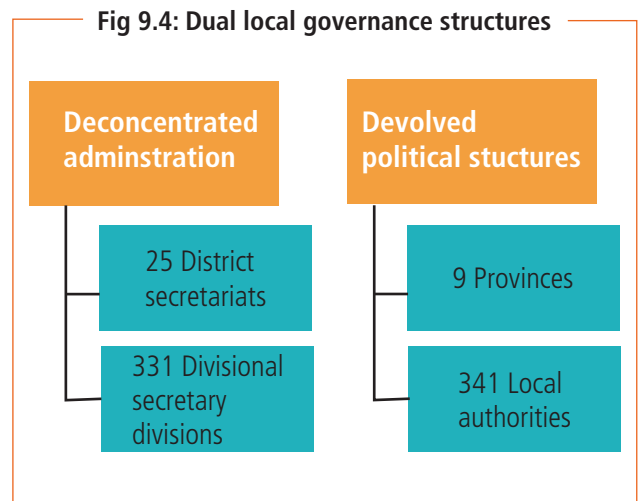


Source: SoSLC project

Table 9.3: LA rank according to CGI

City Council	Index (Max = 100)
Kandy MC	57.35
Colombo MC	49.14
Galle MC	45.44
Badulla MC	42.53
Anuradhapura MC	40.96
Jaffna MC	37.93
Trincomalee UC	36.12
Kurunegala MC	34.8
Ratnapura MC	32.84

Source: SoSLC project



Source: SoSLC project

regarding the allocation of funds from the annual budget have not been based on a sharing of service provision responsibilities and have followed imperatives of central requirements that are increasingly incorporating service delivery programmes in devolved subjects and functions.

LAs have a range of tax powers, although these are currently not used to their potential. An overarching conclusion drawn from an overall analysis of revenue sources available to the Municipal Councils, Urban Councils and Pradeshiya Sabha reveal that though the revenue bases are limited for the LAs, they are seldom fully explored. Or, in other words, most LAs perform below par when it comes to raising revenue from sources that are exclusively earmarked. The main sources of revenue include stamp duty levied on property and other transactions, and the assessment tax levied on the deemed value of property and rents. Based on the data available with the Ministry of Provincial Councils, Local Government and for 2016,⁵ it was found that a total of LKR 26.1 billion was generated by 335 LAs in the country from their mandated sources. In addition, LKR 19.8 billion was transferred to the

LAs from central and provincial governments, of which about LKR 18.5 billion was transferred to pay salaries of permanent staff and the balance of LKR 1.3 billion was transferred to meet capital expenses.

To redress this financial capacity issue, LAs must promote their untapped ability to generate revenue, opening the window for increased innovation, planning, and flexible management of funds to meet local needs in a timely manner. Backed by sound leadership and practices, revenue generation may transform a waiting game into active collaboration for improved service delivery.

LAs face challenges in various aspects of service delivery, resulting in low CGI scores relating to service provision

Unpredictable funding schemes, and lack of capacity for revenue, administrative, and financial management, play a fundamental role in poor standards of municipal service

⁵ Derived from data obtained from the Ministry of Provincial Councils and Local Government for the year 2016

⁶ Survey undertaken for the World Bank as part of the 'Diagnostic Study on Local Government Institutions and Finances'

Badulla Municipal Council



Source: UN-Habitat/Charlene Liao

provision.⁶ A unique institutionalized citizen feedback mechanism (Electronic Citizen Report Card – ECRC) piloted in a 3 cities – Anuradhapura, Batticaloa and Jaffna – through the Asia Foundation’s Subnational Governance Program shows that total satisfaction scores with the services provided by the Municipal Councils were in the range of 27 per cent to 40 per cent.

A key issue is realigning the frameworks for financing local services so financial streams are positioned to meet clear public needs and services. In the case of recurrent grants, the LAs are required to incur the cost and request reimbursement from Provincial Council (PCs). There are delays in obtaining this reimbursement, and if there are cut backs in the monthly allocation of recurrent grants by the Treasury to the PCs, these are in turn passed on to the LAs who do not receive the full reimbursement of their expenditure on salaries. Here again the LAs are not in a position to question the PCs on cuts applied to LAs against cuts made by the Treasury. Thus, there are issues of transparency as well as predictability in the allocation and flow of funds, from Treasury to PCs and particularly from PCs to LAs. Consistent fiscal flows and timelines will allow improved intergovernmental cooperation, project planning and fiscal management.

There is also a need to establish service level benchmarks to measure and monitor performance of service delivery and financial management in a systematic and continuous manner. Ensuring a standardized mechanism for service delivery and fiscal management serves to reduce duplicity and improve efficient use of government resources. Mandated benchmarks have the ability to survive political change if transparency mechanisms are also put into place.

Public access to benchmarks and outcomes incentivize government authorities to maintain consistency in their practices.

A key issue impacting the coverage and cost of services is that MC boundaries do not reflect urban extent. As has been emphasized throughout this report, urban areas often extend far beyond MC boundaries – particularly in larger cities such as Colombo and Kandy. In these cases, populations from outside the MC boundaries use MC services, putting pressure on the provision of services and providing challenges for LAs to fund the required capacity.

Challenges to accountable, equitable and participatory urban governance

LAs face challenges increasing CGI scores relating to accountable, equitable and participatory local governance for numerous reasons. Well intentioned efforts following the 13th Amendment to promote citizen participation in local development have not been effective. The Extraordinary Gazette number 1632/26 issued in 2009 declared that every council should promote social inclusivity, and civil society participation and partnership. Each province is required to adopt the policy and the provincial minister must issue an order for LAs to implement this notice. However, implementation has been erratic and weak. Participation in local planning and budgeting processes is largely seen to be tokenistic; in many cases, priorities identified at the LA level are not integrated into aggregated provincial-level plans.

The planning and budgeting processes have also been implemented in a top down fashion and hindered by weak capacity, lack of skills, and motivation to implement the

⁶ Survey undertaken for the World Bank as part of the 'Diagnostic Study on Local Government Institutions and Finances'

⁷ No. 4 above.

process effectively. There is also a mismatch between priorities and actual resources available to address them at the LA level, leading to a trust deficit between local governments and local communities. According to The Asia Foundation's 2017 Institutional Assessment of 108 local authorities in the North, East, and Uva Provinces⁷, although many LAs receive training related to community participation and consultations, there continues to be issues of capacity and resource management that leave LAs without basic community communication, and limits the accountability of LAs. This includes community consultations, appropriate signage in local languages, public access to latest budgets and the Citizen Charter, and use of a complaint box. Many LAs also lack inclusive infrastructure, including availability of counters and facilities accessible to individuals with disabilities, which is particularly salient in post-conflict regions of the country. On average, across the provinces surveyed, innovation, allocation, and expenditure for social development services is also very low.

There is also a need to promote more pro-poor social development programmes to support the most vulnerable urban residents, and foster inclusive development. Support and partnership with local service-providers for allocation, expenditure, and delivery of pro-poor social development services (psycho-social support programmes, livelihood support programmes, poverty eradication programmes and support to vulnerable communities) is key in this regard. In providing basic services and infrastructure management, local government authorities lack resources and/or capacity to support social development services. However, communities look to government authorities to meet these needs. In prioritizing support and partnership for social development services, local government can support the social fabric of their area, a crucial necessity for financial resilience, positive economic growth, and values that support equitable delivery of services.

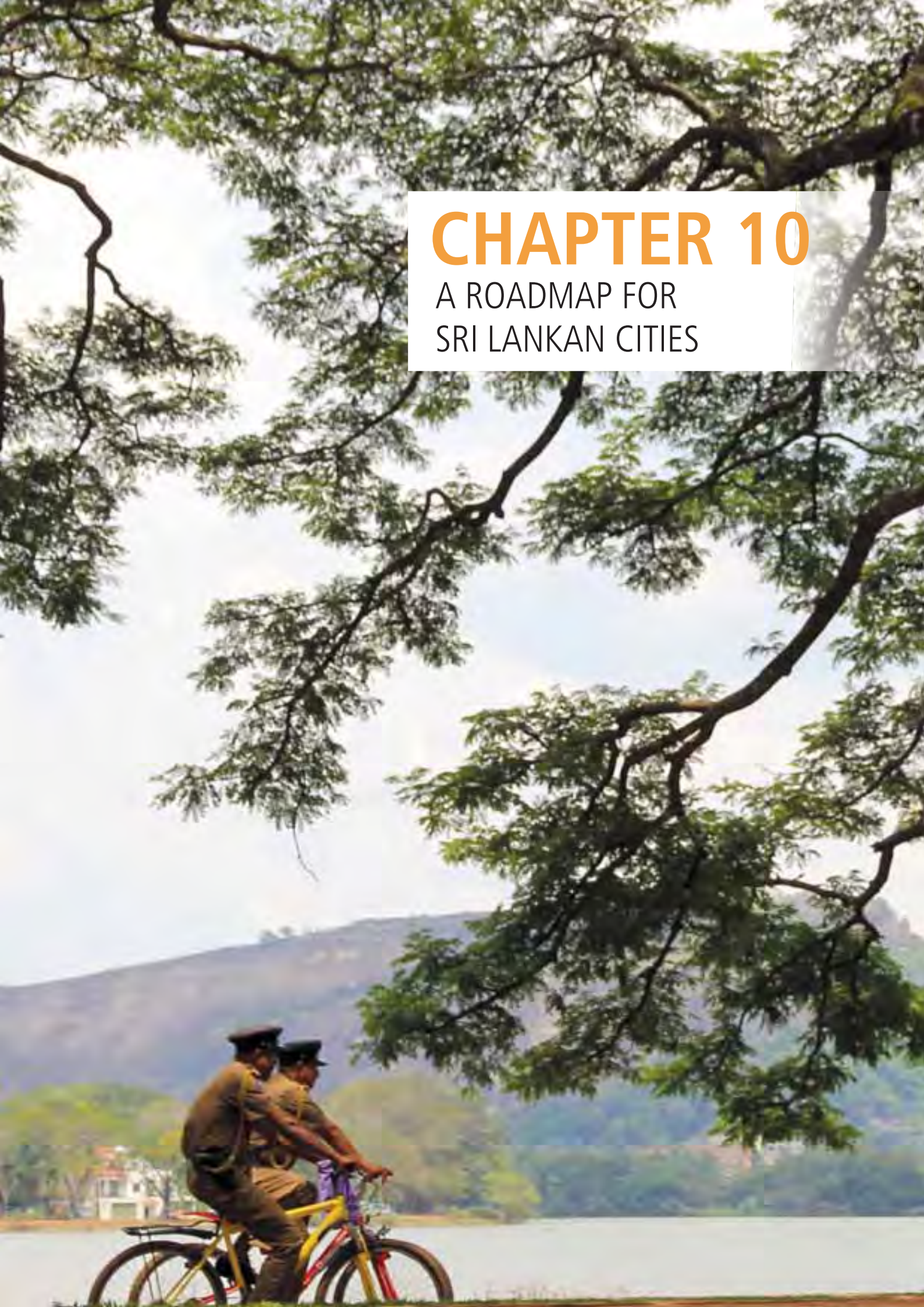
9.4 Urban governance and a better urban future for all Sri Lankans

Equitable and efficient urban governance mechanisms are key to achieving sustainable cities. By providing an evidenced-based assessment of urban governance, this chapter contributes to *a better urban future for all Sri Lankans*: promoting the competitiveness, inclusivity, resilience, safety and sustainability of Sri Lanka's cities.

City outcome	Contribution of urban governance
Competitive	<p>LAs are placed to identify opportunities to support local businesses and service providers.</p> <p>The efficient and predictable provision of key services are important to attract business and investment to cities.</p>
Inclusive	<p>Community participation in planning and budgetary processes in LAs promotes transparent, accountable, and demand-driven governance.</p> <p>Service level benchmarks with appropriate standards and processes along with grievance redressal can improve residents' access to local government services and programmes.</p>
Resilient	<p>Reconciling overlaps in the role and responsibilities of LAs coupled with strengthening local capacity for revenue generation, will make LAs resilient to unexpected shocks and stresses.</p> <p>Improving capacity of the LAs by leveraging the use of technology and e-governance in institutional and business processes can help LAs become more responsive, efficient and effective.</p>
Safe	<p>Fostering partnerships between LAs and local businesses, civil society and other service providers will help to build trust and social capital in the community.</p>
Sustainable	<p>Supporting appropriate collaborative governance initiatives can help LAs learn from each other and drive innovation in local governance. This will ensure sustainable, effective practices are more widely adopted and that LAs are responsive and adaptable to changing circumstances over time.</p> <p>Increasing and diversifying revenue collection will enable the sustainable financing of key services.</p>

CHAPTER 10

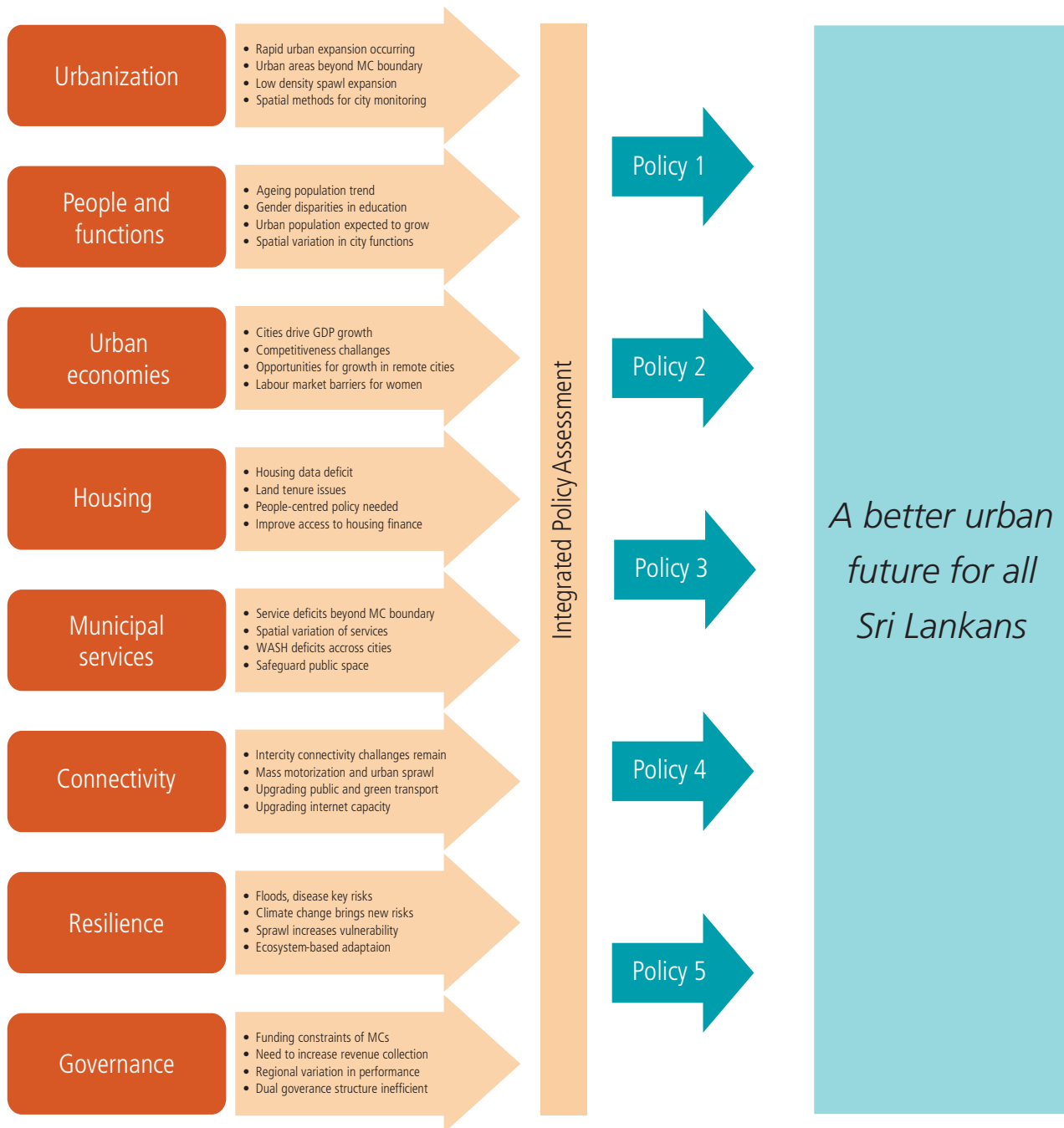
A ROADMAP FOR
SRI LANKAN CITIES



10.1 Key findings

This Roadmap for Sri Lankan cities details possible future policy and programme directions to promote social and economic development in the country's urban centres. The SoSLC analysis has identified key messages across the range of urban sectors, which will aid policy makers to achieve *a better urban future for all Sri Lankans* (Fig 10.1). Building on these messages, the Roadmap offers an integrated policy assessment, to identify integrated interventions that work across urban sectors. In this sense, the SoSLC report's analysis recognises the integrated nature of urban systems: to centre policy making on cities as holistic entities, rather than on individual urban sectors in silos. This model of policy making is rooted in the United Nations New Urban Agenda, which highlights cross-sectoral policies as a crucial component to improving interrelated urban systems (United Nations, 2016).

Fig 10.1: Key messages of the *State of Sri Lankan Cities* report



10.2 A vision of a better urban future for all Sri Lankans

To aid in the identification of integrated policies, the analysis included in the report has been linked to 5 key tenets that define a *better urban future for all Sri Lankans*. These themes draw on the United Nations SDGs and New Urban Agenda, and also incorporate GoSL priorities extracted from analysis of key GoSL strategic documents, including *Vision 2025*, and the *Public Investment Programme 2017-2020* (GoSL, 2017a, 2017b; see Chapter 1, Introduction, for details). These themes have centred the analysis throughout the report, and are linked to each sectoral analysis in a matrix at the end of each chapter.

A *better urban future for all Sri Lankans* includes the following 5 tenets:

- **Competitive Cities**

Urban competitiveness refers to the capacity of cities to attract flows of trade and investment, which in turn drives growth, creates job opportunities, raises incomes and enables cities to move up the value chain into higher-value goods and services. The competitiveness of a city is related to numerous attributes, including the skills of its workforce, its connectivity to national, regional and international markets and supply chains, and the diversification of its economic activity. A competitive city attracts high levels of investment, from both foreign and domestic sources, and is a hub of national, regional and international trade.

The economic arguments for promoting competitive cities in Sri Lanka are compelling because of the importance of cities to economic development. From a global perspective, UN-Habitat's *World Cities Report 2016*, reported that cities account for 80 per cent of global GDP despite comprising only 54 per cent of the world's population (UN-Habitat, 2016). A recent report by the World Bank (2015) found that 75 per cent of cities enjoyed GDP growth that was higher than their national average. The SoSLC report confirms the importance of cities to Sri Lanka's economic development and identifies strategies to increase their competitiveness in the future.

- **Inclusive cities**

Inclusive cities extend the opportunities of urban life across urban population subgroups. They provide equitable access to economic opportunities, such as jobs or affordable credit for business investments. They also provide equitable access to urban services and infrastructure, such as adequate housing, public transport, water, drainage and sewerage infrastructure, hospitals and education facilities, parks and public spaces. In inclusive cities residents enjoy equal access to opportunities and services regardless of ethnicity, religion, gender and other differentiating factors.

In Sri Lanka, promoting inclusive cities can redress gendered, ethnic and other forms of inequality. In the context of the three-decade conflict, promoting equitable access to urban opportunities and services is important for national reconciliation, which is an important aim of government as articulated in *Vision 2025*. In this regard, the *State of Sri Lanka Cities 2018* report has assessed inclusivity within individual cities, but also between cities: cities in the conflict afflicted north and east of Sri Lanka, and the remote central areas, offer less economic opportunities and services than more prosperous urban centres, particularly in the western part of the country. Correspondingly, extending urban opportunities to these regions is a policy priority.

- **Resilient cities**

Urban resilience refers to the capacity of cities to adapt, recover and overcome shocks and stresses. Shocks refer to sudden-onset events that significantly disrupt urban processes, including natural disasters or economic crises. Stresses refer to slow on-set processes, such as those related to long-term changes in climate or unplanned urban development.

Sri Lanka's cities are exposed to variety of shocks and stresses. Notable shocks in recent history include the 2004 Tsunami as well as more frequent urban flood events, such as the 2017 floods in the Western Province. A striking example of a long-term stressor in Sri Lanka is rapid urban sprawl expansion, which has contributed to waterlogging during rains and increased riverine flood risk through land use changes, and is linked to disease – particularly dengue fever – in waterlogged areas.

Urban resilience is an imperative issue in Sri Lanka – as it is globally – because exposure to shocks and stressors is increasingly distributed towards urban areas. This changing risk profile is related to the dynamics of urbanization: a natural disaster affecting a major city will have far larger impacts than a disaster of similar scale located in a rural area. Similarly, urban growth creates the conditions for chronic stressors – such as urban sprawl expansion – to negatively impact substantial populations because of the scale of cities.

- **Safe cities**

Safe cities refer primarily to personal safety and the health of urban residents. Personal safety can refer to issues that arise from living in cities, such as crime, sexual harassment and death or injury from traffic. A safe city also limits health risks for its citizens, such as those related to pollution, contaminated water and other urban-related hazards.

Urban residents in Sri Lanka are vulnerable to a range of threats to their safety, which can be disaggregated by population subgroup. For instance, low-income residents

suffer health dangers linked to sanitation infrastructure deficits. The safety of women is a key issue, particularly in public spaces and public transport where harassment is a threat, or in the home, where gender-based domestic violence is a risk.

- **Sustainable cities**

Sustainability in the urban context is a broad concept that encompasses all the above city characteristics. A sustainable urban system is one that can sustain and/or develop over time without causing adverse effects to other urban processes and systems.

In Sri Lanka sustainability is often talked about in relation to the urban environment. In this regard, a key issue has been the rapid urban growth in the absence of sewerage infrastructure, which has resulted in polluted urban ecosystems and is, therefore, not environmentally sustainable. Sustainability also refers to a range of urban processes and need not necessarily be related directly to the environment. Sustainable sources of municipal revenue, for example, underpin predictable delivery of public services that are crucial to urban life.

10.3 Policy directions for a better urban future for all Sri Lankans

To achieve a better urban future for all Sri Lankans embodying the above 5 key tenets, the following integrated policy and programmatic responses are proposed. These are not an exhaustive set of urban policy recommendations. Rather, they recognise resource constraints and will provide maximum impact across urban sectors.

1. Redefining urban areas

Redefine 'urban' in terms of spatial characteristics, and revise municipal boundaries to incorporate fringe urban areas, to:

- a. Improve the planning, management and development of the Provincial Capital cities and fringe urban areas.
- b. Provide more equitable access to urban utilities and services for fringe urban dwellers.

2. Sustainable development of cities

Develop a national and sub-national sustainable urban strategy and investment plan for Sri Lankan cities:

- a. Prepare a strategy that views cities as integrated systems rather than sectors in silos, and which promotes ecosystem-based adaptation and compact city development as key programmatic approaches.
- b. Prepare priority action and investment plans to address the key challenges of urban sprawl,

vulnerability to climate change and urban management.

- c. Prepare integrated development plans (land use, economic and social) for the Provincial Capitals and other cities to include fringe urban areas.
- d. Develop an infrastructure grants and loans programme for cities, which builds on the Strategic Cities Development Programme (SCDP).

3. Urban research and information systems

Establish and fund national collaborative hubs and networked Research and Development Institutes located in universities and linked to government, business and civil society, for:

- a. Housing and Urban Research to guide national and local physical and social urban development planning, and conduct spatial analysis of urban expansion.
- b. Local Economic Development to foster the formation of industry and research clusters, innovation hubs and creative industries.
- c. Urban Ecosystem Services to research and model impacts of climate change, ecosystem services and Disaster Risk Reduction.
- d. Smart Infrastructure for Cities to develop smart systems for WASH, energy, renewables, recycling, telecommunications, information, transport and logistics.
- e. Municipal Governance and Finance incorporating SLILG and other stakeholders to improve urban governance, enhance municipal financial management and planning, urban information systems and monitor the localisation of the SDGs.
- f. Development of an integrated and open-access national database on cities.
- g. A national bi-annual urban research forum that links into 2a, 2b and 2c and 2d.

4. Urban governance reform

Reform the dual governance structures that exist in urban areas to enhance local enabling environments, inclusiveness and gender mainstreaming; streamline, integrate and optimise the delivery of essential urban services to support the development of competitive urban and rural economies.

- a. Evidence-based policies to enable appropriate and feasible collaborative governance initiatives.
- b. Progressive policies for citizen engagement through Council Committee systems and participatory approaches to ensure inclusion in planning and budgeting, and strengthened accountability.
- c. An investment programme to support the development of local and networked industry clusters in cities, and the promotion of Public Private Partnerships to fund improved delivery of basic urban services.

A street scene in Galle



Source: UN-Habitat/Charmalee Jayasinghe

5. City connectedness

Programmes to improve connectedness between cities, and their hinterlands, through the building of hard and soft infrastructure, logistics, knowledge networks, enhanced access to supply and value-chains, alliances, and inter-government arrangements.

- a. A national integrated network of highways, rail and airline connections between Provincial Capital cities.
- b. A national and local broadband/Wi-Fi network to support e-governance, e-education, e-information, e-health, e-safety and security (especially for women) and e-commerce.
- c. Promote better accessibility to urban services, incorporating the needs of women, disabled, marginal and vulnerable groups.
- d. Improve the efficiency and effectiveness of supply chains and logistics centres between the national systems of cities.

10.4 An integrated policy matrix

Finally, the SoSLC project has developed an integrated policy matrix as a tool to aid policy makers identify policies that work across sectors (Table 10.1). The integrated policy matrix links the 32 Key Messages identified through the sectoral assessments in Chapters 2-9 (referred to as Sectoral Constraints) to the 5 key tenets of a *better urban future for all Sri Lankans* (referred to as City Outcomes). According to this matrix, a successful integrated urban policy intervention will address multiple Sectoral Constraints and contribute to multiple City Outcomes. In this way, the matrix provides a tool for identifying high-impact, cross-sectoral policy that addresses key constraints and contributes to the 5 tenets of a *better urban future for all Sri Lankans*.

Table 10.1: Integrated policy matrix

Integrated Policy Intervention	Sectoral Constraints (Key messages)																City Outcomes																															
	Urbanization				People and functions				Economy				Housing				Municipal services				Connectivity				Climate Resilience				Governance																			
	1	2	3	4	1	2	3	3	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	Competitive	Inclusive	Resilient	Safe	Sustainable											
Key Message No																																																
POLICY 1 REDEFINING URBAN AREAS	•		•		•																																											
POLICY 2 SUSTAINABLE DEVELOPMENT OF CITIES	•		•		•																																											
POLICY 3 URBAN RESEARCH AND INFORMATION SYSTEMS	•		•		•																																											
POLICY 4 URBAN GOVERNANCE REFORM																																																
POLICY 5 CITY CONNECTEDNES			•																																													

Source: SoS/C Project

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Annexes



Annex 1: Methodology of creating land use maps

This annex aims to give an overview of the methodology of collecting land use 2017 data for the *State of Sri Lankan Cities Report (SoSLC)* to make explicit the approach, scope and limitations. The annex is structured around the three main data sources utilized:

1. Review and selection of secondary spatial and other statistical data (e.g. land use/building topographic databases from the National Survey department and Urban Development Authority and reports, census data, literature; program evaluations and reports, sector and city-level studies, etc.).
2. Data extraction, mainly by visual interpretation, from recent very-high resolution satellite images to compare existing building and land use data and develop detailed land use maps and statistics (2017) for the 9 Municipalities;
3. Field surveys for the verification of land use data.

The first and second data sources were utilized in conjunction with each other to arrive at the final 'SoSLC land use 2017 dataset'. The complete land use maps and table for the 9 Municipalities can be found in Annex 6. The land use data were used to support the thematic chapters.

The selected methodology enables a suitably nuanced overview of the 'state of 9 Sri Lankan cities' and the development of a web-based database and a data repository. (Fig A.1.1). It not only developed a reliable and comparable dataset for these cities but also situated this within existing knowledge, data and previous studies in order to inform policy and planning decision-making.

Considering that the main application of the land use data is for citywide urban planning and land management there is no need to identify the land use *for each compound/structure at building/parcel level*. Given the mixed-use and partly informal nature of Sri Lankan cities this is also not feasible. Therefore, the minimum area of a land use polygon was set at approximately 0.25 hectares (ha). The consequence is that, for example, a small shop in a residential area is classified as residential land use, not commercial. Nevertheless, the data gives a clear demonstration of the *dominant* land uses of an area, at a relatively high level of accuracy, verified through field checks.

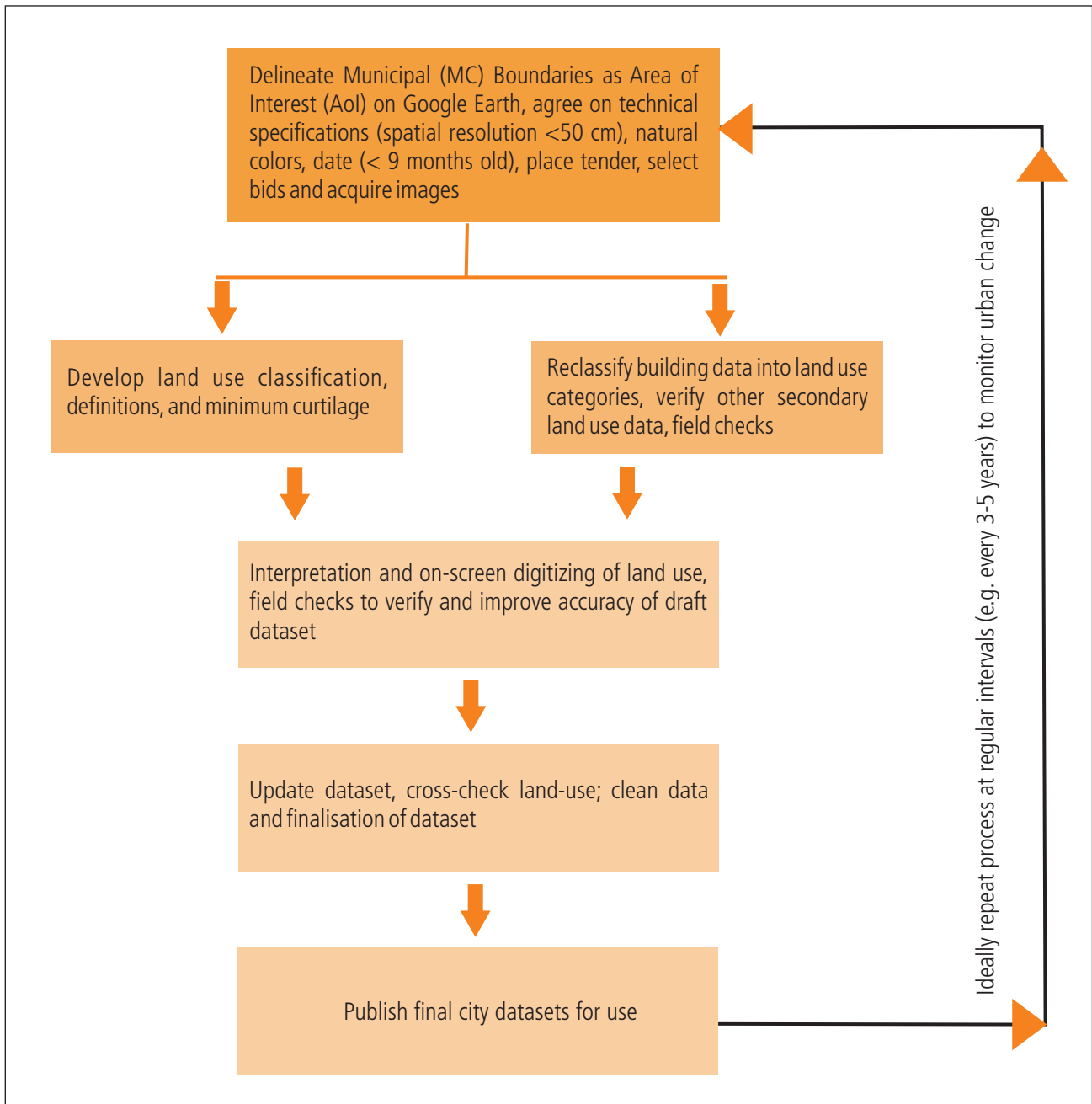
There are limitations to the number of land use sub-classes that can be accurately identified through visual interpretation of satellite images without complete verification in the field. Small structures used for health or education purposes cannot be accurately identified and can be easily interpreted as a dwelling. Therefore, a compromise is needed between land use details and interpretation time. For example, the Institutional land use class is classified into eight sub-classes (Table A.1.1) which was possible due to the availability of existing building data (from the Survey Department, Urban Development Authority and extensive field data collection/verification).

SoSLC team looking through the land use maps



Source: UN-Habitat

Fig A.1.1: Flowchart of the methodology used to obtain land use 2017 data



For the **LAND USE 2017** maps visual interpretation/verification of recent (2017) very high-resolution satellite images (Pléiades) with a spatial resolution of 50 cm was used (see Table A. 1. 1). The Area of Interest (AoI) for the land use 2017 maps is the current administrative boundary of the Municipal Councils obtained from the Urban Development Authority; these boundaries were demarcated on the images.

The visual interpretations of the images were cross checked with data collected from the Urban Development Authority (UDA), Land Use Policy Planning Department (LUPPD) and National Building Research Organization (NBRO); use was also made of Google Street view. When Google street view information was unavailable, field data was collected form field enumerators, using GPS Essentials mobile app to track spatial information and point of interests.

After the building dataset from the UDA (Fig A.1.2) was obtained, the building data was reclassified and generalized into the land use categories and the land uses digitized. The draft land use map was compared with land use data collected from Local Authorities, UDA and LUPPD.

Fig A.1.2: UDA Building data of Galle (2017)



Fig A.1.3: LUPPD Land Use data for Anuradhapura (2015)

Fig A.1.4: UDA Land Use data for Trincomalee (2008)

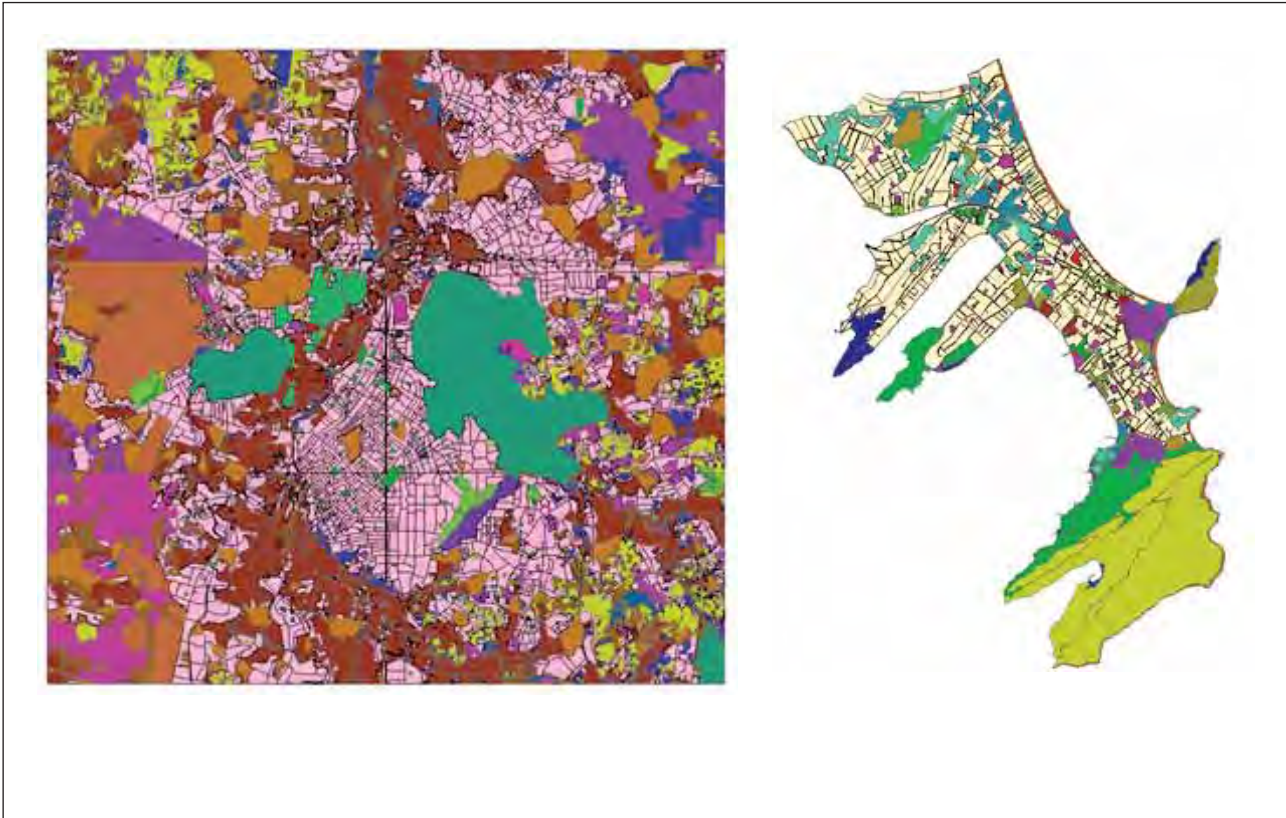


Table A.1.1: Satellite image sources

Municipality	Date of Image	MC area covered (km²)	Visual Interpretation (weeks)	Digitizing (weeks)
"Greater" Colombo (Colombo + Jayawardhanapura Kotte+Dehiwala)	04 February 2017 25 April 2016/18	82.05	22	11
Anuradhapura	March 2015 15 February 2015	51.95	5	3
Jaffna	09 January 2017 18 April 2017	22.05	5	4
Badulla	10 January 2017 30 July 2017	10.65	5	2
Galle	17 January 2017 17 February 2017	17.37	5	3
Kandy	05 February 2017	24.94	5	3
Kurunegala	11 February 2017 12 February 2017	10.99	4	2
Rathnapura	29 January 2017 22 March 2017	22.66	5	2
Trincomalee	31 July 2017	13.81	3	3
TOTAL		256.47	59	33

The time spent to create the detailed land use for the 9 cities was 92 weeks and covered 25,647 ha. On average it took one day to interpret and digitize around 56 ha.

Table A.1.2: Land Use 2017 11 MC areas

Land Use classes		Municipality										
		Colombo	Dehiwala	Kotte	Anuradhapura	Jaffna	Badulla	Galle	Kandy	Kurunegala	Ratnapura	Trincomalee
Residential	High Rise	135	13.1	2.5	0	1.1	0.2	2.7	0.8	0	0.1	1.2
	Low Rise	1162.6	1121	894.2	1420.3	988.5	563.2	972.4	953.2	429.4	823.5	491.4
	Slum	220.2	39.1	2.1	5.6	2.5	0	0.2	10.4	0.1	0.2	0.4
Commercial	Shanty	45.3	0.01	1.6	0	0	0	0	0	0	0.2	0.5
	Retail	255.8	149.4	99.9	160.4	58.5	43.2	96.2	156	67.8	55	49.3
	Office	29.1	4.6	31.7	0	15.1	1.3	0	3.4	1	1.3	2.6
Institutional	Mixed Retail-Residential	12.4	4.5	19.9	14	45.5	0.8	0.4	63.2	7.4	1.5	6.2
	Bank	49.3	2.1	3.3	3.3	2.8	0.9	0.4	1.9	2.3	0.9	1.7
	University	15.7	16.7	3.6	39.6	1.9	2.8	0	38	0.3	0	0
Health	Other higher	42.5	10.4	7.2	10.9	7.4	2.8	17.4	10.2	13.9	1.5	4.6
	School	106.1	33.8	23.5	38.2	50.5	10.6	35	71.8	33.6	19.8	16.7
	Hospital	50.5	6	0.1	14.3	8.2	6.3	3	22.5	17.8	10.4	5.8
Industrial	Dispensary	2.5	0.8	1.6	1	2.3	0.2	5.7	1	0.4	0.1	0.5
	Government	195.4	84.7	32	187.3	37.2	15.7	70.8	27.6	34.6	51.1	90.1
	Factory	280.3	118.1	20.4	26.1	7.6	2.5	17.6	4.4	1.8	3.9	5.6
Transport	Land fill	11.9	0	0	0	0	0	2.4	0.4	0	0	0
	Bus Terminus	11.5	2.7	0.2	2.5	1.2	2.3	1.2	1.8	4.3	2.6	3.6
	Rail Terminus	62.9	1.7	0.2	4	5.1	1.2	6.6	4.2	4.2	0	7.5
Public Space	Port	296.2	0	0	0	1.6	0	0	0	0	0	0.3
	Airport	0	91	0	59.1	0.2	0	0	0.1	0	0	0
	Parking	32.5	5.5	1	4.2	6	0.2	1.1	5.4	2.9	2.4	1.4
Cultural	Roads	507.2	174.9	99.1	118.9	154	48.1	83.9	86.7	57.1	77.6	62.9
	Park/Square	67.8	11.5	3.1	45.1	16.8	6.4	13.4	67.5	0.9	0.7	3.9
	Playground	172.9	29.9	18.6	39.4	32.4	11.1	12.8	30	9.2	19.4	37.2
Under Construction	Cemetery	26.6	3.2	1.8	19.2	4.3	2.4	4.8	9.8	6.2	2	5.4
	Temple/ Shrine	54.1	28.1	19.8	99.6	27	7.4	34.5	29	24	12.6	18
	Church	39.1	6.9	1.8	1.5	16.9	1.6	1.6	3.5	2	0.5	6.5
Non-Built-Up	Mosque	6.7	2.1	0.1	1	1.2	0.5	6	1.9	0.6	0.4	0.6
	Archeologic	6	0.7	0.4	333.3	16.4	0.2	4.5	10.2	0.9	0	1.7
	Under Construction	146.4	11	14.2	0.1	5.5	0	5.5	3.9	0.1	1	0.7
Total Built up area		4044.5	1973.3	1303.5	2647.8	1514.3	731.9	1399.8	1618.6	722.6	1088.8	899
	Agriculture	0.2	9.9	2.6	710.3	64.7	93.6	42.9	103.8	138	680.3	29.2
	Water	151.3	43.7	66.8	1546	26.3	24.9	36.6	180.1	48.2	76.4	16.9
Total Non-Built up area	Forest	2.2	0.9	0	36.8	1.9	41.9	20.4	47.7	80.1	254.7	299
	Reservation	0	0	0	133.7	0	0	1.4	21.1	6.8	0	0
	Wetland	27.1	42.2	219.1	12.5	2.3	0	27.8	19	0	26.8	7.6
Total land extent	Coastal area	13.8	19.7	0	3.3	0	33.1	0	0	0	0	27.8
	Shrub	0	0	0	10.3	29	154.1	19.8	71.3	0	114.2	55.1
	Barren land	122.5	35.8	41.5	42.9	268.8	19.2	150.4	9.3	103.8	25.1	54.4
		317	154.2	330.1	2492.5	396.3	333.7	332.3	881.5	376.9	1177.5	489.96
		4361.6	2127.5	2127.5	5140.3	1910.6	1065.6	1732.1	2500.1	1099.5	2266.3	1379

Annex 2: Data extraction from medium high-resolution satellite images

The coverage for the **Urban Growth** analysis is the MC area and the urban and semi-urban areas located in the surrounding areas (fringe). The fringe covers approximately the areas with continuous urban and semi-urban areas, it is not defined by any administrative area (with the exception of the Western Province) but used to illustrate the large urban and semi-urban areas outside the MC boundaries.

For the urban growth analysis (Table A.2.1) satellite images from Landsat Thematic Mapper 5 (for 1995), Landsat Enhanced Thematic Mapper 7 Plus (for 2001 and 2012) and Landsat Enhanced Thematic Mapper 8 Plus (for 2017) were used with 30m spatial resolution pan sharpened to 15m, good enough for analyzing the changes of the built-up areas over the last 22 years (1995, 2001, 2012 and 2017).

Table A.2.1: Coverage for urban growth analysis 1995-2017

Municipality	MC Area (km ²)	Fringe area (km ²)	Total covered Area (km ²)
Colombo/ Kotte/Dehiwala	81.23	848.70	929.93
Anuradhapura	51.40	632.82	684.22
Jaffna	19.11	99.67	118.77
Badulla	10.66	85.46	96.12
Galle	17.32	183.17	200.50
Kandy	25.00	113.61	138.62
Kurunegala	11.00	65.03	76.03
Ratnapura	22.66	244.84	267.50
Tricomalee	13.79	129.85	143.64
TOTAL			
Colombo	1,278.43		
Colombo Western Province	3,742.51		

For the analysis of urban growth four land use classes were used: Urban, Semi-Urban, Water and Non-Built-Up areas. Use have been made of the Normalised Difference Built-Index defined as $(NDBI) = \frac{SWIR - NIR}{SWIR + NIR}$

Bands	Wavelength (micrometres)	Spatial Resolution (meters)
Band 5 - Near Infrared (NIR)	0.851 - 0.879	30
Band 6 - Shortwave Infrared (SWIR) 1	1.566 - 1.651	30
Band 8 – Panchromatic	0.503 - 0.676	15

Methodology for urban classification

Landsat-8 image has a 16-bit radiometric resolution ranges from 0 to 65535. A wide range of values gives the ability for pixel values to discriminate very slight differences in energy. These spectral values represent the reflectance as a function of wavelength and each material has a unique signature, which can be used for material classification (NASA, 2013).

According to the spectral values of Band 6 of the Landsat Enhanced Thematic Mapper 8 Plus satellite, the higher values (16000 – 13000) represent the areas with higher built-up densities while values between 13000 and 10000 represent the moderate densely built-up areas and values up to 6000 represent the low densely built-up areas classified in this study as non-built-up areas.

The NDBI value was calculated to distinguish the mentioned ranges for the densities of the built-up areas. Specifically, once the Band 6 spectral values are analysed with Band 5 (Near Infrared) an identification of the built-up areas can be obtained and pixels can be separated from vegetation areas (the higher spectral values of the NIR band represent the dense vegetation areas).

This classification was used to identify the character of urban, semi urban, non-built-up and water areas. In the remote sensing discipline under the NDBI calculation, the values between 0.100 – 0.300 are identified as high built up area. Accordingly, having the built index values compared to the existing situation characteristics, the values were categorized into the urban, semi-urban, non-built-up and water classes.

In Fig A.2.1 the red colour represents the urban area, the yellow colour represents the semi-urban area. Based on samples of 1 ha grids using Google Earth and Pleiades images the number of buildings were counted. From these, changes in the extent of urban, semi-urban, non-built-up and water areas were determined (Table A.2.2).

Fig A.2.1.: Spectral values in Band 6 (L) and NDBI values (R)

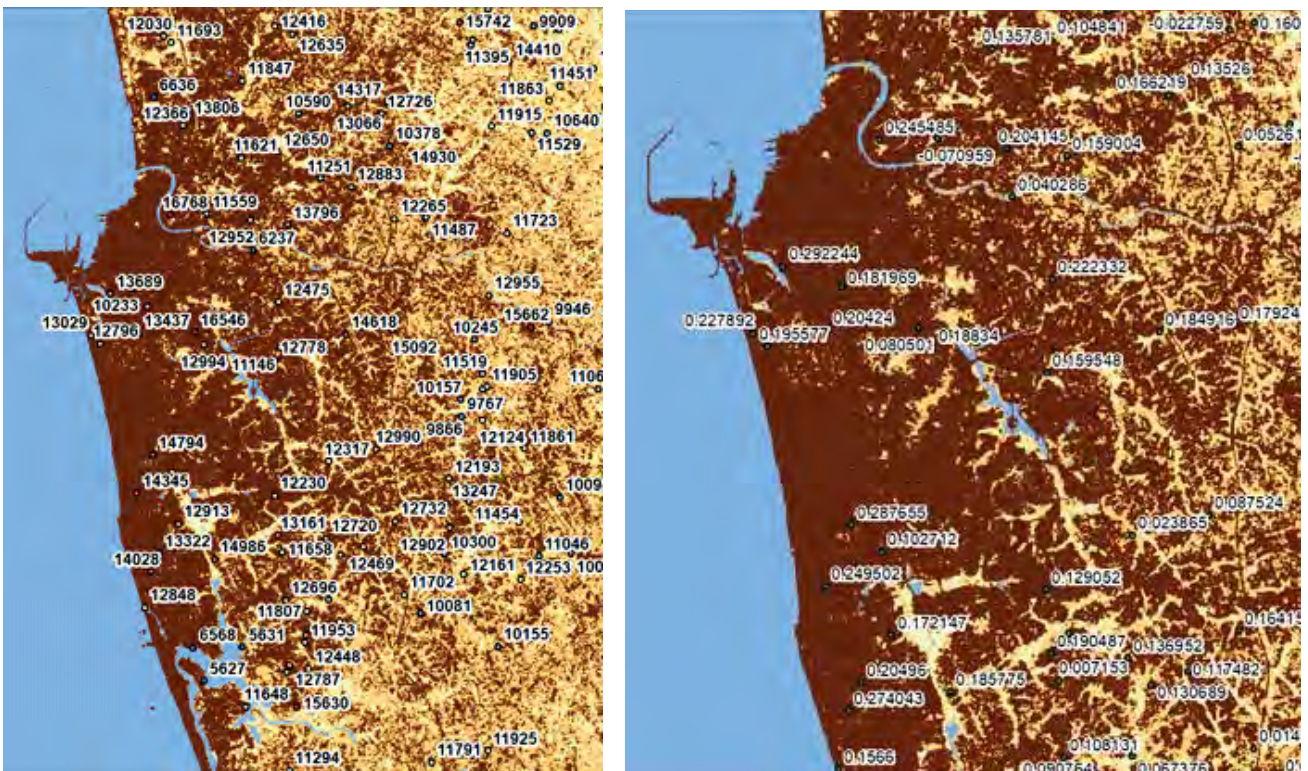


Table A.2.2: Urban Growth (1995-2017)

Municipality	Year	LAND USE																								Total AOI		
		Urban						Semi-Urban						Non-Built-Up						Water							Total MC (km ²)	Total Fringe (km ²)
		MC		Fringe		%		MC		Fringe		%		MC		Fringe		%		MC		Fringe		%				
		km ²	%	km ²	%	km ²	%	km ²	%	km ²	%	km ²	%	km ²	%	km ²	%	km ²	%	km ²	%	km ²	%	km ²	%			
WRM	1995	602.68	16.1	307.08	3.8	2311.08	61.8	1851.15	22.7	762.55	20.4	948.43	11.6	66.20	1.8	5039.05	61.9	3742.51	81.45	72	11888.23							
	2017	1522.96	40.7	958.79	11.8	2074.78	55.4	2073.75	25.5	81.15	2.2	79.87	1.0	63.62	1.7	5033.30	61.8	3742.51	81.45	72	11888.23							
	1995	60.48	77.7	61.63	7.2	9.03	11.6	269.92	31.7	6.17	7.9	148.75	17.5	2.16	2.8	371.80	43.6	77.84	852.09	929.93								
Colombo	2001	62.38	80.1	98.44	11.6	7.00	9.0	253.92	29.8	6.30	8.1	197.93	23.2	2.16	2.8	301.80	35.4	77.84	852.09	929.93								
	2012	69.17	85.2	219.91	25.9	5.01	6.2	205.29	24.2	4.89	6.0	121.71	14.3	2.16	2.7	301.80	35.6	81.23	848.70	929.93								
	2017	73.82	90.9	381.34	44.9	4.2	161.61	19.0	3.95	0.5	2.3	3.95	0.5	2.16	2.7	301.80	35.6	81.23	848.70	929.93								
Badulla	1995	0.83	7.7	1.87	2.2	2.27	21.3	5.19	6.1	7.23	67.8	77.74	91.0	0.34	3.2	0.66	0.8	10.66	85.46	96.12								
	2001	1.49	14.0	2.90	3.4	2.34	22.0	7.12	8.3	6.48	60.9	74.79	87.5	0.34	3.2	0.66	0.8	10.66	85.46	96.12								
	2012	3.19	29.9	4.86	5.7	2.61	24.5	10.62	12.4	4.52	42.4	69.32	81.1	0.34	3.2	0.66	0.8	10.66	85.46	96.12								
Galle	2017	4.61	43.3	5.98	7.0	2.85	26.7	12.55	14.7	2.86	26.8	66.27	77.5	0.34	3.2	0.66	0.8	10.66	85.46	96.12								
	1995	2.70	15.6	4.12	2.2	4.83	27.9	19.75	10.8	9.13	52.7	119.93	65.5	0.67	3.8	58.21	31.8	17.32	183.17	200.50								
	2001	3.43	19.8	5.86	3.2	5.63	32.5	29.97	16.4	7.60	43.8	89.22	48.7	0.67	3.8	58.12	31.7	17.32	183.17	200.50								
Anuradhapura	2012	5.61	32.4	12.62	6.9	6.60	38.1	47.89	26.1	4.45	25.7	64.53	35.2	0.67	3.8	58.14	31.7	17.32	183.17	200.50								
	2017	7.59	43.8	21.32	11.6	7.05	40.7	59.07	32.2	2.02	11.7	44.80	24.5	0.67	3.8	57.98	31.7	17.32	183.17	200.50								
	1995	1.96	3.8	0.00	0.0	7.39	14.4	4.31	0.7	26.71	52.0	560.23	88.5	15.34	29.8	68.28	10.8	51.40	632.82	684.22								
Jaffna	2001	2.44	4.7	0.53	0.1	10.44	20.3	9.92	1.6	23.19	45.1	554.09	87.6	15.34	29.8	68.28	10.8	51.40	632.82	684.22								
	2012	4.96	9.6	0.64	0.1	15.30	29.8	27.34	4.3	15.82	30.8	536.56	84.8	15.34	29.8	68.28	10.8	51.40	632.82	684.22								
	2017	8.59	16.7	0.76	0.1	17.64	34.3	45.26	7.2	9.84	19.1	518.52	81.9	15.34	29.8	68.28	10.8	51.40	632.82	684.22								
Kurunegala	1995	2.76	14.4	0.27	0.3	8.27	43.3	27.15	27.2	7.82	40.9	50.93	51.1	0.27	1.4	21.31	21.4	19.11	99.67	118.77								
	2001	3.56	18.6	0.35	0.4	8.81	46.1	31.47	31.6	6.48	33.9	46.55	46.7	0.27	1.4	21.31	21.4	19.11	99.67	118.77								
	2012	5.70	29.8	0.64	0.6	9.92	51.9	38.21	38.3	3.21	16.8	39.51	39.6	0.27	1.4	21.31	21.4	19.11	99.67	118.77								
Kandy	2017	7.53	39.4	0.98	1.0	10.58	55.4	40.79	40.9	0.73	3.8	36.60	36.7	0.27	1.4	21.31	21.4	19.11	99.67	118.77								
	1995	0.51	4.6	0.40	0.6	0.77	7.0	0.44	0.7	9.14	83.1	62.74	96.5	0.58	5.3	1.44	2.2	11.00	65.03	76.03								
	2001	1.00	9.1	0.46	0.7	1.15	10.4	0.91	1.4	8.27	75.2	62.22	95.7	0.58	5.3	1.44	2.2	11.00	65.03	76.03								
Rathnapura	2012	2.38	21.6	0.53	0.8	2.32	21.1	2.03	3.1	5.72	52.0	61.03	93.9	0.58	5.3	1.44	2.2	11.00	65.03	76.03								
	2017	3.54	32.1	0.55	0.8	3.57	32.5	2.65	4.1	3.31	30.1	60.38	92.9	0.58	5.3	1.44	2.2	11.00	65.03	76.03								
	1995	1.72	6.9	1.08	0.9	6.28	25.1	7.60	6.7	14.84	59.3	103.03	90.7	2.17	8.7	1.90	1.7	25.00	113.61	138.62								
Trincomalee	2001	2.69	10.7	1.22	1.1	7.19	28.8	11.06	9.7	12.96	51.8	99.44	87.5	2.17	8.7	1.90	1.7	25.00	113.61	138.62								
	2012	4.94	19.8	2.03	1.8	8.85	35.4	19.36	17.0	9.04	36.2	90.32	79.5	2.17	8.7	1.90	1.7	25.00	113.61	138.62								
	2017	6.27	25.1	3.07	2.7	9.55	38.2	25.06	22.1	7.02	28.1	83.58	73.6	2.17	8.7	1.90	1.7	25.00	113.61	138.62								
References	1995	0.41	1.8	0.00	0.0	4.57	20.2	7.58	3.1	17.09	75.4	231.95	94.7	0.60	2.6	5.31	2.2	22.66	244.84	267.50								
	2001	0.79	3.5	0.10	0.0	5.33	23.5	10.00	4.1	15.95	70.4	229.43	93.7	0.60	2.6	5.31	2.2	22.66	244.84	267.50								
	2012	1.76	7.8	0.41	0.2	6.90	30.4	15.04	6.1	13.41	59.1	224.08	91.5	0.60	2.6	5.31	2.2	22.66	244.84	267.50								
References	2017	2.56	11.3	0.89	0.4	7.74	34.1	18.21	7.4	11.77	51.9	220.43	90.0	0.60	2.6	5.31	2.2	22.66	244.84	267.50								
	1995	1.59	11.5	0.91	0.7	3.93	28.5	6.96	5.4	7.39	53.6	52.08	40.1	0.88	6.4	69.90	53.8	13.79	129.85	143.64								
	2001	2.31	16.7	1.16	0.9	4.02	29.1	8.88	6.9	6.59	47.7	49.81	38.4	0.88	6.4	69.90	53.8	13.79	129.85	143.64								
References	2012	3.90	28.3	2.10	1.6	4.32	31.3	10.98	8.5	4.70	34.1	46.87	36.1	0.88	6.4	69.90	53.8	13.79	129.85	143.64								
	2017	4.92	35.6	3.16	2.4	4.58	33.2	12.01	9.2	3.41	24.8	44.77	34.5	0.88	6.4	69.90	53.8	13.79	129.85	143.64								

References

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 UN and Government of Sri Lanka (2017) United Nations Sustainable Development Framework 2018-2022. Retrieved from http://lk.one.un.org/wp-content/uploads/2017/08/Final_UNSDF_2018-2022.pdf

Annex 3: Population estimates for the MC and fringe areas in 2017

The population estimates for the MC area in 2017 are based on built-up area and population density. Based on the population from the 2012 Census and the built-up area in 2012 (see Annex 2), the population density is calculated. For 2017 we have the detailed land use (see Annex 1) and we assume that there is not much variation in population density between 2012 and 2017. The built-up area in 2017 has been multiplied with the population density, the population number has been rounded off to the nearest '000 to indicate it is an estimate (Table A.3.1). For example, Kandy population estimate for 2017 within the MC area = $71.7 * 1582 = 113,429$ rounded of to 113,000 persons.

Table A.3.1: Population estimates of MC areas 2017

	Pop. 2012 (Census)	Built-Up area 2012 (ha)	Pop. Dens (pop/built-up area) p/ha	Built-up area 2017 (ha)	Pop. estimate 2017
Kandy	98,828	1,379	71.7	1,582	113,000
Jaffna	80,829	1,562	51.7	1,811	94,000
Galle	86,333	1,221	70.7	1,464	104,000
Kurunegala	24,833	470	52.8	711	38,000
Ratnapura	47,105	866	54.3	1,030	56,000
Trincomalee	48,351	822	58.8	950	56,000
Badulla	42,237	580	72.8	746	54,000
Anuradhapura	50,595	2,026	25.0	2,623	66,000
Colombo	853,707	7,418	115.1	7,722	889,000

The population estimate for the fringe area in 2017 of the Municipalities are calculated based on 2 different methodologies (Table A.3.2): (i) the urban areas are multiplied with the population density (slightly lower as the population density for the MC area) and (ii) the semi-urban areas are multiplied with the average dwelling density and an average household size of 3.8 persons (Census 2012). For example, the estimated population in the fringe area of Kandy = $(307 * 71.7) + (2,506 * 10 * 3.8) = 117,239$ rounded off to 117,000 persons. For Colombo and the WRM, official data for 2017 population is available for the Western Province from the DCS.

Table A.3.2: Population estimates for the fringe areas 2017

	Urban Area 2017 (ha)	Pop. Dens (p/ha)	Semi-Urban area (ha)	Dwelling density Semi- Urban area (d/ha)	
Kandy	307	71.7	2,506	10	117,000
Jaffna	98	51.7	4,079	5	83,000
Galle	2,132	70.7	5,907	5	263,000
Kurunegala	55	52.8	265	9.5	12,000
Ratnapura	89	53.4	1,821	7.2	55,000
Trincomalee	316	58.8	1,201	9.5	62,000
Badulla	598	72.8	1,255	5	67,000
Anuradhapura	76	25.0	4,526	4	71,000

Annex 4: Methodology to create spatial data for Bellanwila Attidiya wetland

The extent of the Attidiya wetland area is based on the Wetland Conservation Project by the Central Environmental Authority (Fig A.4.1). The boundary was digitized on the Pléiades image from Nov. 2017 (Fig A.4.2).

Fig A.4.1: Attidiya Wetland boundaries

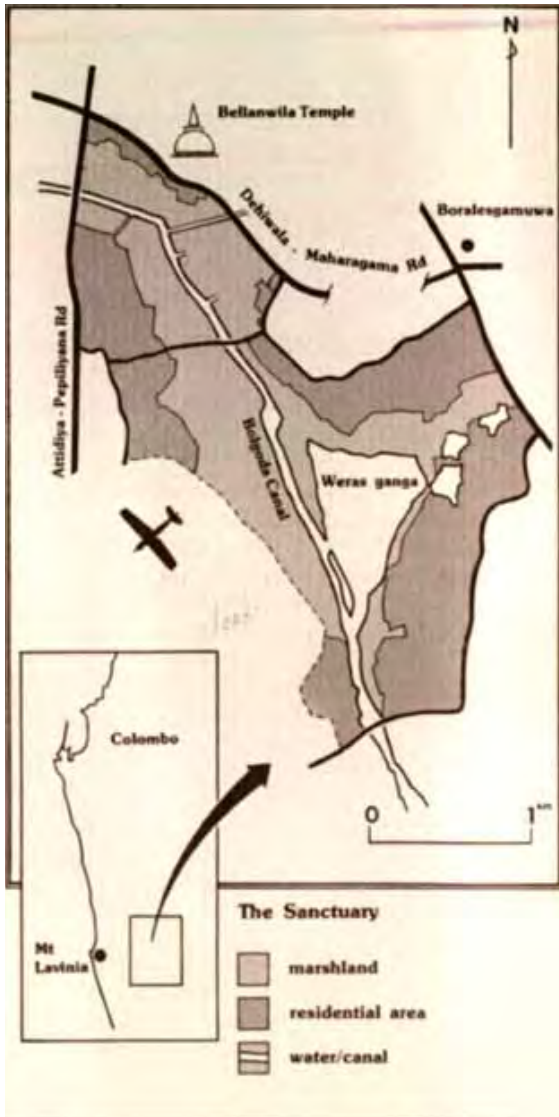


Fig A.4.2: Pléiades satellite image (Nov. 2017) with boundary of the wetland area



All building footprints were digitized using the very high-resolution satellite image (Pléiades) from Nov. 2017. Using Google Maps historical satellite image from 2004 another building layer was created by removing and adjusting extensions to the new buildings constructed after 2004 (Fig A.4.3). In yellow are buildings developed before 2004, in red are buildings developed between 2004 and 2017. The results are shown in Table A.4.1.



Fig A.4.3: Building growth between 2004 and 2017

Table A.4.1: Increases in number and area of buildings in Attidiya 2004 to 2017

Year	No of buildings	Land extent of foot print (Ha)	Average foot print (m ²)
2004	5,158	51.1	99.1
2017	7,524	68.9	91.6

It took 1 day to demarcate the boundary, 1 week to digitize the 2004 buildings and 2 weeks to digitize the 2017 buildings.

Most of the newly developed buildings between 2004 and 2017 are residential often self-built buildings with a relatively small footprint. Some other new buildings consist of warehouses and factory yards. In addition, the new buildings also exhibit examples of vertical expansion (additional floors) and horizontal expansion.

New buildings

These types of buildings are identified as buildings constructed between 2004 and 2017.



Multi-story buildings (vertical expansion)

This type includes new high-rise constructions and buildings which added one or more floors to the buildings.



Building extensions or alterations (horizontal expansion)

When an existing building is expanded and a larger floor area is created, then it is considered as building extensions or alterations (horizontal expansion)



Annex 5: Categorisation for an 'Economic Order' of cities.

The below matrix details how cities are categorised according to an 'Economic Order' in Chapter 4.

Economic Indicator	Category I	Category II	Category III	Category IV
Economic Wealth				
1. GDP per capita (LKR.'000)	Over 600 Colombo (784) Over15% Colombo (39.7)	500 - 600 Anuradhapura (519) Badulla (518) Kurunegala (513)	400 - 500 Kandy (467) Galle (463) Ratnapura (447) Jaffna (450) Trincomalee (416)	300 - 400
2. GDP Share (%)	Over 250 Colombo (429) Galle (276) Kurunegala (272)	10 – 15% Kurunegala (10.7) Kandy (10.5) Galle (10.1)	5 – 10% Ratnapura (7.5) Anuradhapura (5.8) Badulla (5.8) Trincomalee (5.7)	3 – 5% Jaffna (4.2)
3. HH per capita Income (LKR.'000)	Over 250 Colombo (367) Kurunegala (251)	225 - 250 Kandy (236)	200 - 225 Anuradhapura (263) Badulla (232) Ratnapura (208)	150 - 200 Trincomalee (191) Jaffna (188)
4. HH per capita Expenditure (LKR.'000)		200 - 250 Kandy (230) Galle (230) Anuradhapura (215)	150 - 200 Badulla (177) Jaffna (169) Ratnapura (168) Trincomalee (161)	100 - 150
Education				
5. Literacy Rate	Over 95% Jaffna (96.8) Colombo (95.8)	92 – 95% Anuradhapura (94.1) Kurunegala (93.7) Galle (93.0) Kandy (92.1)	90 – 92% Trincomalee (91.5) Ratnapura (90.9) Badulla (90.7)	88 – 90%
6. Admission to Universities (No./Year)	Over 2,000 Colombo (3,605)	1,500 – 2,000 Kurunegala (1,934) Kandy (1,656) Galle (1,606)	1,000 – 1,500 Ratnapura (1,465) Jaffna (1,121) Badulla (1,063) Anuradhapura (1,054)	500 – 1,000 Trincomalee (510)
Employment				
7. Total Employment (No. '000)	Over 500 Colombo (904) Kurunegala (710)	400 - 500 Kandy (492) Ratnapura (474) Galle (400)	300 - 400 Badulla (350) Anuradhapura (348)	200 - 300
Industry Diversity				
8. Large Industry Sectors (with over 2,000 employees) (No.)	Over 25 Colombo (35)	20 - 25 Kandy (22) Kurunegala (21) Ratnapura (20)	15 - 20 Galle (17) Anuradhapura (15) Badulla (15) Trincomalee (15)	10 - 15 Jaffna (14)
Technological Advancement				
9. Computer Literacy Rate (%)	Over 30% Colombo (44.1) Kandy (31.2)	25 – 30% Galle (27.0) Kurunegala (26.8)	20 – 25% Ratnapura (24.4) Jaffna (23.0) Anuradhapura (22.4)	15 – 20% Badulla (17.2)
10. Share of Manufacturing & Services Sectors to national GDP (%)	Over 20% Colombo (82.7) Kurunegala (20.7)	15 – 20% Kandy (19.3) Galle (17.20) Ratnapura (15.0)	10 – 15% Badulla (11.1) Trincomalee (10.8) Anuradhapura (10.4)	5 – 10% Jaffna (7.1)

Economic Indicator	Category I	Category II	Category III	Category IV
Connectivity 11. Travel time to nearest Airport or Sea Port (Hours)	Less than 2	2 - 4	4 - 6	6 - 8
	Colombo (1) Galle (1) Trincomalee (1)	Anuradhapura (3) Ratnapura (3) Kurunegala (3) Kandy (3½)	Jaffna (4)	Badulla (7)
Poverty Level 12. Poverty H.C.I (%)	Less than 1%	1 – 4%	5 – 7%	7 – 10%
	Colombo (0.9)	Kurunegala (2.9) Galle (2.9) Anuradhapura (3.8)	Kandy (5.5) Ratnapura (6.5) Badulla (6.8)	Jaffna (7.7) Trincomalee (10.0)
Summary of Achievements	Colombo 12/12 Kurunegala 4/12 Galle 2/12 Jaffna 1/12 Kandy 1/12 Trincomalee 1/12	Kandy 9/12 Kurunegala 8/12 Galle 8/12 Anuradhapura 5/12 Ratnapura 4/12 Badulla 1/12	Badulla 9/12 Ratnapura 8/12 Anuradhapura 7/12 Trincomalee 6/12 Jaffna 5/12 Kandy 2/12 Galle 2/12	Jaffna 5/12 Trincomalee 3/12 Badulla 2/12
Economic Order				
1st Order	Colombo 12/12			
2nd Order		Kurunegala 12/12 Galle 10/12 Kandy 10/12		
3rd Order			Ratnapura 12/12 Anuradhapura 12/12 Badulla 10/12	
4th Order				Jaffna 11/12 Trincomalee 10/12

Location of 9 Provincial Capitals



Source : Pleiades Satellite Image (0.5 m)
World Image (Background)

Legend

- 9 District Boundaries
- 23 Municipal Councils in Sri Lanka

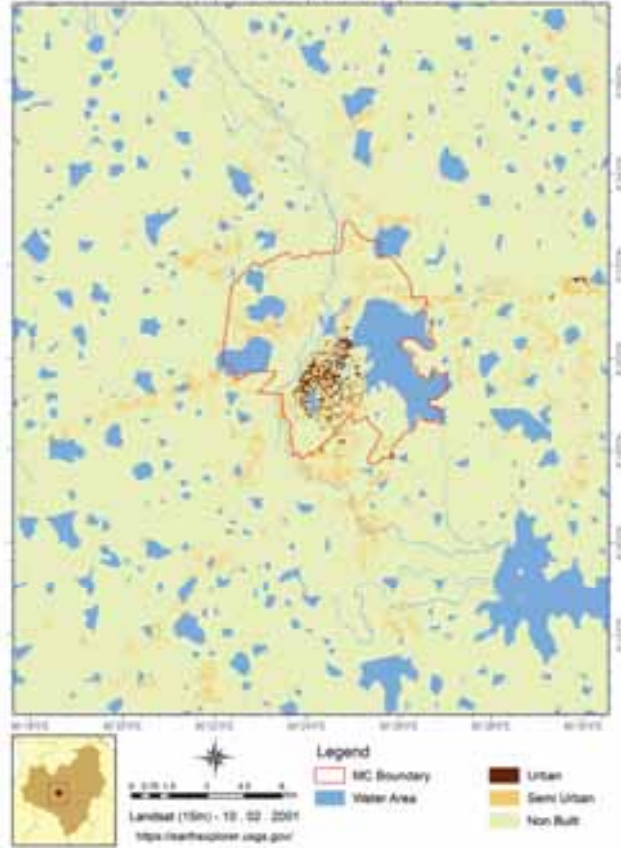
Built up areas of Provincial Capitals (Ha)



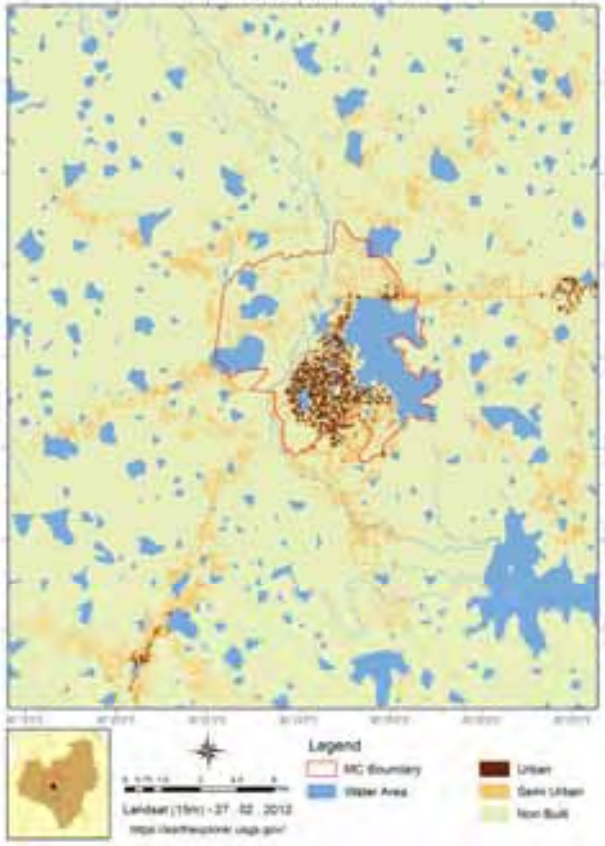
Anuradhapura Urban Areas 1995



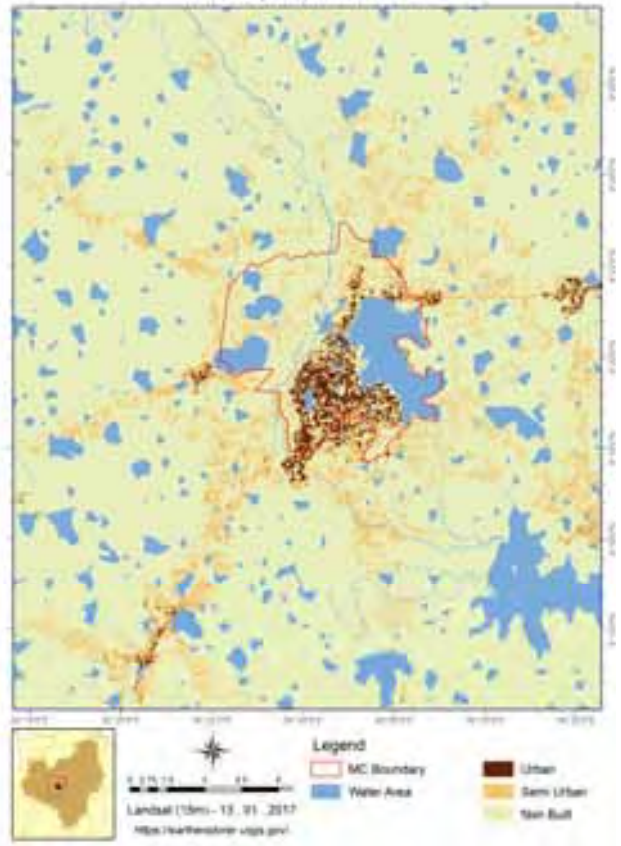
Anuradhapura Urban Areas 2001



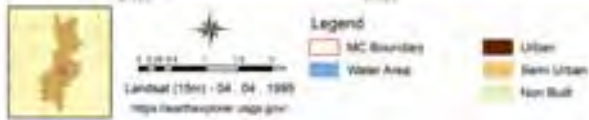
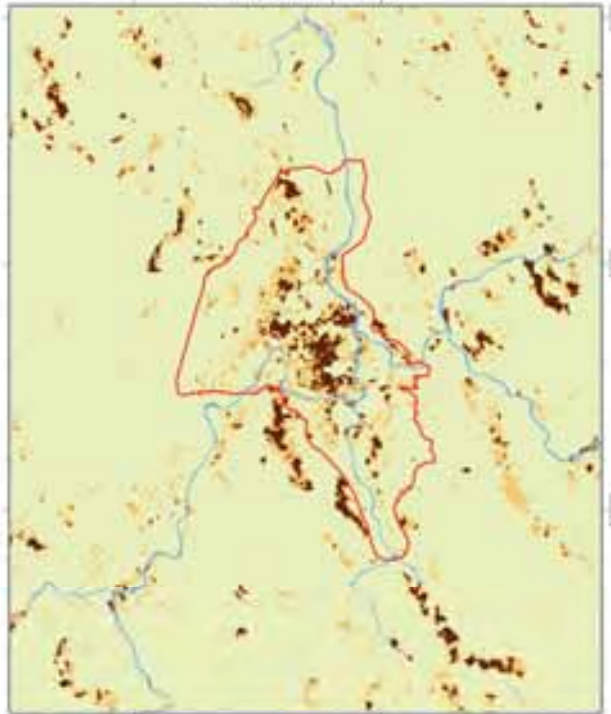
Anuradhapura Urban Areas 2012



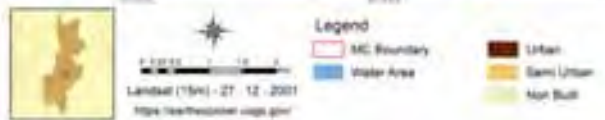
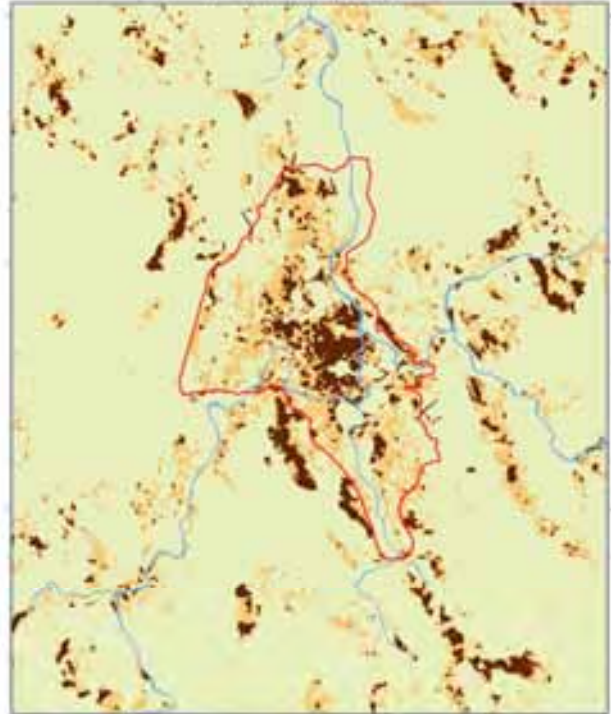
Anuradhapura Urban Areas 2017



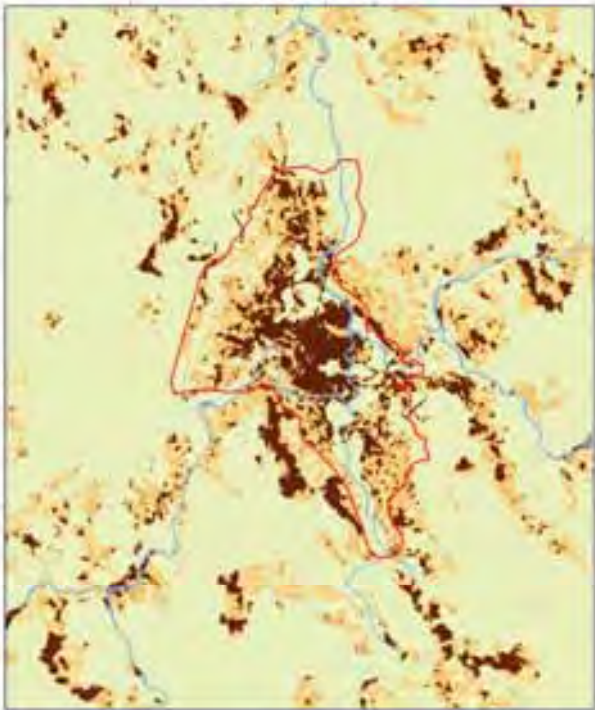
Badulla Urban Areas 1995



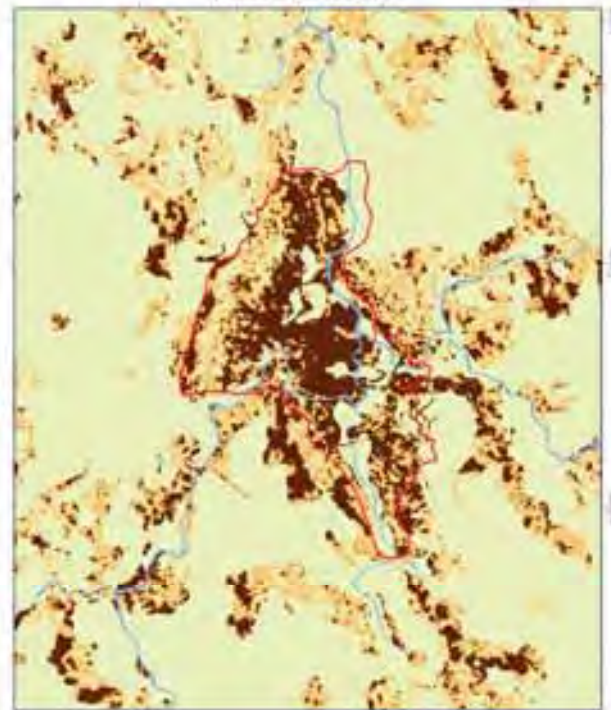
Badulla Urban Areas 2001



Badulla Urban Areas 2012



Badulla Urban Areas 2017



Colombo Urban Areas 1995



Colombo Urban Areas 2001



Colombo Urban Areas 2012



Colombo Urban Areas 2017



Galle Urban Areas 1995



Galle Urban Areas 2001



Galle Urban Areas 2012



Galle Urban Areas 2017



Jaffna Urban Areas 1995



Jaffna Urban Areas 2001



Jaffna Urban Areas 2012



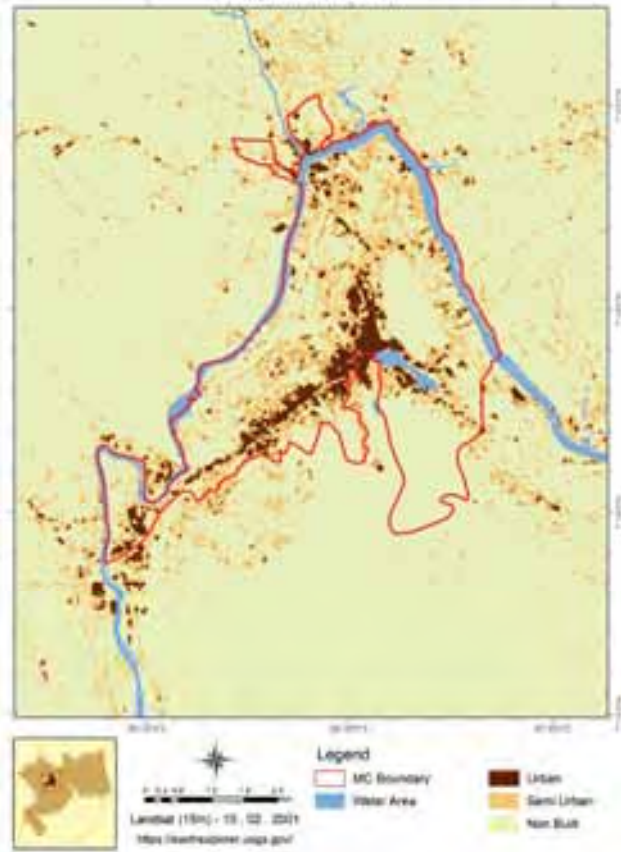
Jaffna Urban Areas 2017



Kandy Urban Areas 1995



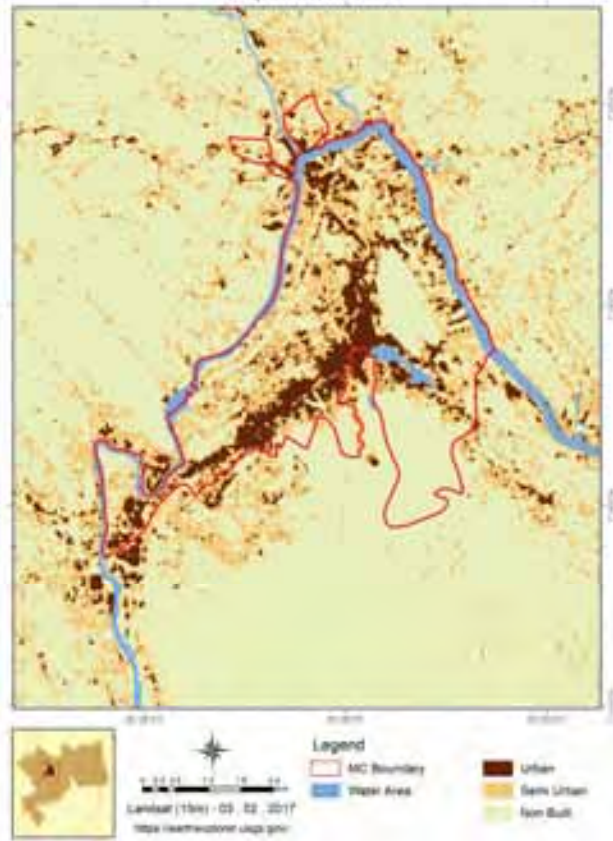
Kandy Urban Areas 2001



Kandy Urban Areas 2012



Kandy Urban Areas 2017



Kurunegala Urban Areas 1995



Kurunegala Urban Areas 2001



Kurunegala Urban Areas 2012



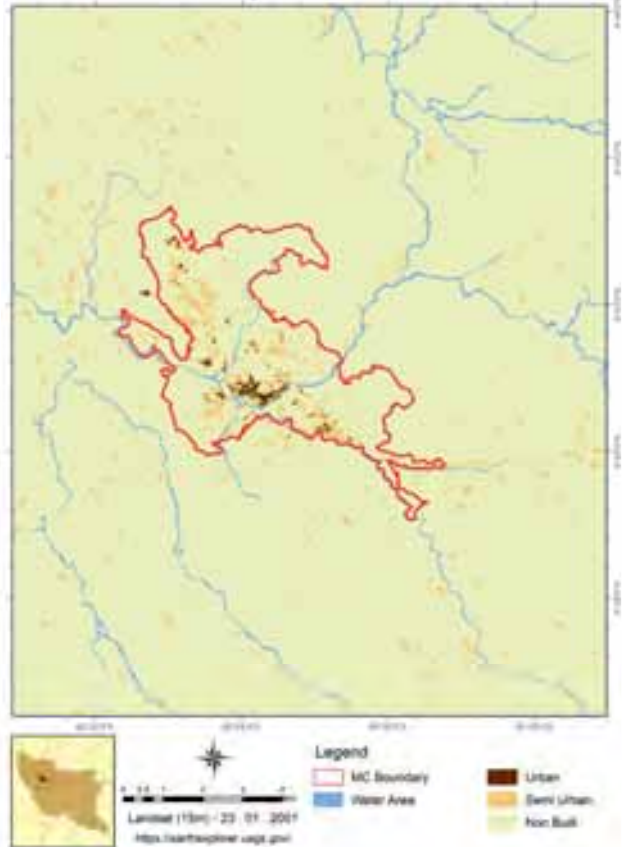
Kurunegala Urban Areas 2017



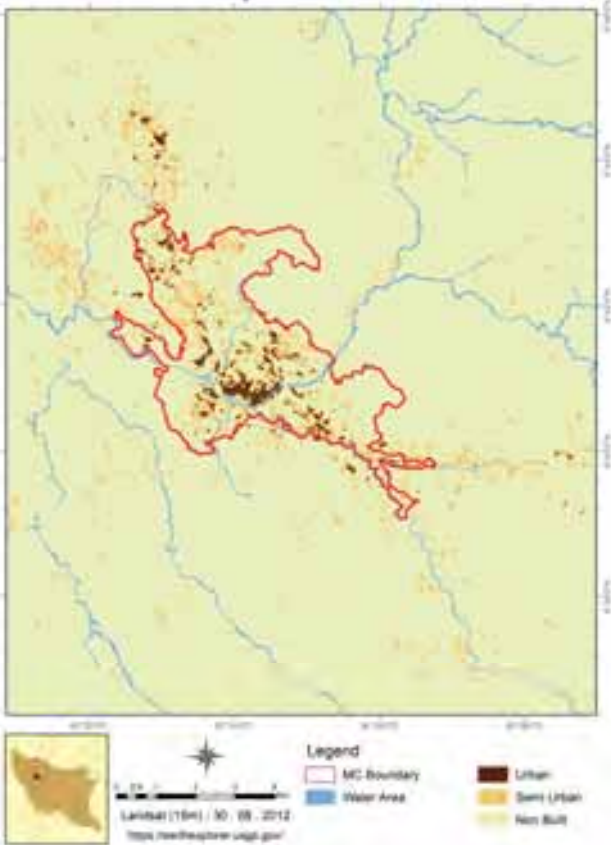
Ratnapura Urban Areas 1995



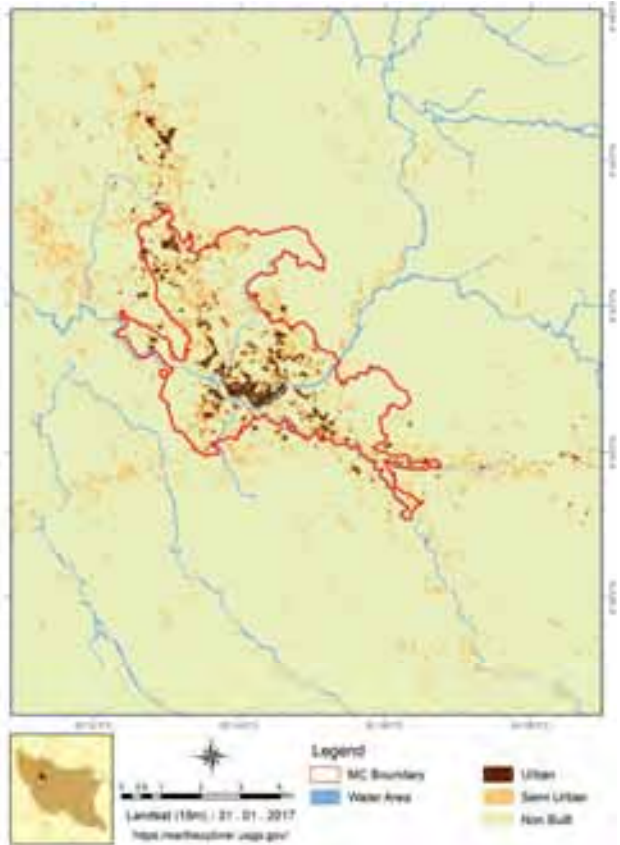
Ratnapura Urban Areas 2001



Ratnapura Urban Areas 2012



Ratnapura Urban Areas 2017



Trincomalee Urban Areas 1995



Trincomalee Urban Areas 2001



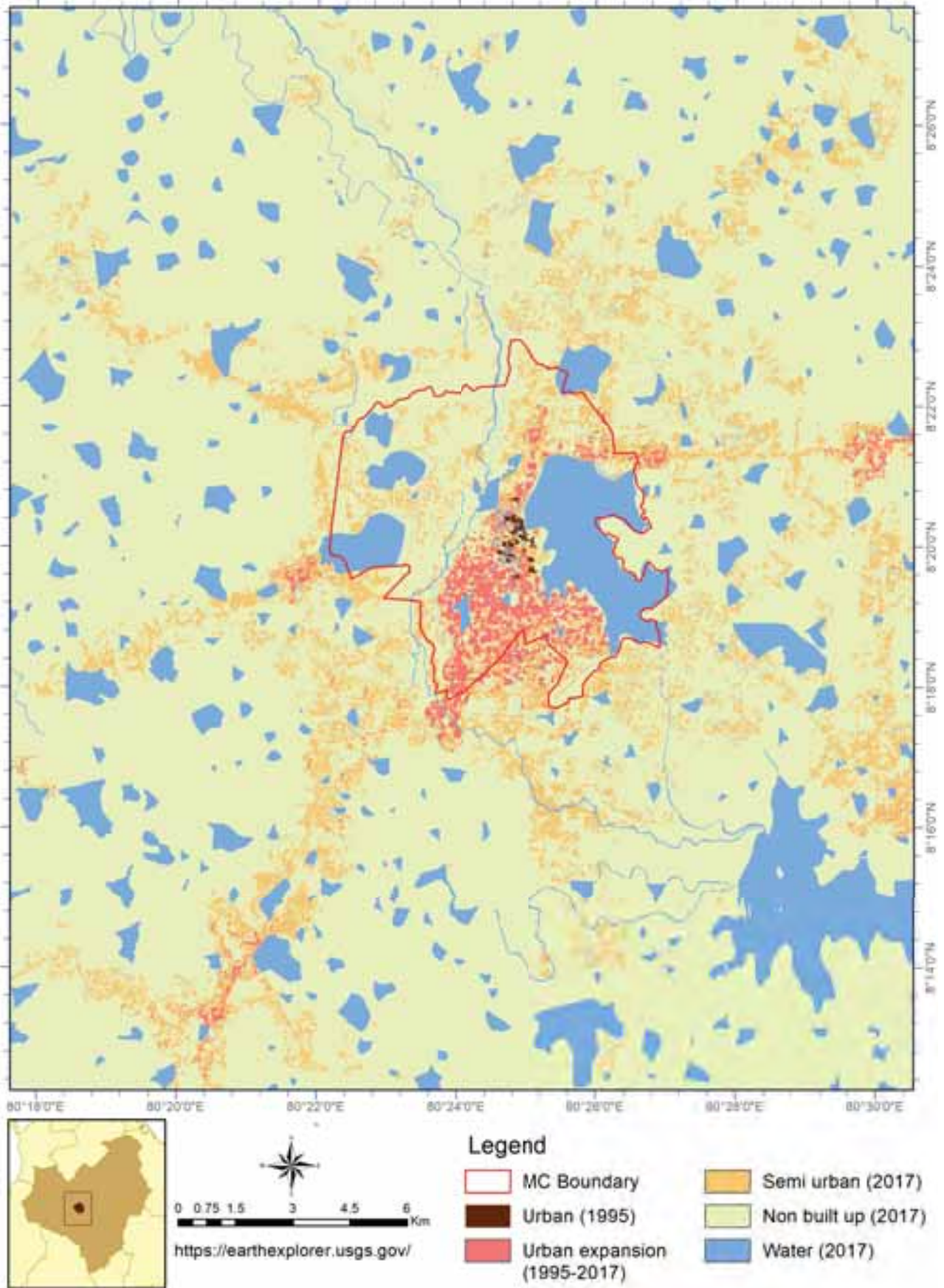
Trincomalee Urban Areas 2012



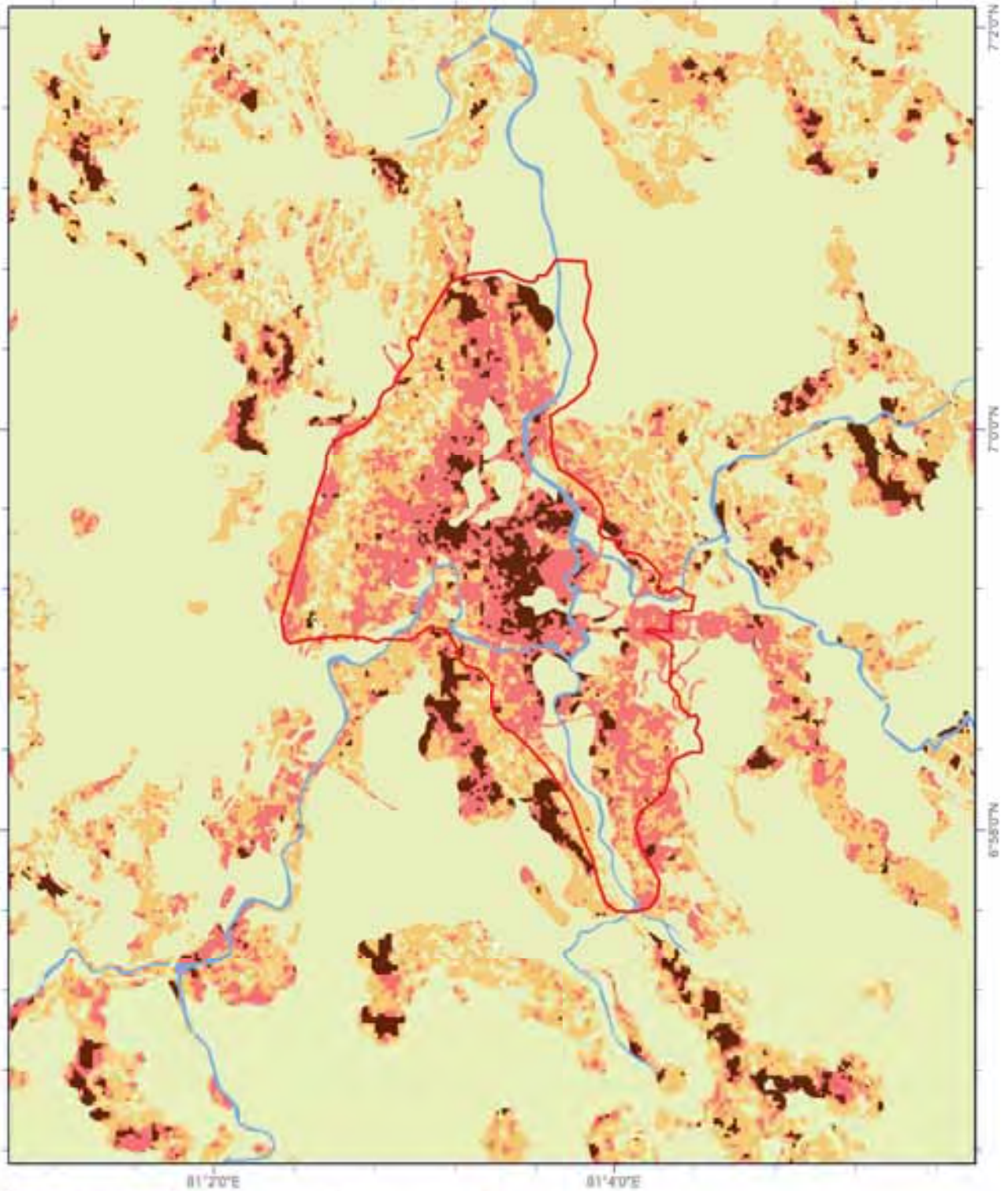
Trincomalee Urban Areas 2017



Anuradhapura Urban Expansion 1995 - 2017



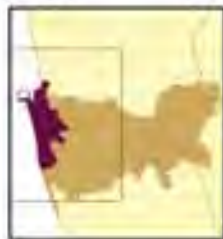
Badulla Urban Expansion 1995 - 2017



Legend

- | | |
|-----------------------------|---------------------|
| MC Boundary | Semi urban (2017) |
| Urban (1995) | Non built up (2017) |
| Urban expansion (1995-2017) | Water (2017) |

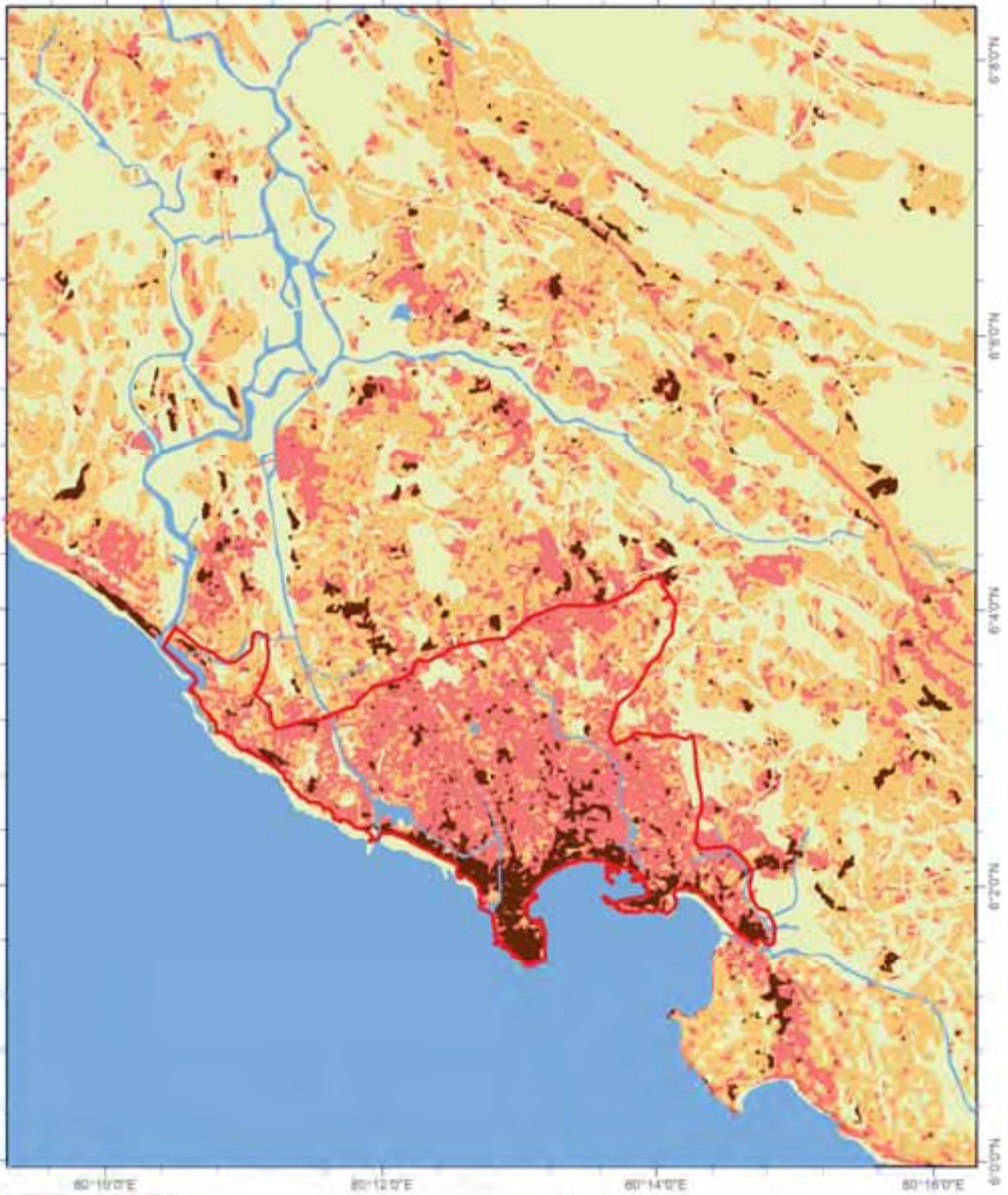
Colombo Urban Expansion 1995 - 2017



Legend

- | | |
|---|---|
|  MC Boundary |  Semi urban (2017) |
|  Urban (1995) |  Non built up (2017) |
|  Urban expansion (1995-2017) |  Water (2017) |

Galle Urban Areas 2017

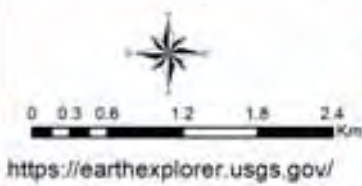
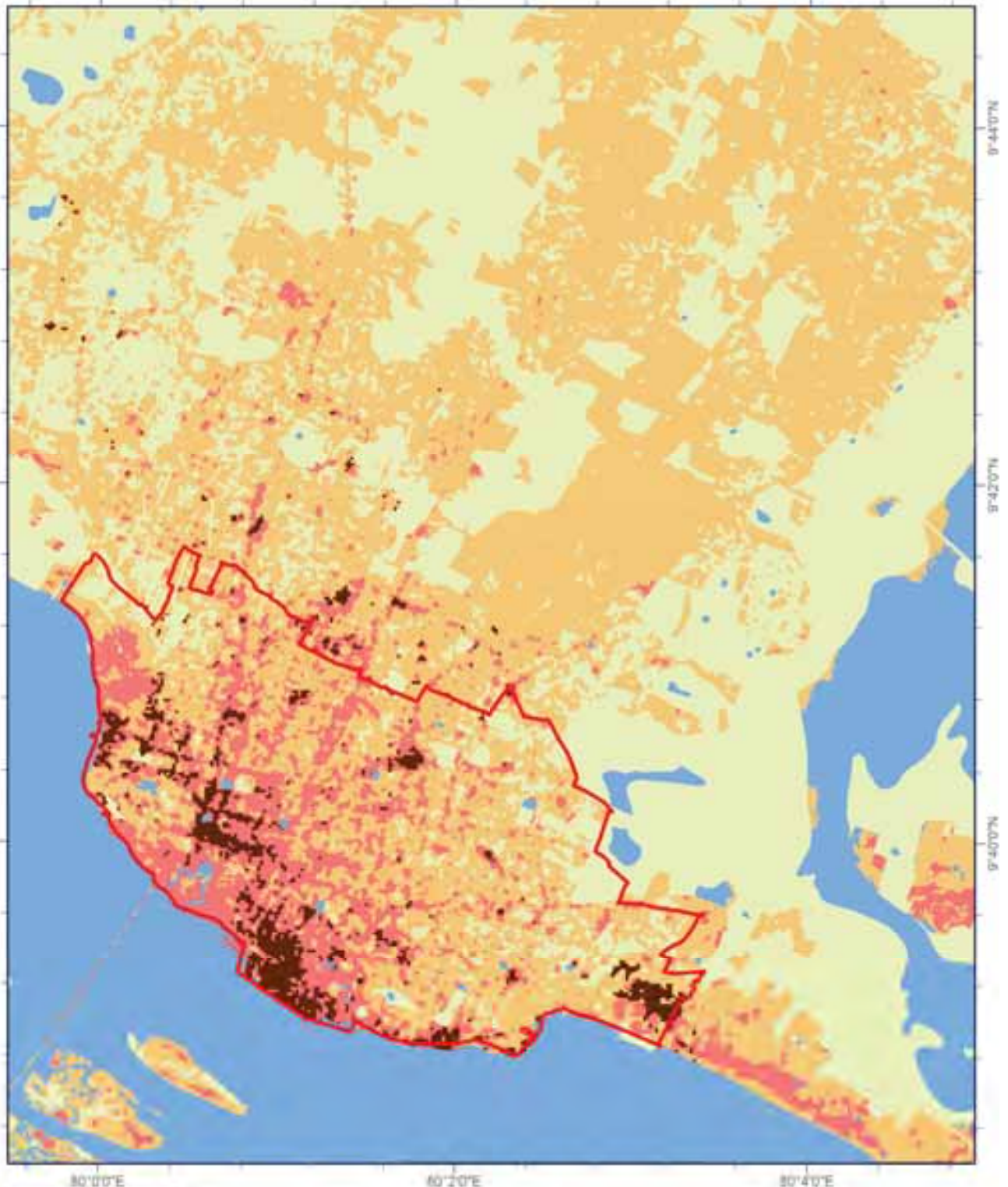


0 0.375 0.75 1.5 2.25 3 Km
Landsat (15m) - 18.03.2017
<https://earthexplorer.usgs.gov/>

Legend

- MC Boundary
- Water Area
- Urban
- Semi Urban
- Non Built

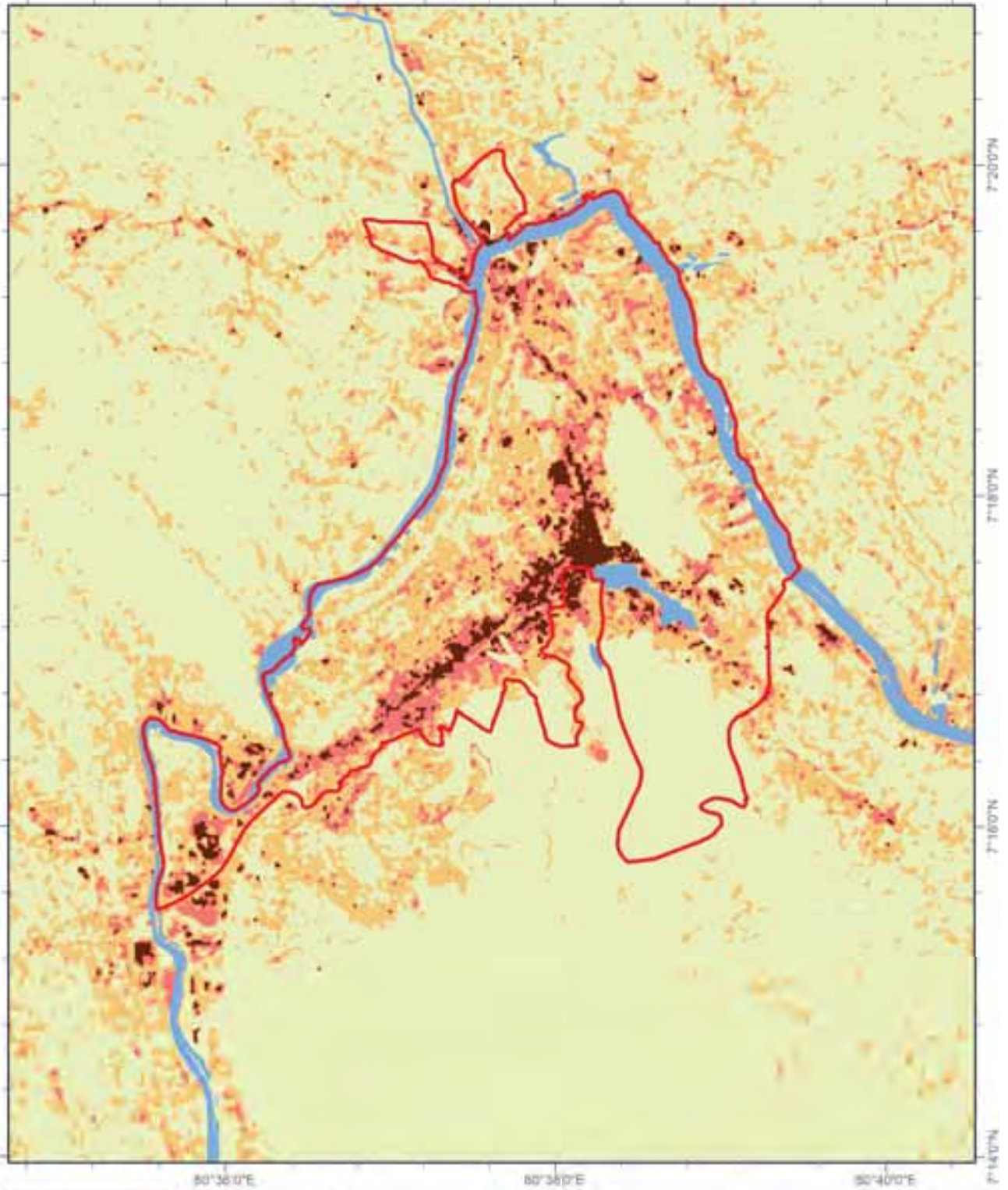
Jaffna Urban Expansion 1995 - 2017



Legend

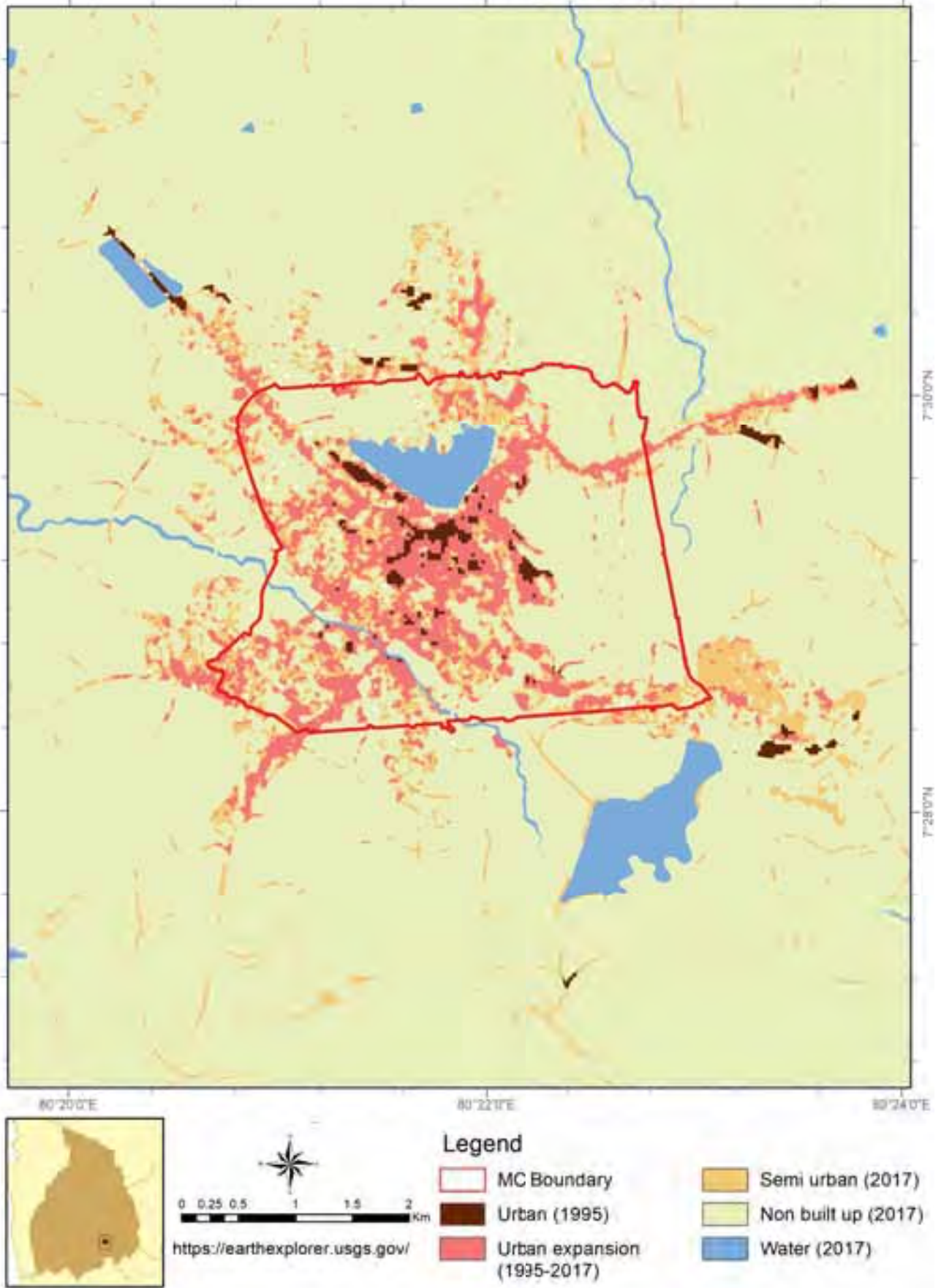
- | | |
|---|---|
|  MC Boundary |  Semi urban (2017) |
|  Urban (1995) |  Non built up (2017) |
|  Urban expansion (1995-2017) |  Water (2017) |

Kandy Urban Expansion 1995 - 2017

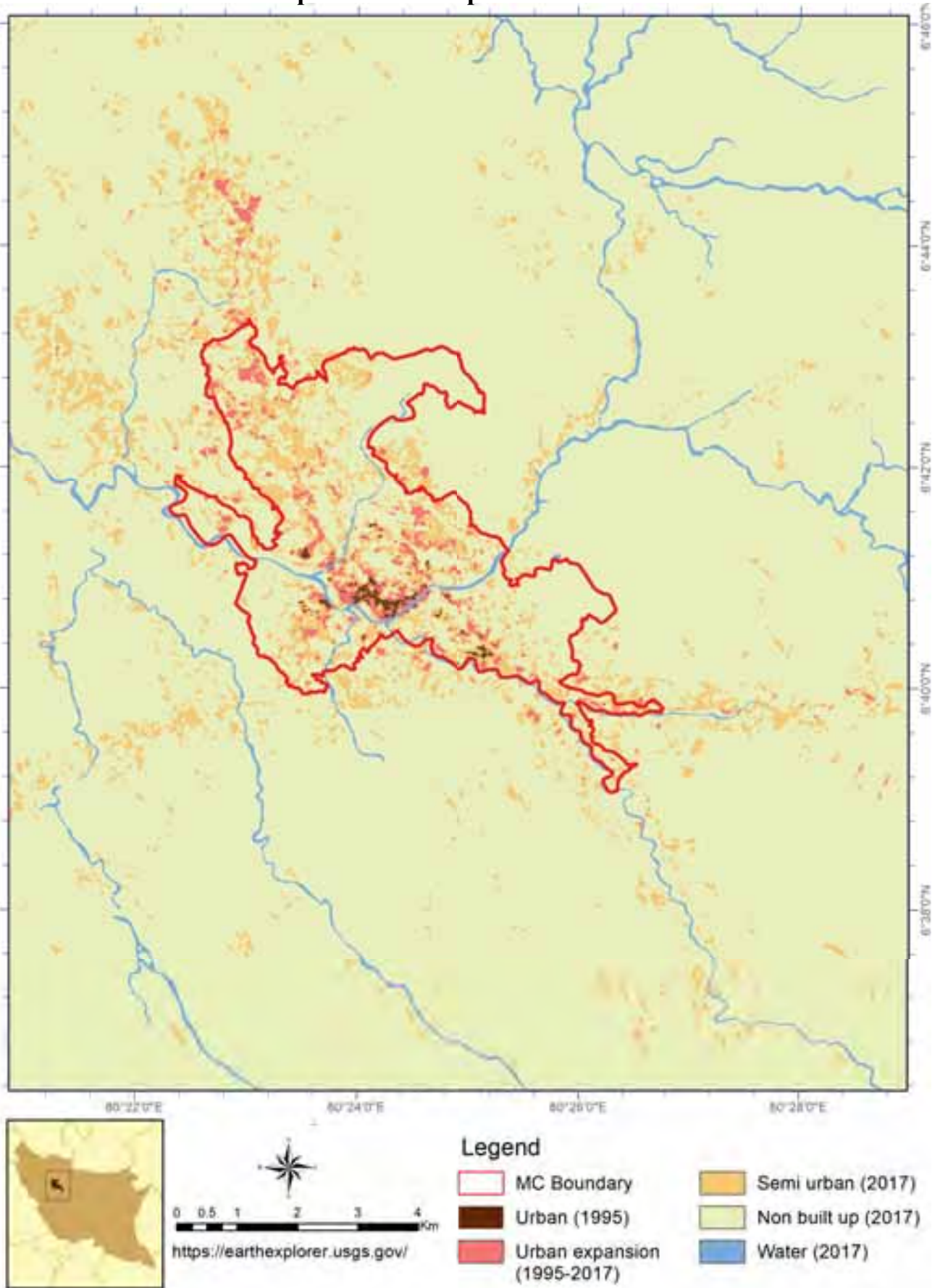


- Legend**
- MC Boundary
 - Semi urban (2017)
 - Urban (1995)
 - Non built up (2017)
 - Urban expansion (1995-2017)
 - Water (2017)

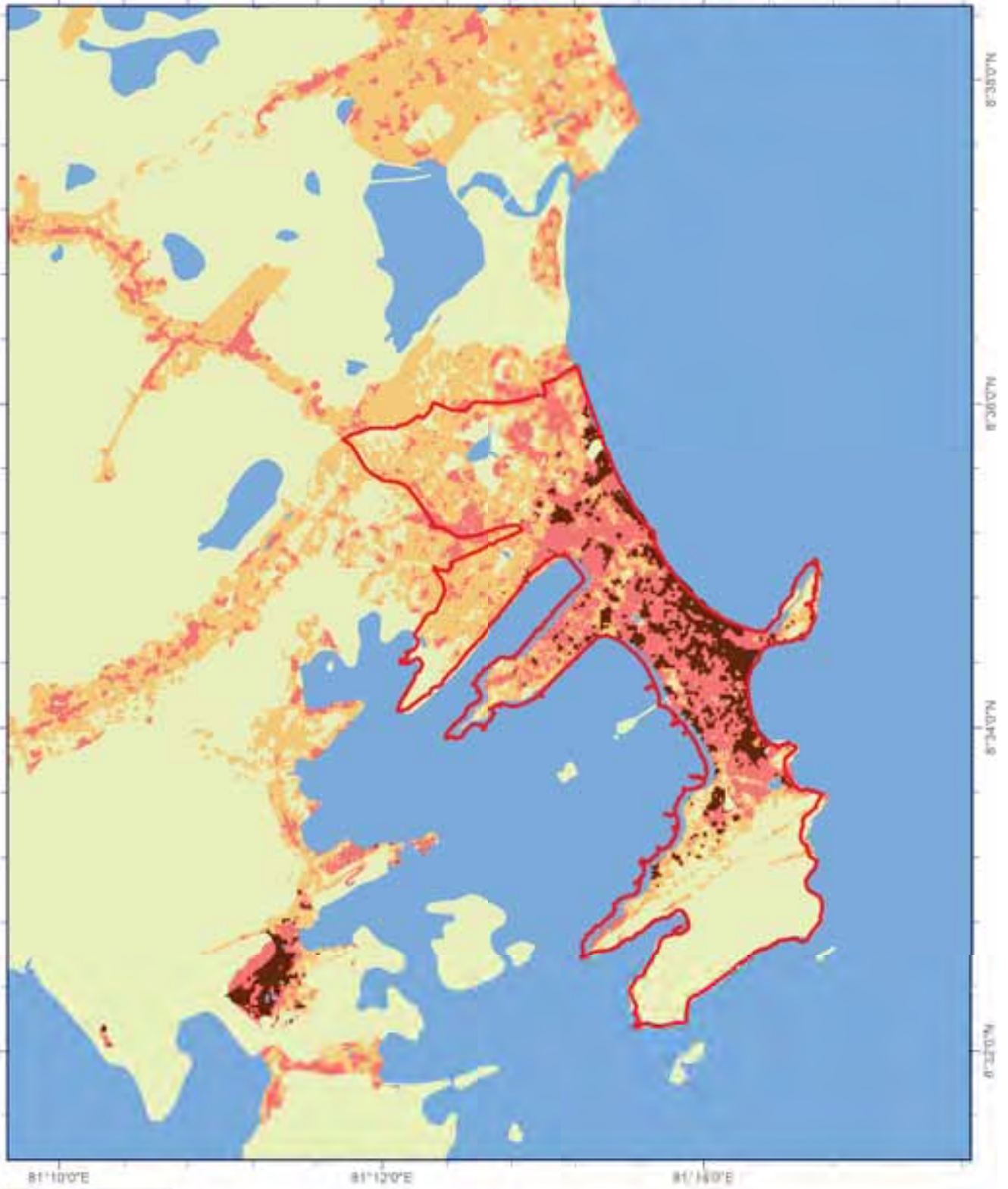
Kurunegala Urban Expansion 1995 - 2017



Ratnapura Urban Expansion 1995 - 2017

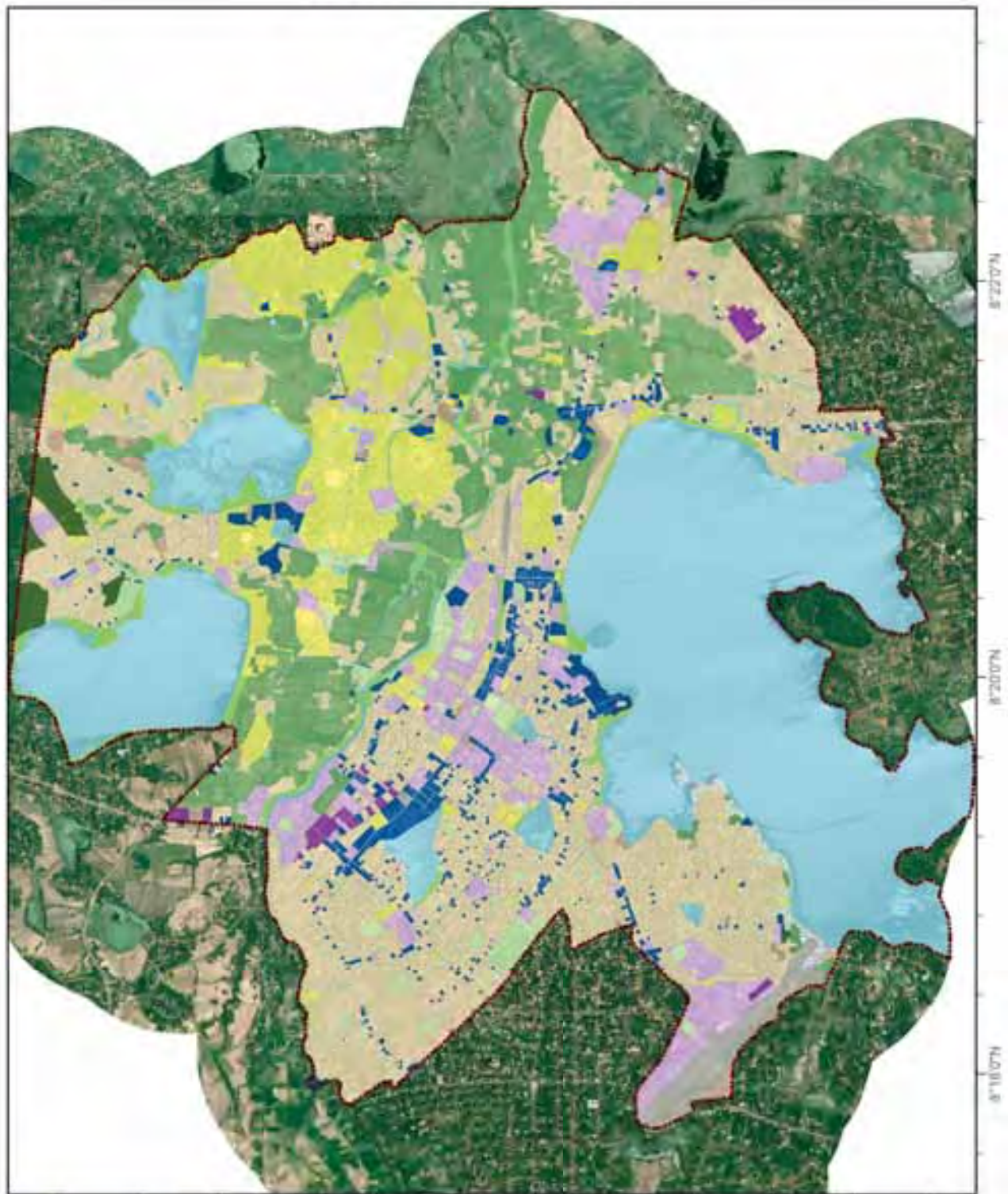


Trincomalee Urban Expansion 1995 - 2017



- Legend**
- MC Boundary
 - Urban (1995)
 - Urban expansion (1995-2017)
 - Semi urban (2017)
 - Non built up (2017)
 - Water (2017)

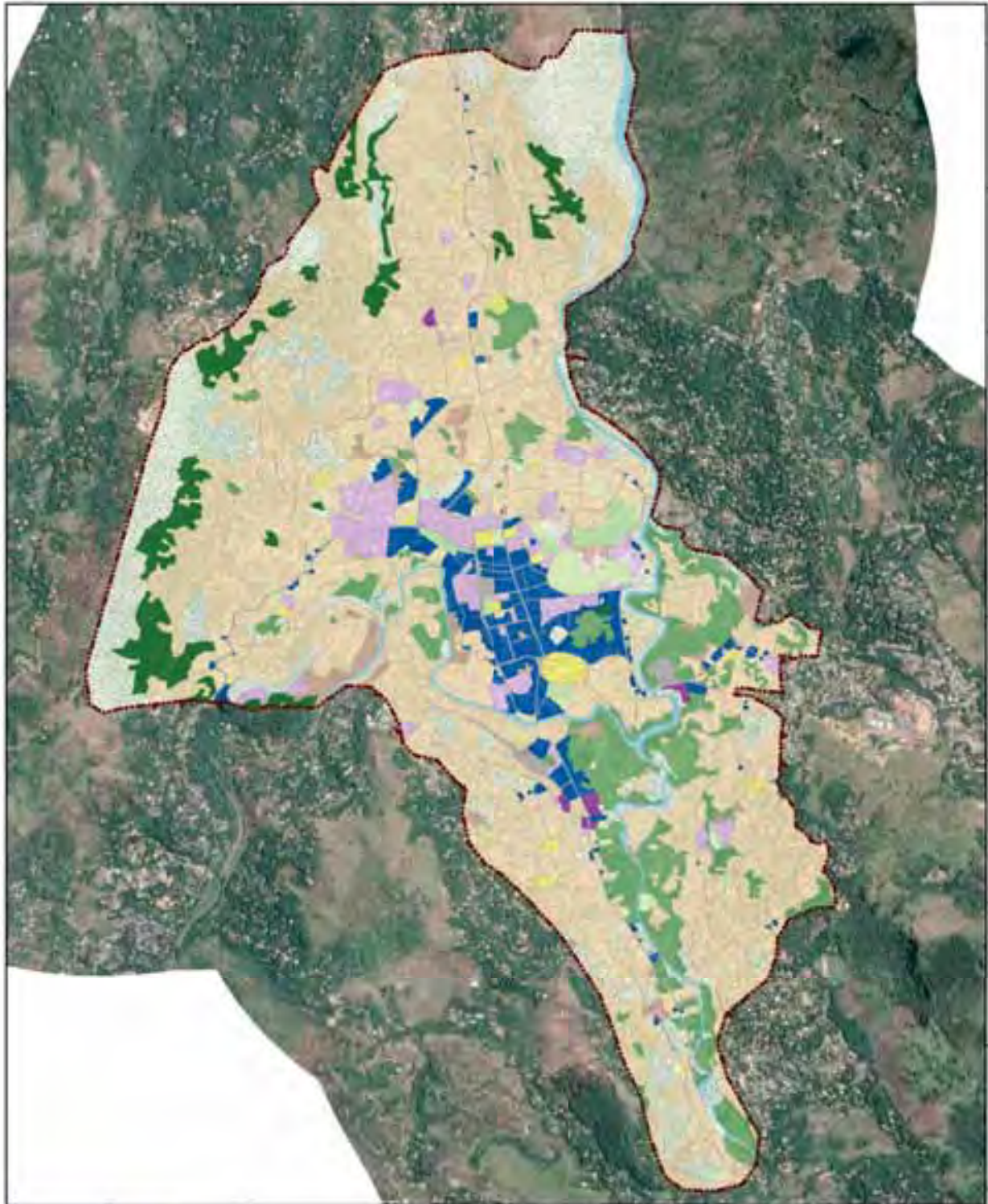
Anuradhapura Land Use 2017



Legend

Anuradhapura Municipal Boundary	Industrial	Under Construction	Reservation
Residential	Transport Public Space	Agriculture	Wetland
Commercial	Institutional	Water	Shrub
Cultural	Forest	Barren Land	

Badulla Land Use 2017



Pleiades Satellite Image
(0.5 m) - 30 July 2017

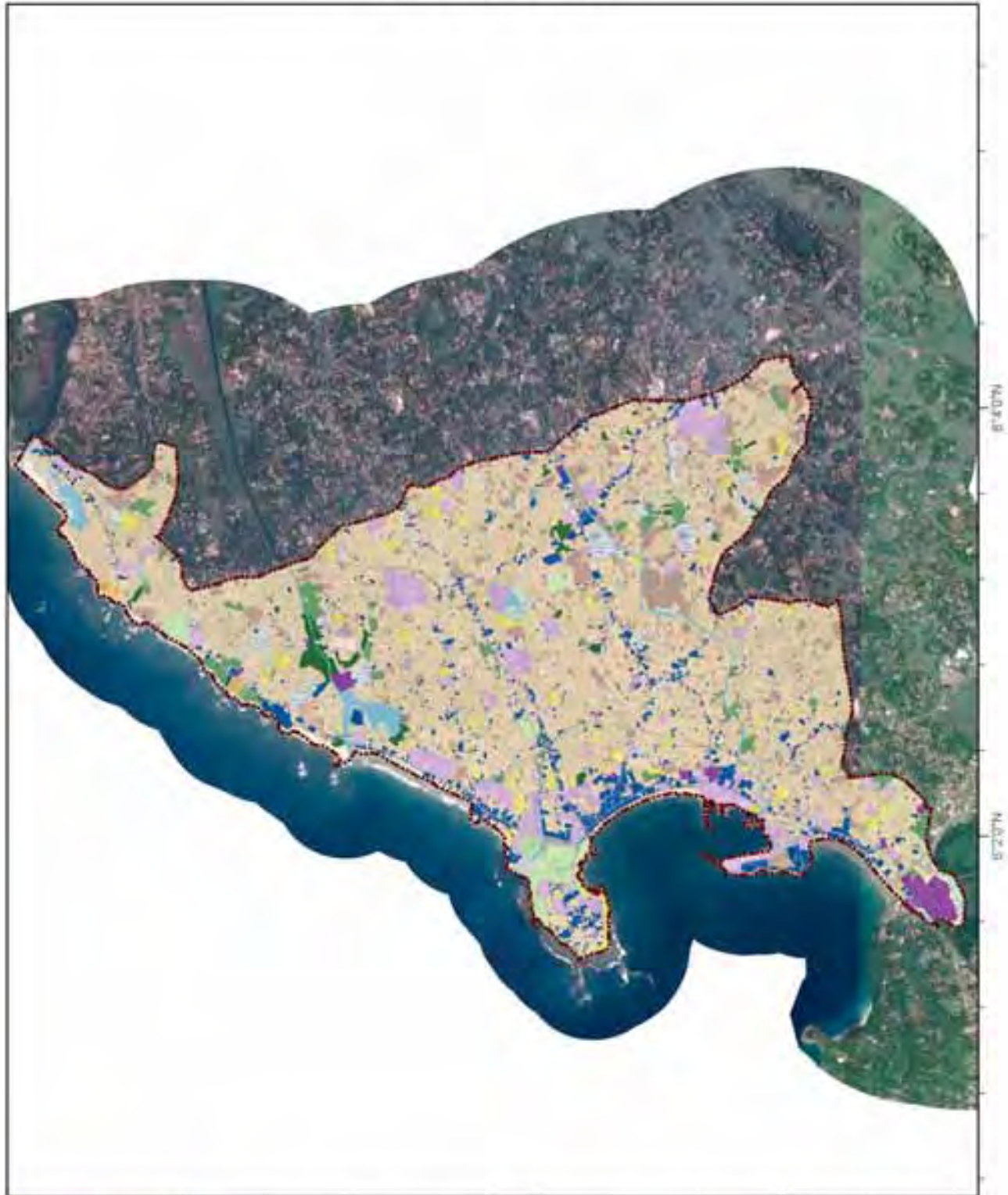
Legend

Badulla Municipal Boundary

Land Use

- | | | | |
|---------------|--------------|-------------|-------------|
| Residential | Industrial | Cultural | Forest |
| Commercial | Transport | Agriculture | Shrub |
| Institutional | Public Space | Water | Barren land |

Galle Land Use 2017



Piélades Satellite Image
(0.5 m) - 17 Feb. 2017

Legend

Galle Municipal Boundary

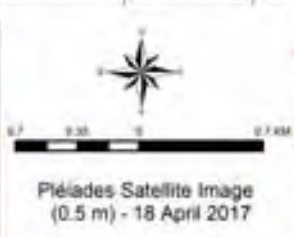
Land Use

- | | | | |
|---------------|----------------|-------------|--------------|
| Residential | Transport | Agriculture | Wetland |
| Commercial | Public Space | Water | Coastal area |
| Institutional | Cultural Under | Forest | Shrub |
| Industrial | Construction | Reservation | Barren Land |

Colombo, Kotte and Dehiwala Land Use 2017



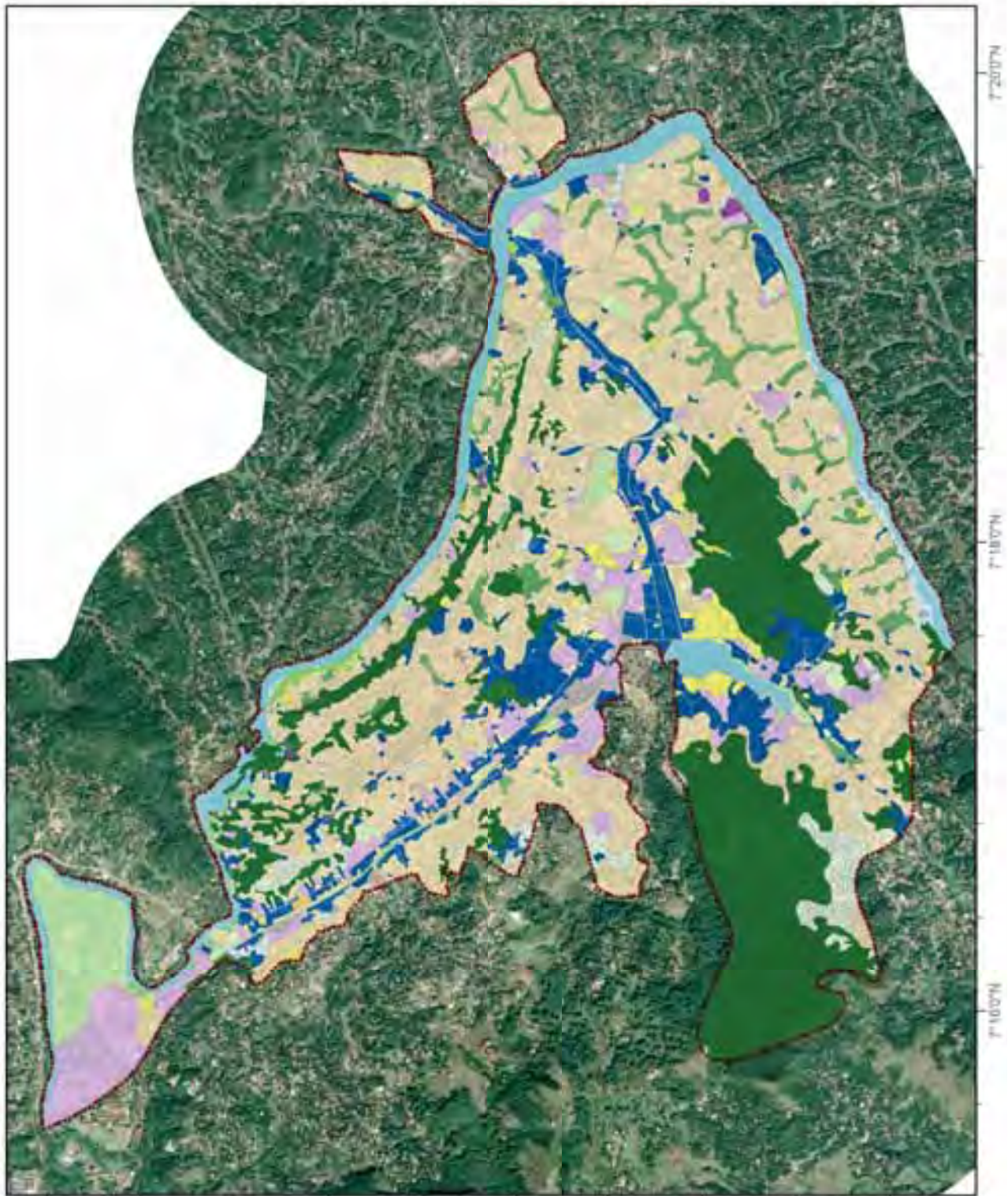
Jaffna Land Use 2017



Legend

- Jaffna Municipal Boundary
- | | | | |
|--|---|---|--|
| <p>Land Use</p> <ul style="list-style-type: none"> Residential Commercial Institutional | <ul style="list-style-type: none"> Industrial Transport Public Spaces Cultural | <ul style="list-style-type: none"> Under Construction Agriculture Water Forest | <ul style="list-style-type: none"> Coastal area Shrub Barren Land |
|--|---|---|--|

Kandy Land Use 2017



Pleiades Satellite Image (0.5 m) - 5 Feb. 2017

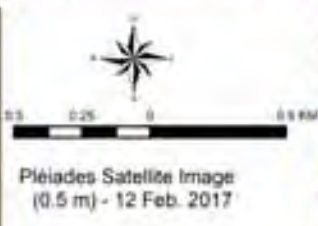
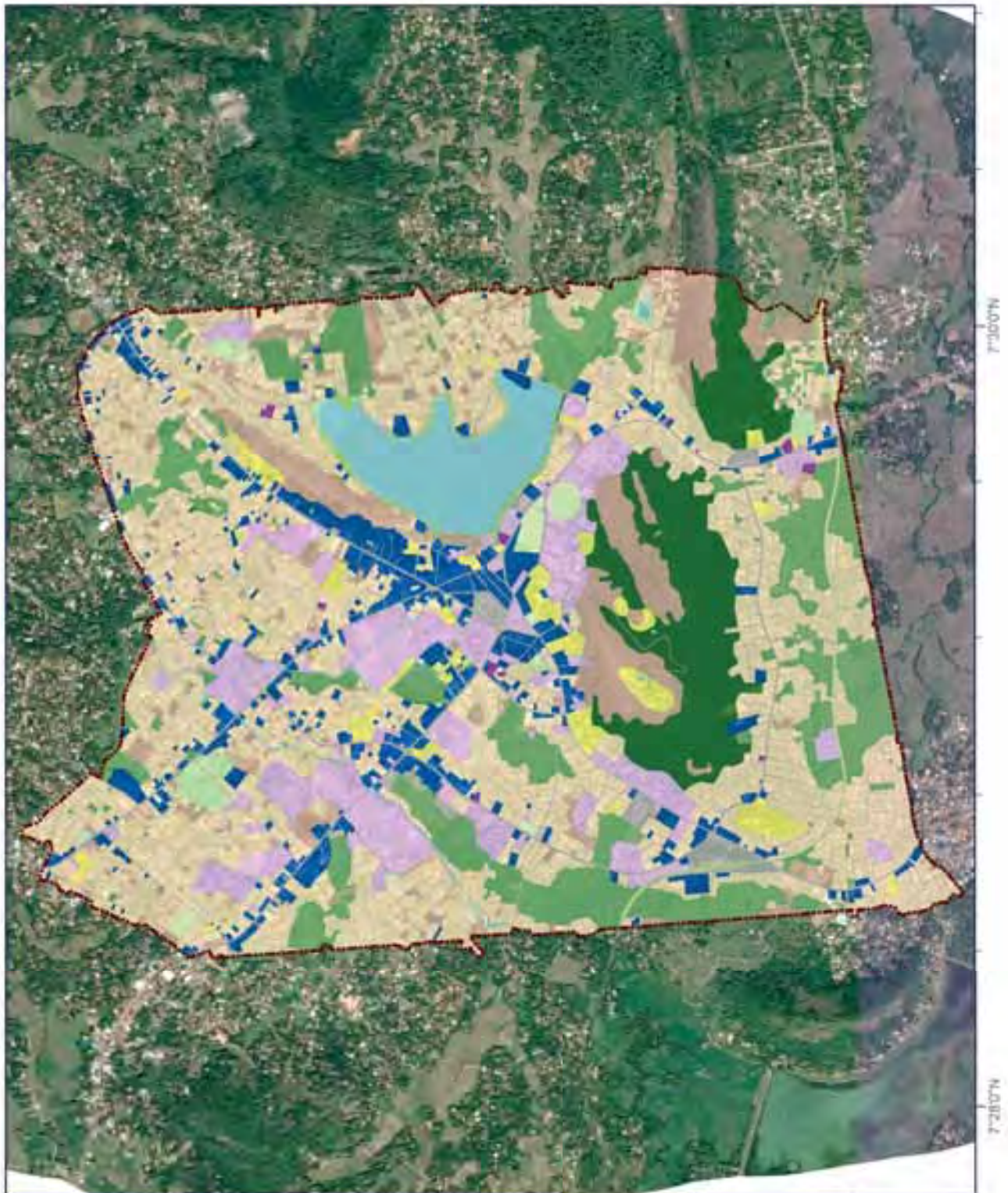
Legend

Kandy Municipal Boundary

Land Use

 Residential	 Transport	 Agriculture	 Wetland
 Commercial	 Public Space	 Water	 Shrub
 Institutional	 Cultural	 Forest	 Barren Land
 Industrial	 Under Construction	 Reservation	

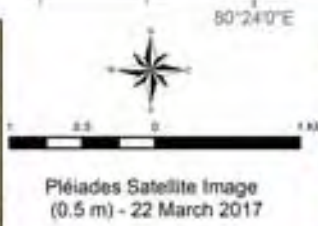
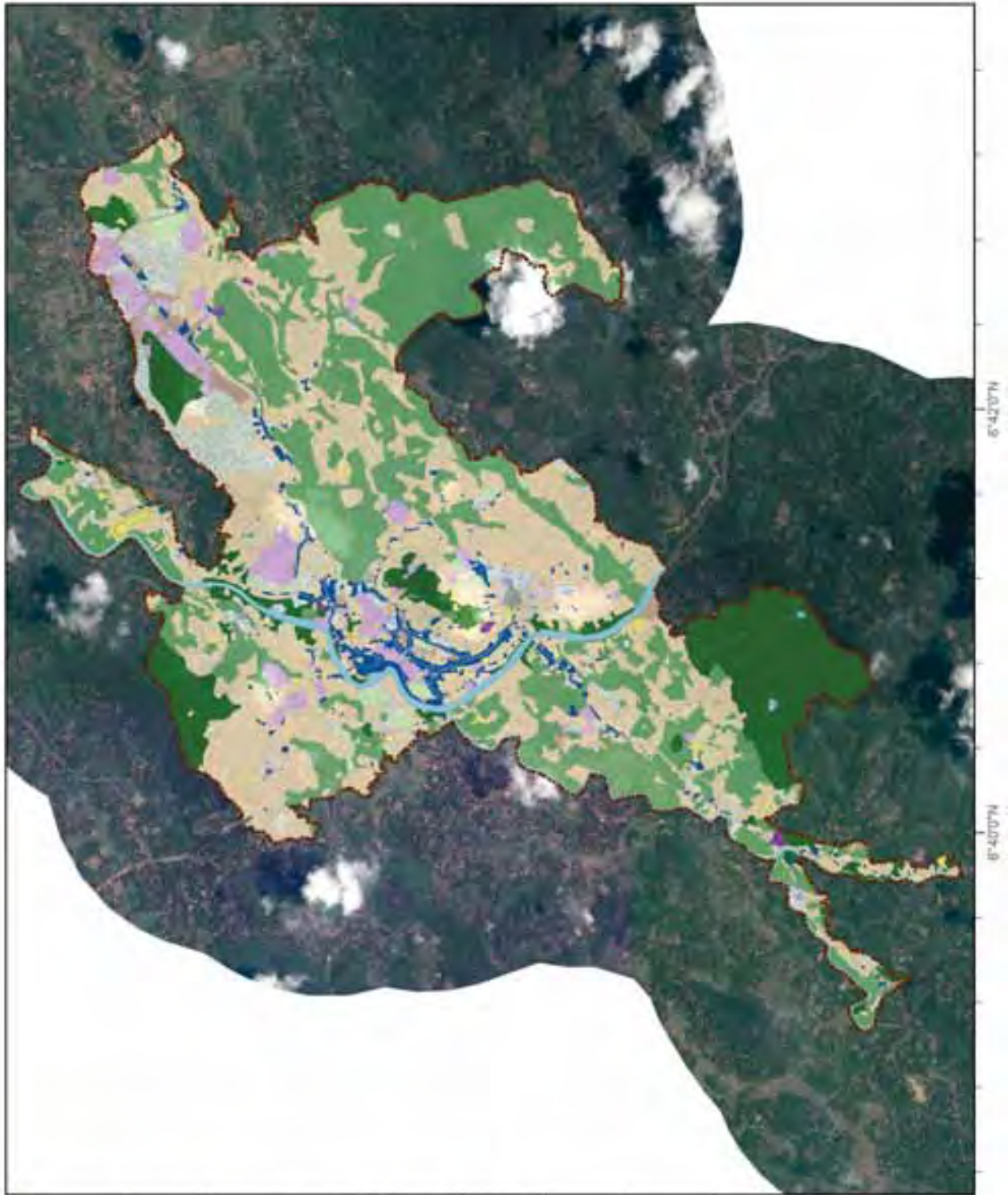
Kurunegala Land Use 2017



Legend 80°22'0\"/>

kurunegala Municipal Boundary	Water		
Land Use	Forest		
Residential	Industrial	Cultural Under	Reservation
Commercial	Transport	Construction	Barren Land
Institutional	Public Space	Agriculture	

Ratnapura Land Use 2017



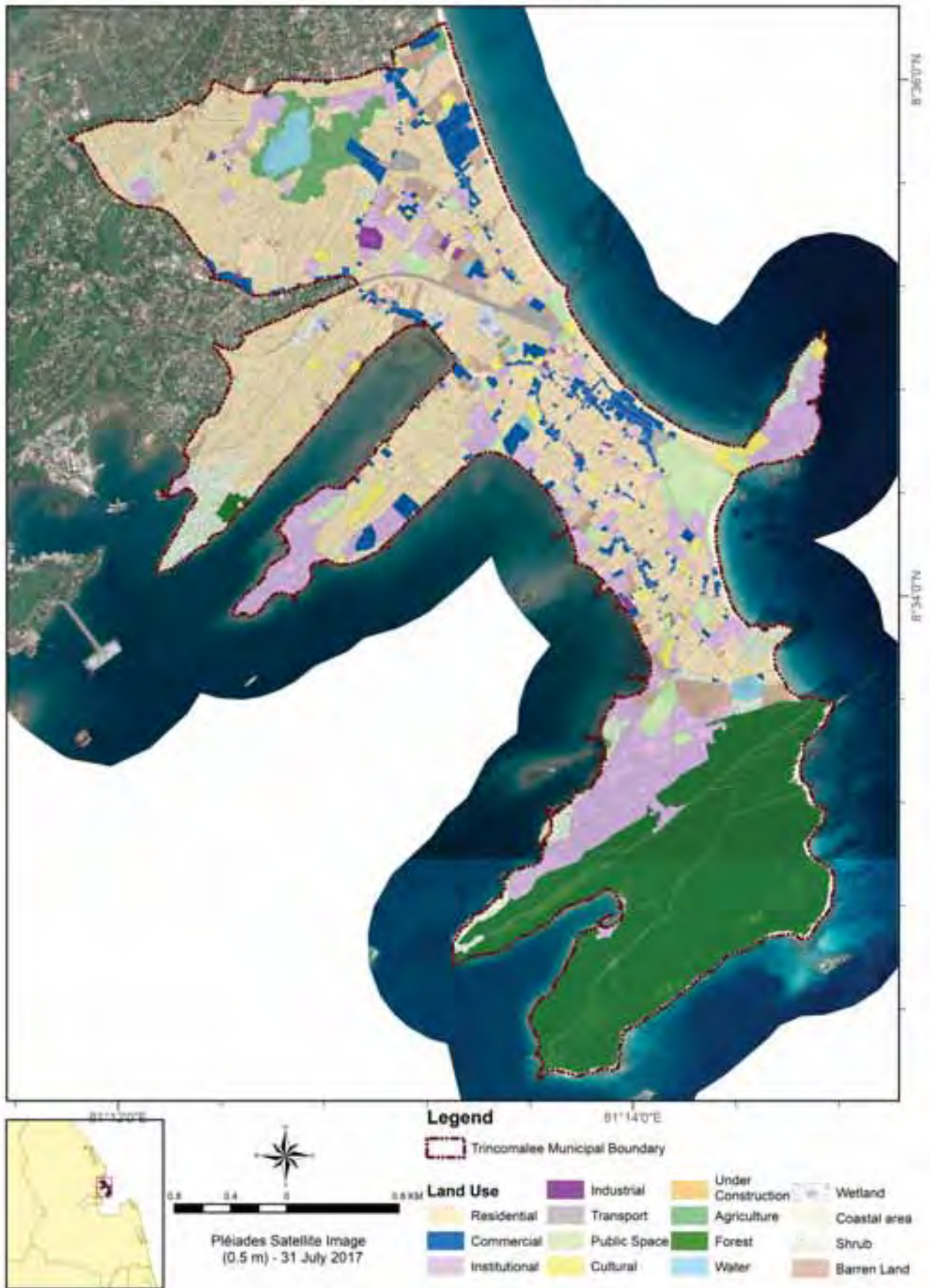
Legend

Ratnapura Municipal Boundary

Land Use

Residential	Transport	Agriculture	Shrub
Commercial	Public Space	Water	Barren Land
Institutional	Cultural	Forest	
Industrial	Construction	Wetland	

Trincomalee Land Use 2017



Buildings in Bellanwila Attidiya Marsh (2004-2017)

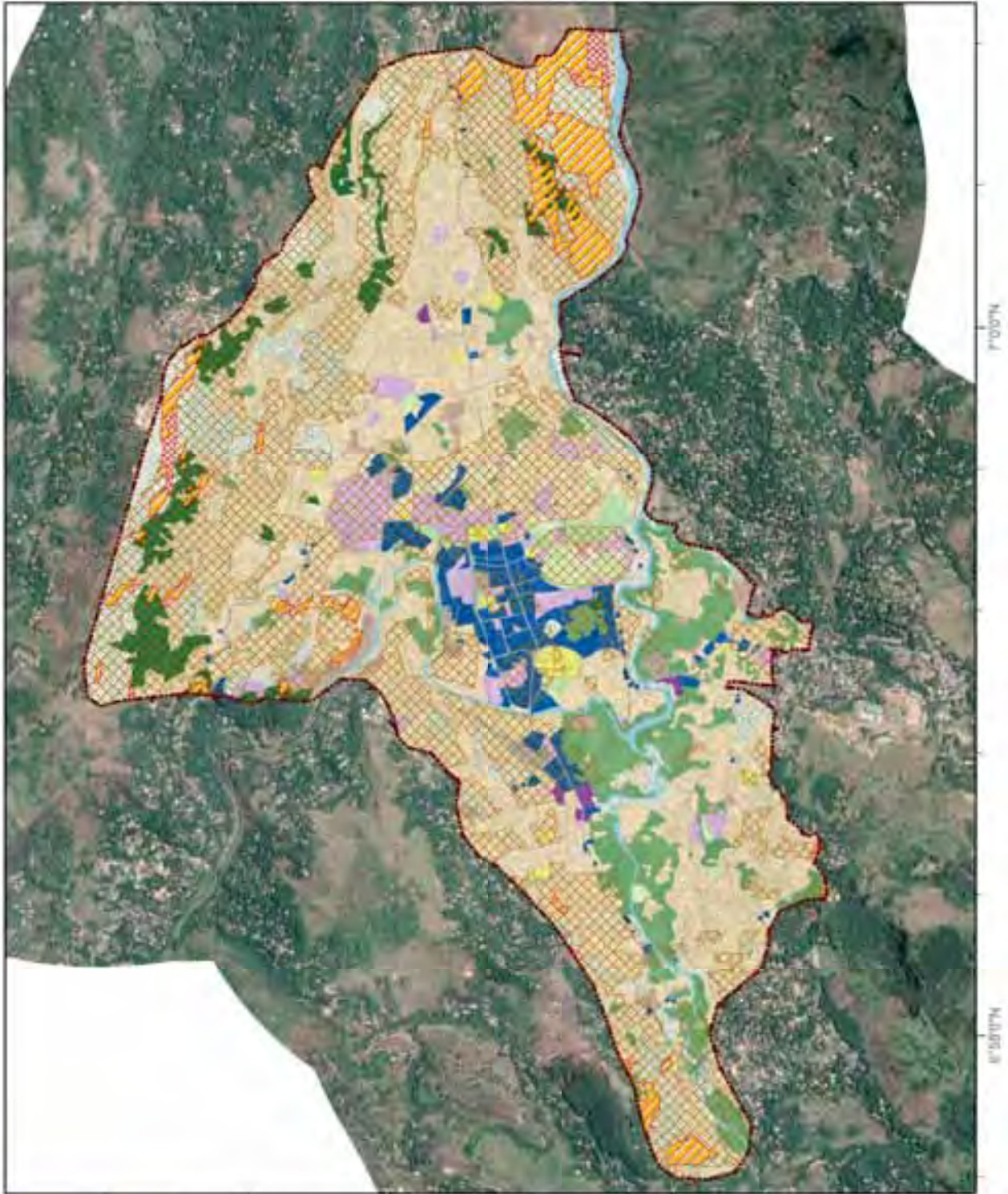


Pléiades Satellite Image
(0.5 m) - 4 Feb. 2017

Legend

- Buildings 2017
- Buildings 2004
- Bellanwila Attidiya Marsh Boundary

Landslide Risk for Badulla



Legend

Badulla Municipal Boundary

Landslide Risk

High

Moderate

Low

Land Use

Residential

Commercial

Institutional

Industrial

Transport

Public Space

Cultural

Agriculture

Water

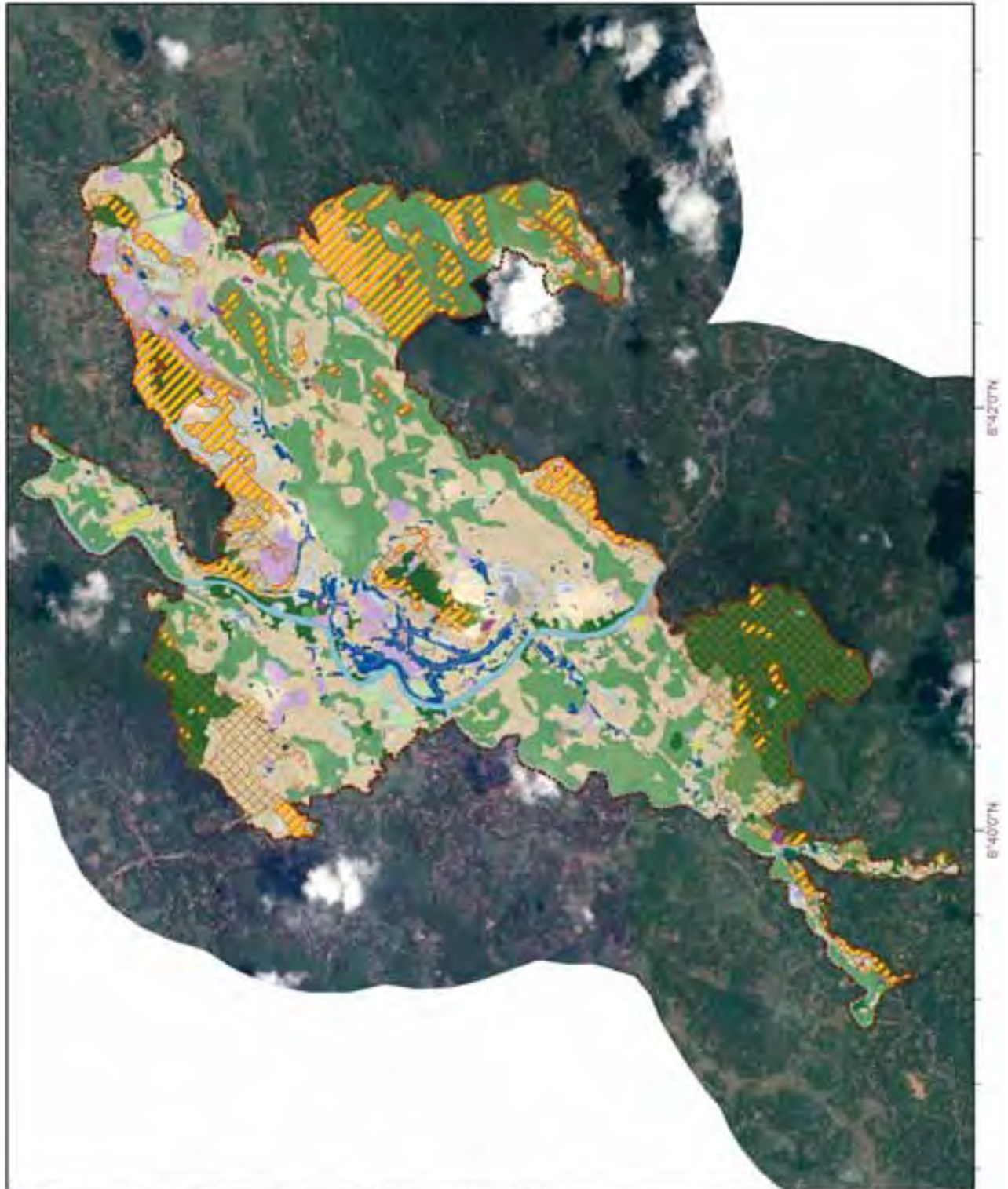
Forest

Shrub

Barren land



Landslide Risk for Ratnapura



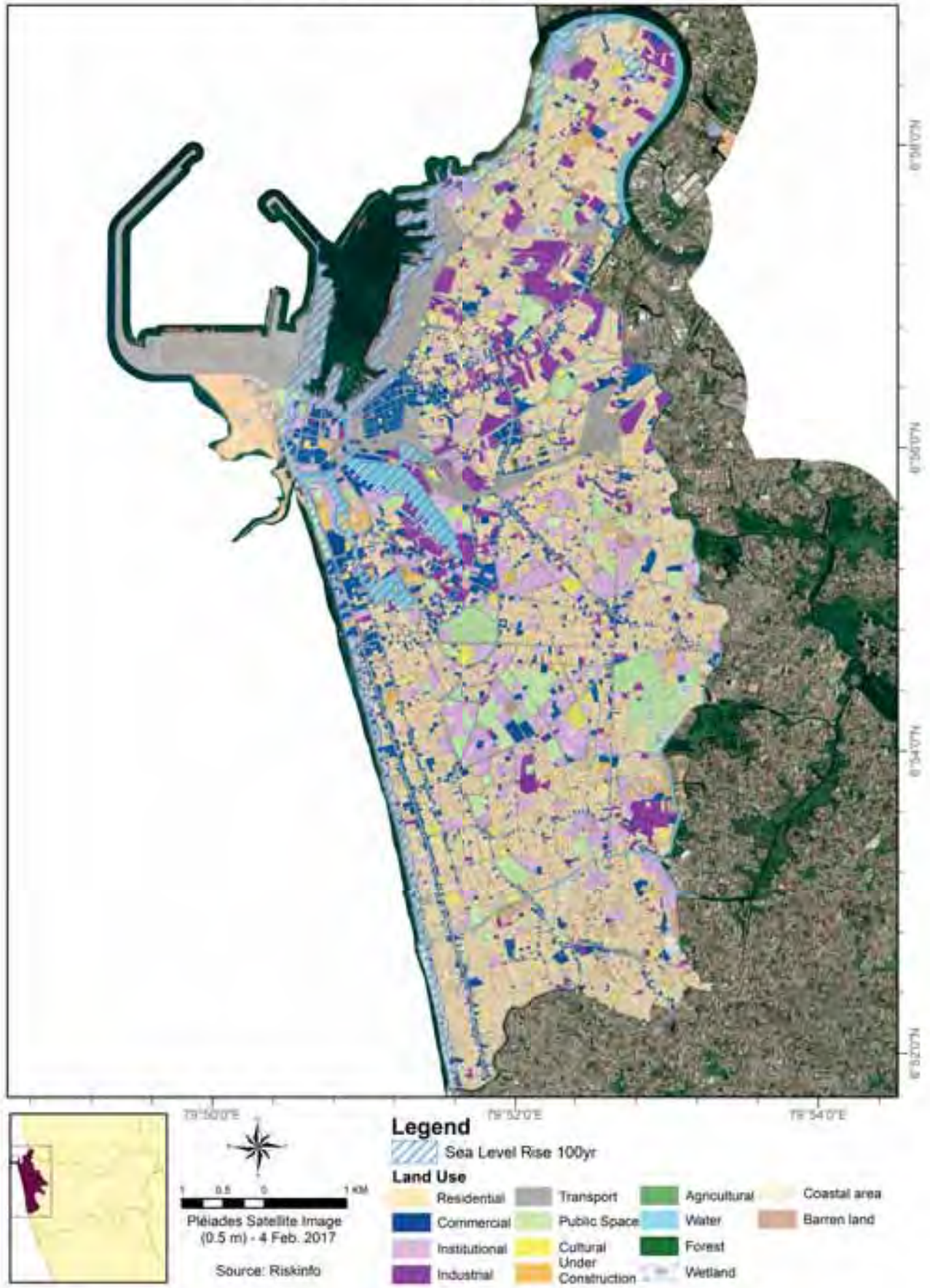
Legend

Ratnapura Municipal Boundary

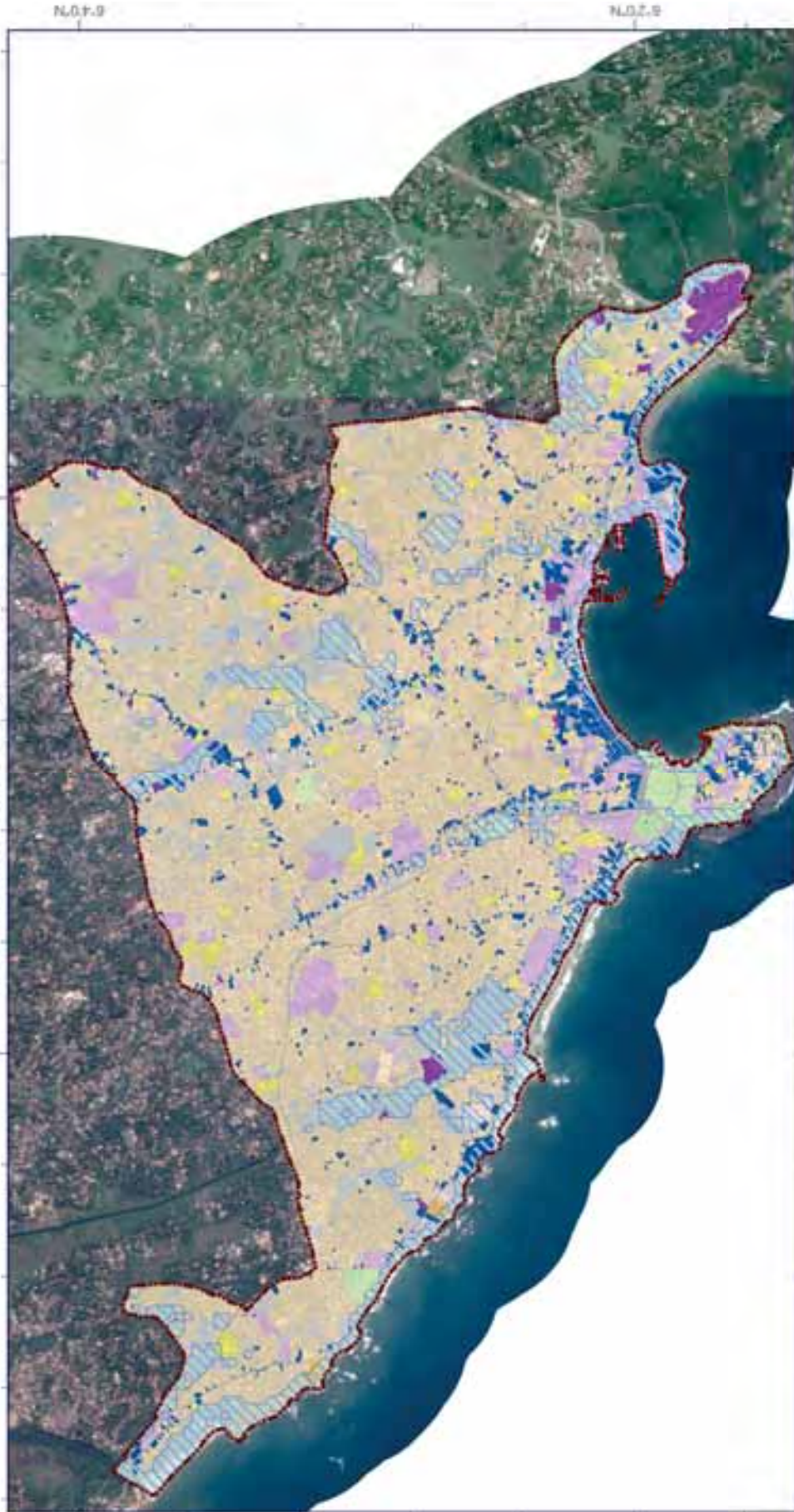
- Landslide Risk**
- High
 - Moderate
 - Low

- Land Use**
- Residential
 - Commercial
 - Institutional
 - Industrial
 - Transport
 - Public Space
 - Cultural Under Construction
 - Agriculture
 - Water
 - Forest
 - Wetland
 - Shrub
 - Barren Land

100 years Sea Level Rise in Colombo



100 Years Sea Level Rise in Galle



Legend

- Sea Level Rise 100 yr
- Galle MC Boundary
- Built Up
 - Residential
 - Commercial
- Under Construction
- Non Built Up
 - Institutional
 - Industrial
 - Transport
 - Public Space
 - Cultural

80°12'0"E 80°14'0"E

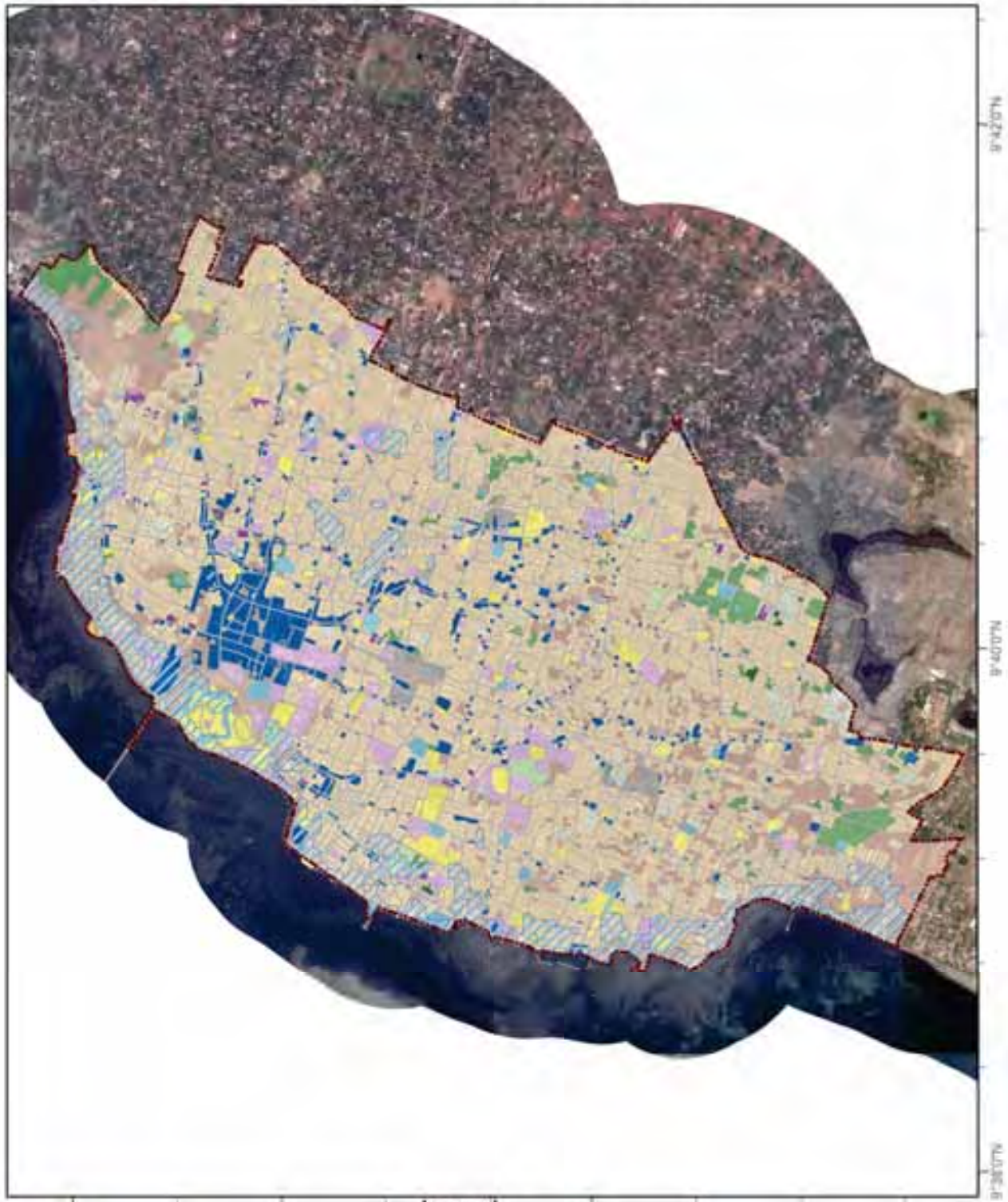
6°47'0"N 6°49'0"N


1.5 0.75 0 1.5 Kilometers

Prisades Satellite Image (0.5 m) - 17 Feb. 2017




100 Years Sea Level Rise in Jaffna





Pleiades Satellite Image
(0.5 m) - 18 April 2017

Source: Riskinfo

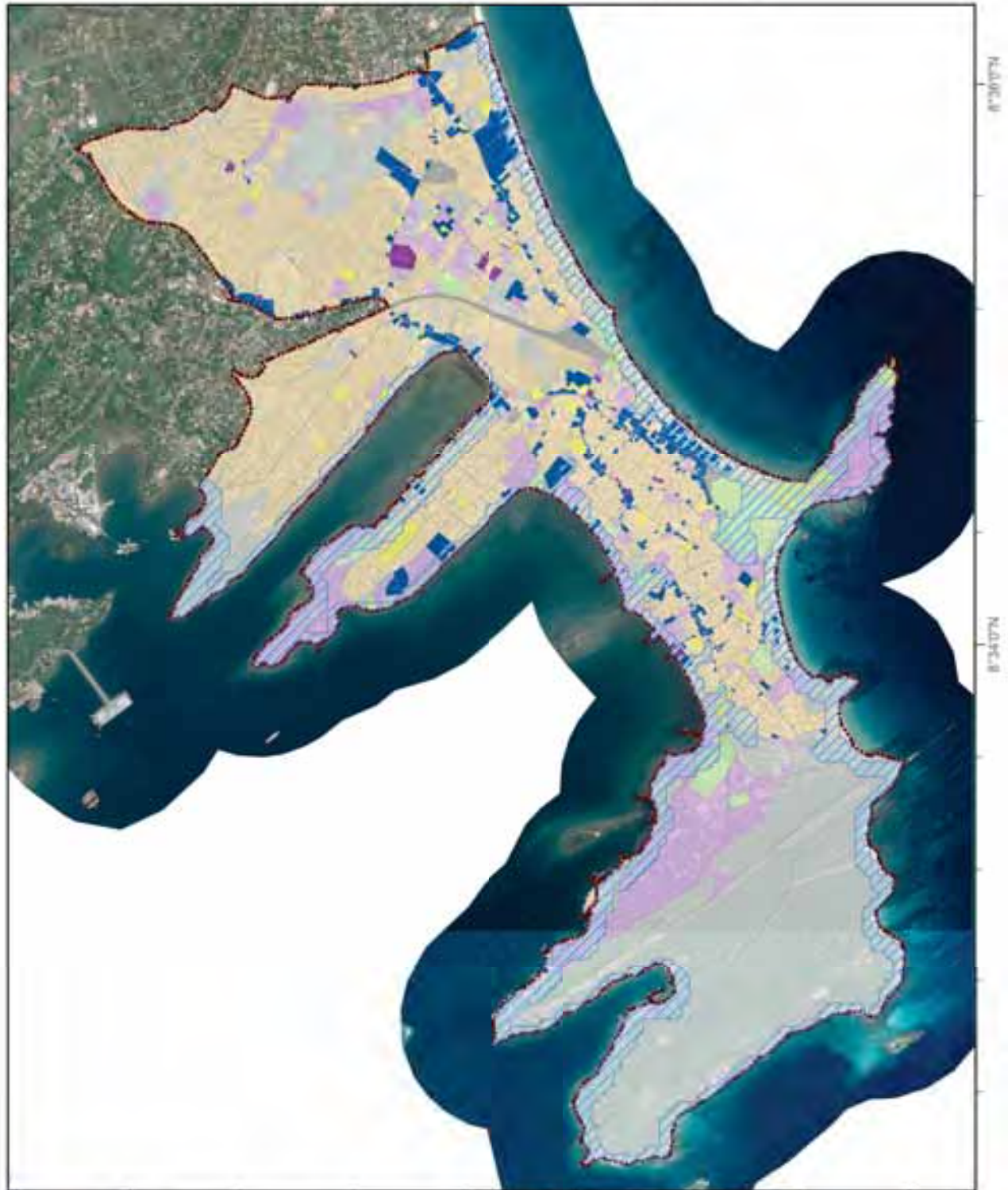


0 2.36 4.72 km

Legend

Jaffna Municipal Boundary	Sea Level Rise 100 yr	
Land Use		
Residential	Industrial	Under Construction
Commercial	Transport	Agriculture
Institutional	Public Spaces	Water
	Cultural	Forest
		Wetland
		Coastal area
		Shrub
		Barren Land

100 years Sea Level Rise in Trincomalee



Pleiades Satellite Image
(0.5 m) - 31 July 2017

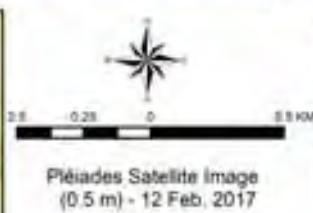
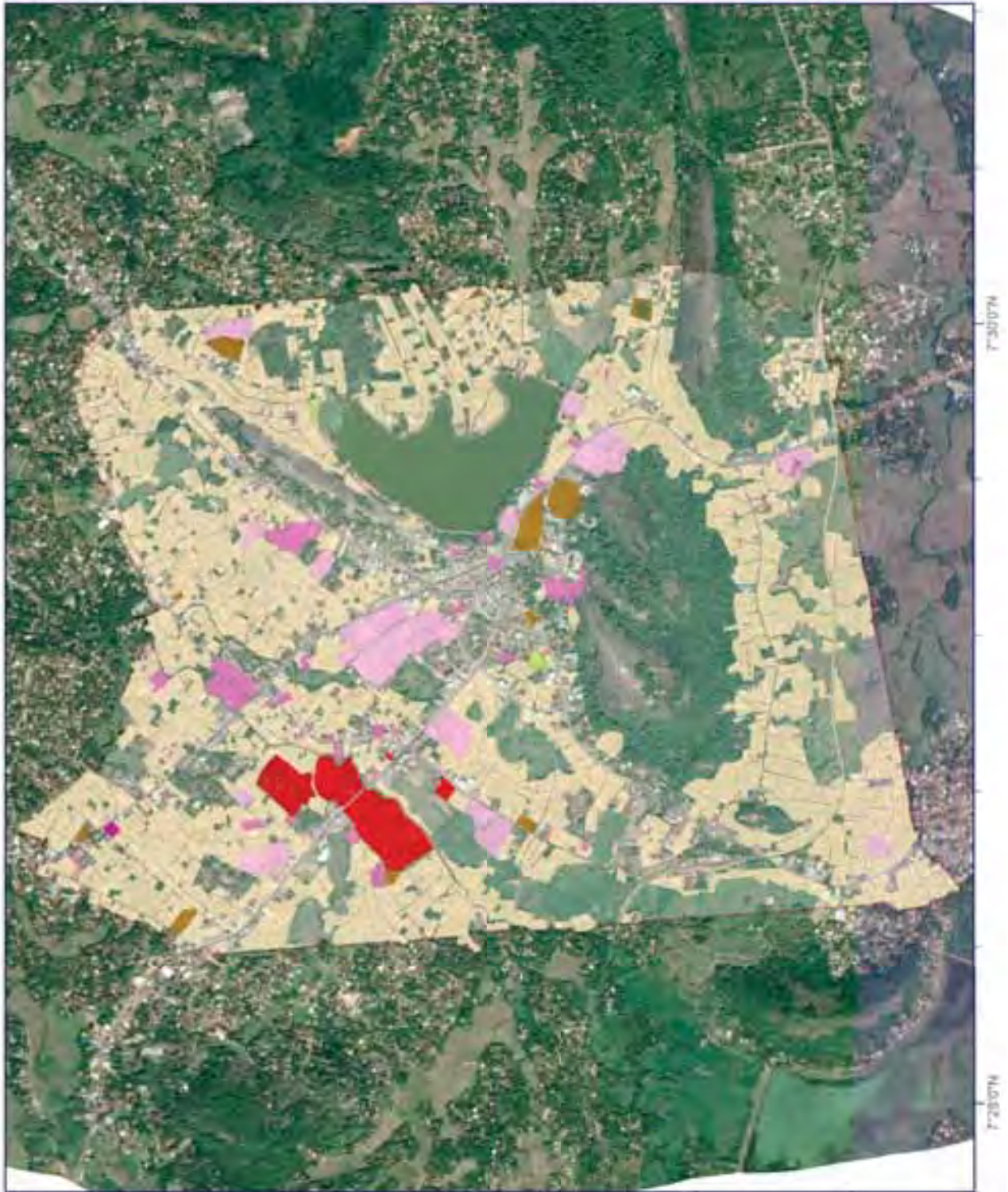
Legend

- 100 Years Sea Level Rise
- Trincomalee Municipal Boundary

Land Use

Residential	Institutional	Public Space
Commercial	Industrial	Cultural
Transport	Under Construction	Non Built Up

Kurunegala Services 2017



Legend

kurunegala Municipal Boundary

Services

- Health**
- Hospital
 - Dispensary

Education

- University
- Other higher educ.
- School

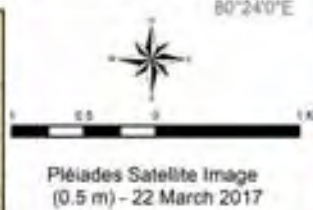
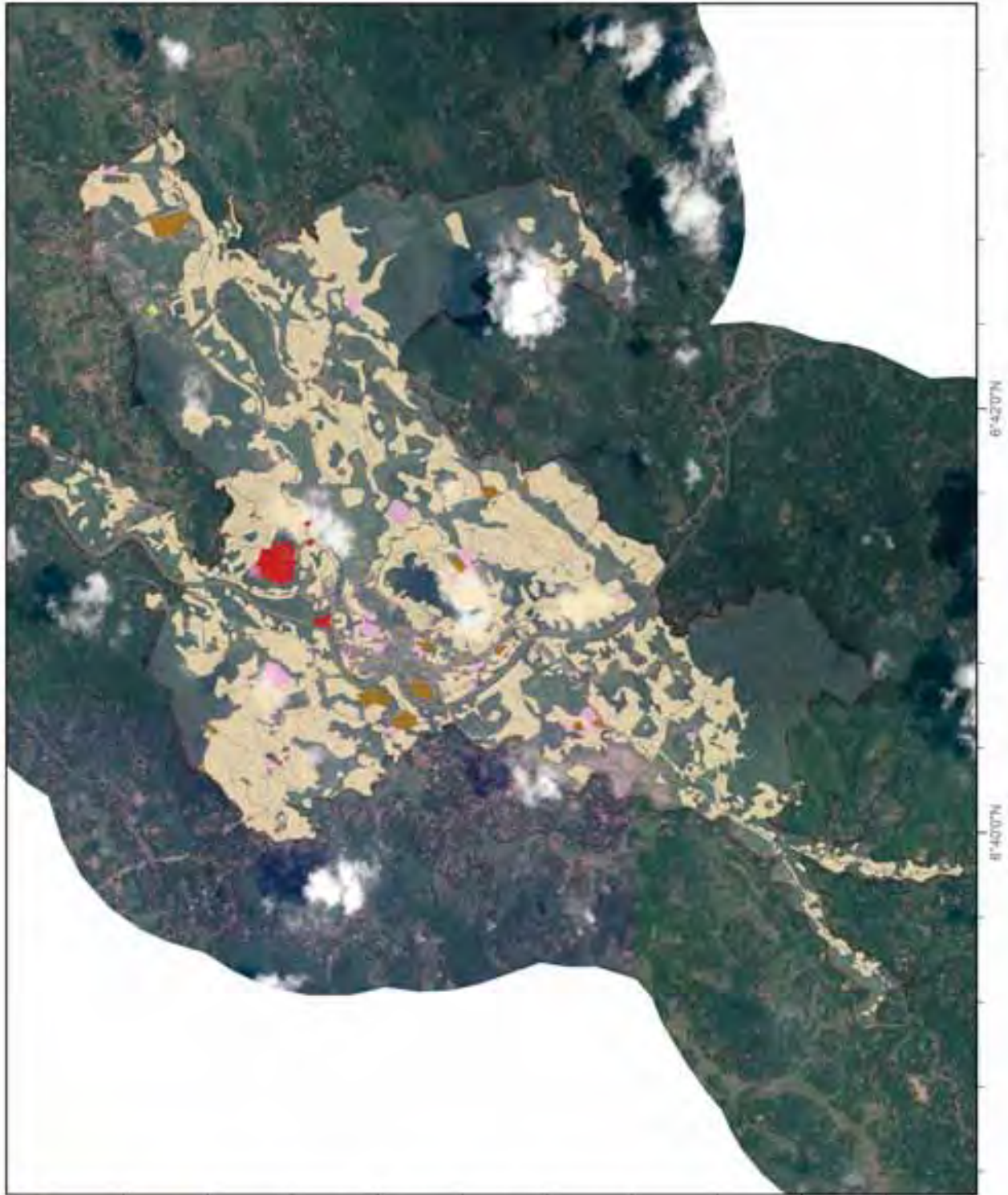
Public Space

- Playground
- Park/Square

Residential

- Low Rise
- Slum

Ratnapura Services 2017



Legend

Ratnapura Municipal Boundary

Services

Health

- Hospital
- Dispensary

Education

- Other Higher Education
- School

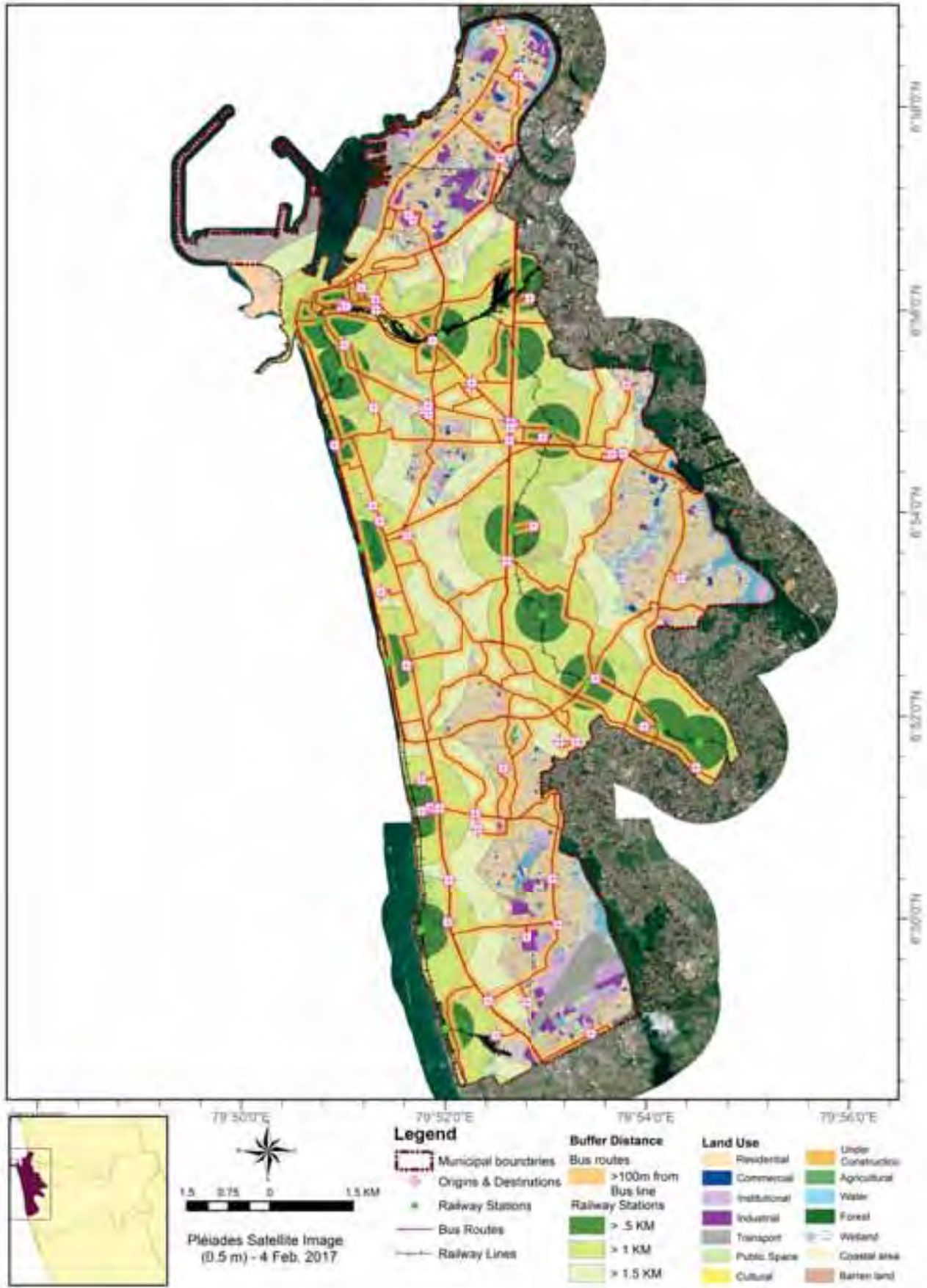
Public Space

- Playground
- Park/Square

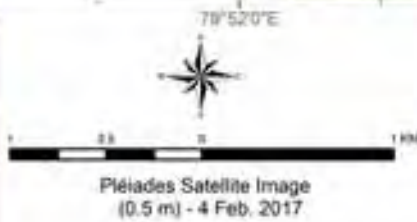
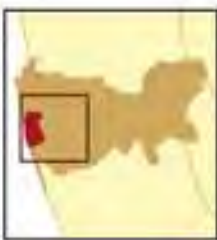
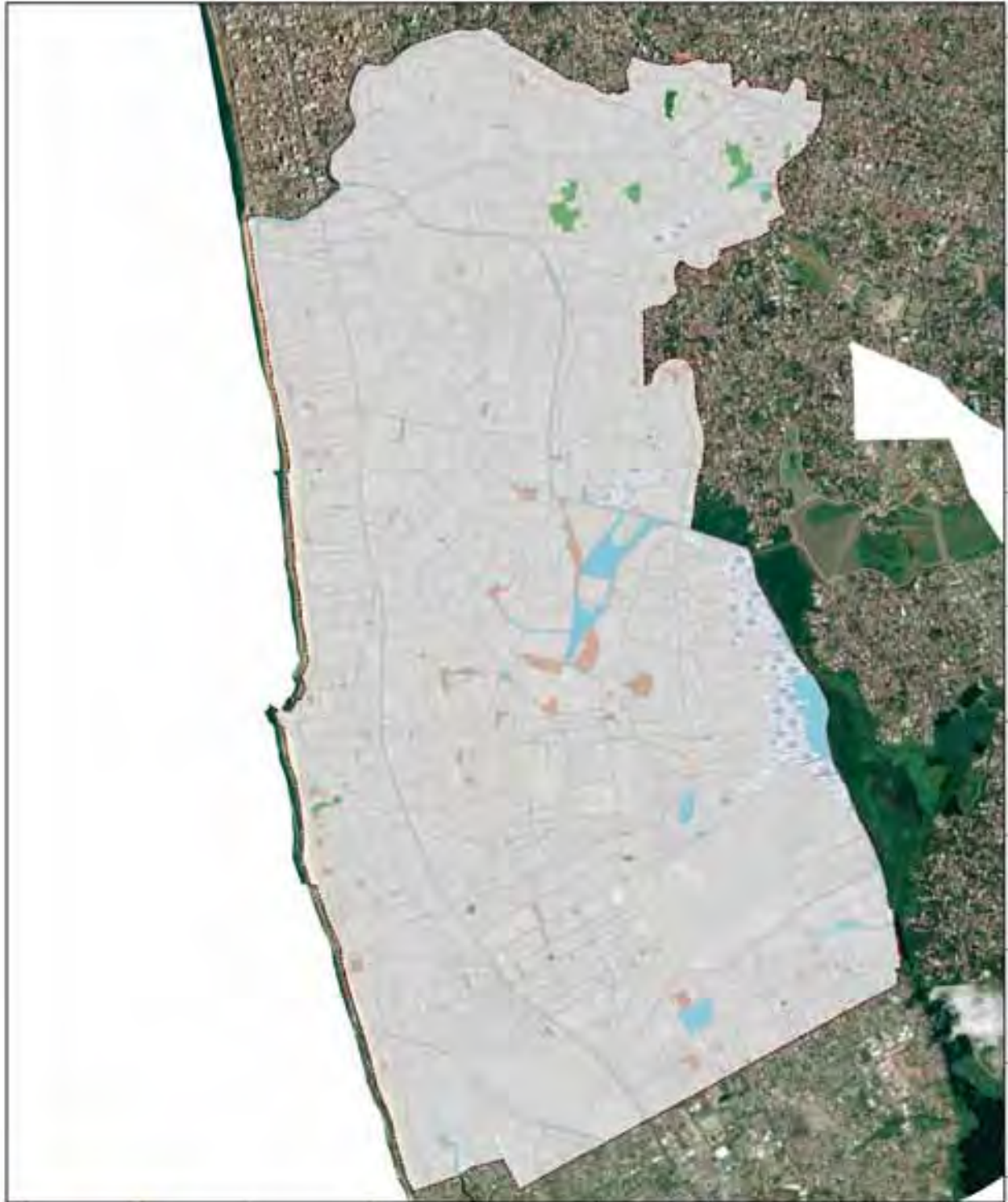
Residential

- Slum
- Shanty
- High Rise
- Low Rise

Bus Routes and Railway Stations in Colombo



Dehiwala Non Built Up Areas 2017



Legend

Dehiwal MC Boundary

Built-Up

Built Up

Roads

Non Built-Up

Agriculture

Water

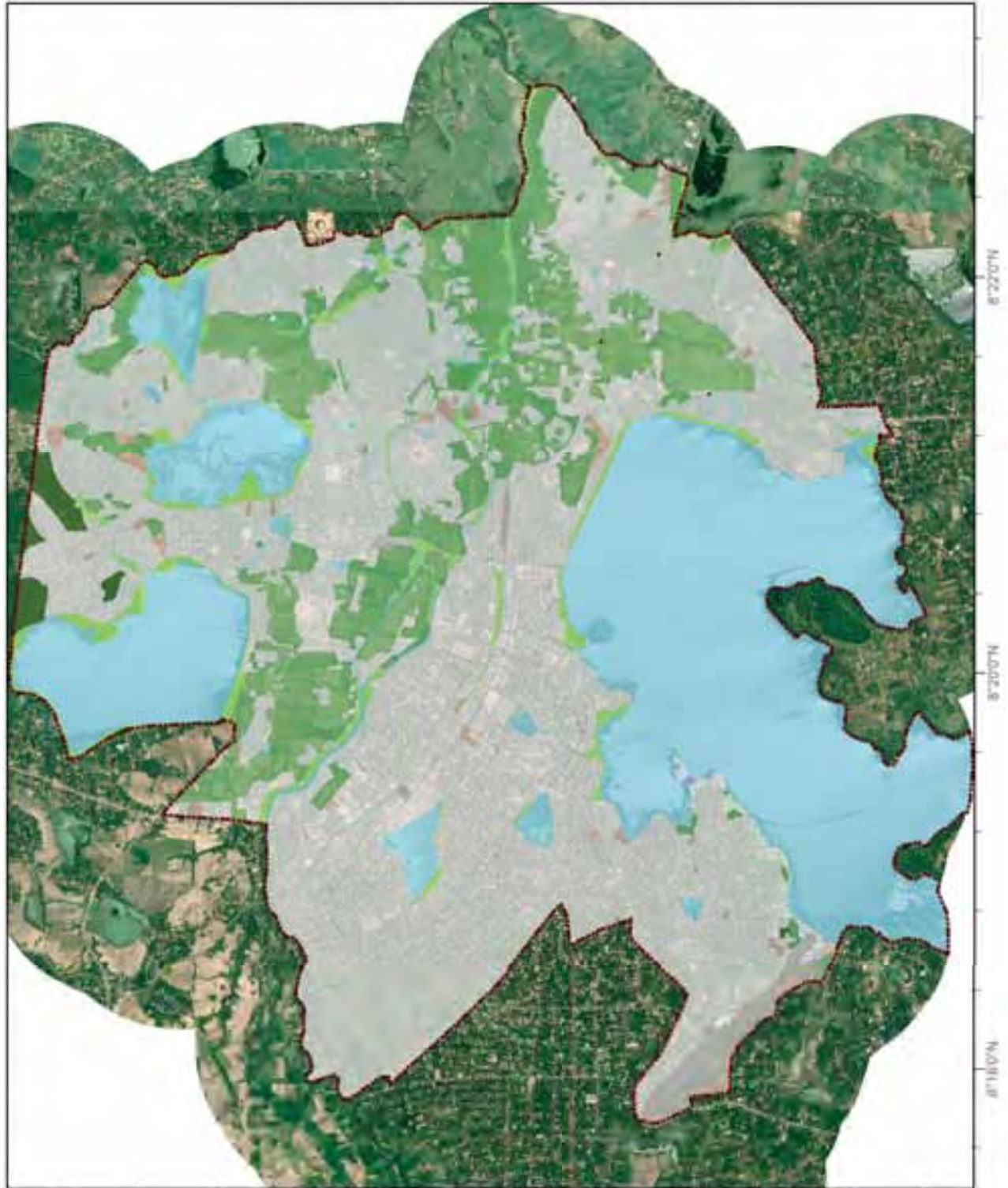
Forest

Wetland

Coastal area

Barren Land

Anuradhapura Non Built Up Areas 2017

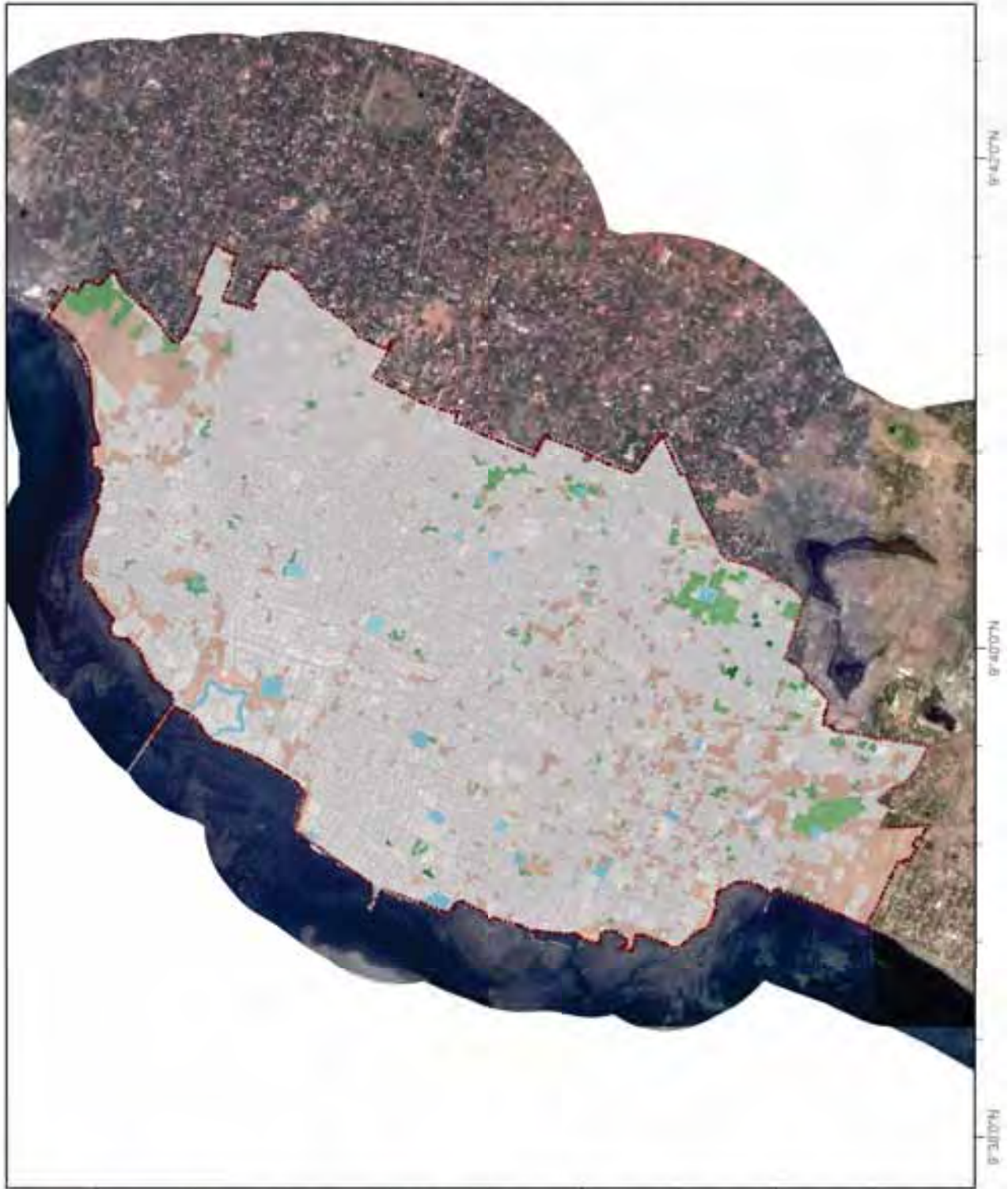


Pleiades Satellite Image
(0.5 m) - 18 March 2015

Legend

- Anuradhapura Municipal Boundary
- Land Use**
- Built Up**
 - Built Up
 - Roads
- Non Built Up**
 - Agriculture
 - Water
 - Forest
 - Reservation
 - Wetland
 - Shrub
 - Barren Land

Jaffna Non Built Up Areas 2017



Legend

Jaffna Municipal Boundary

Land Use

Built Up

- Built Up
- Roads

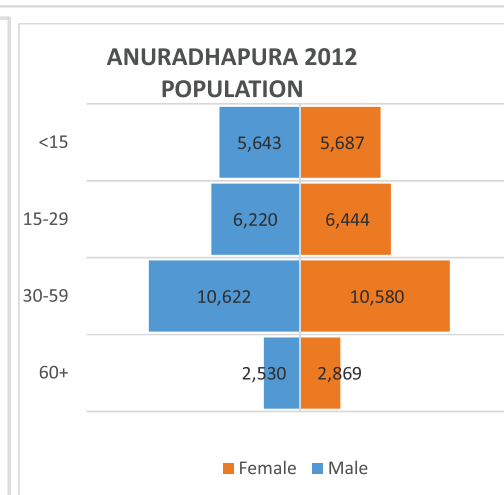
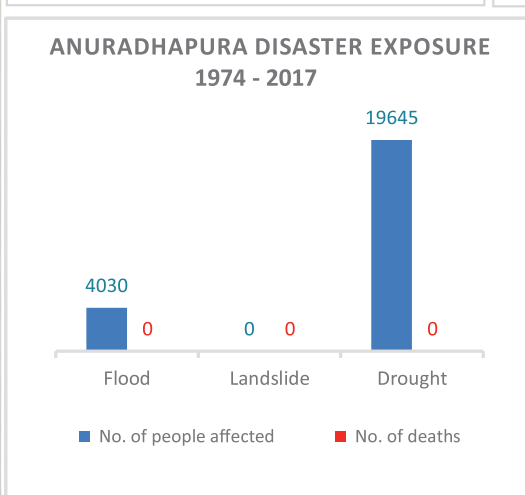
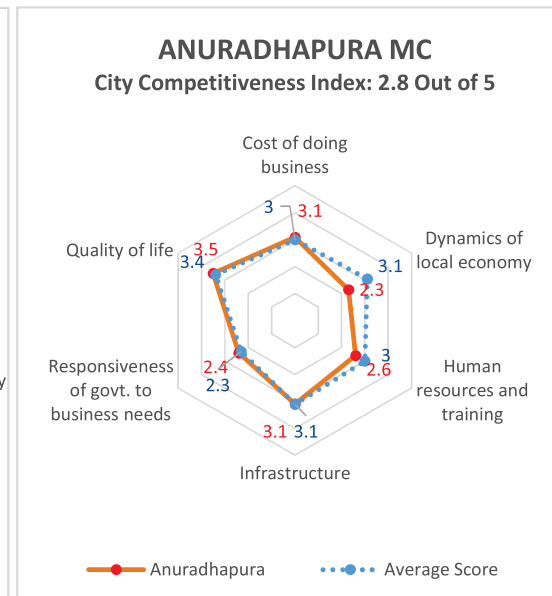
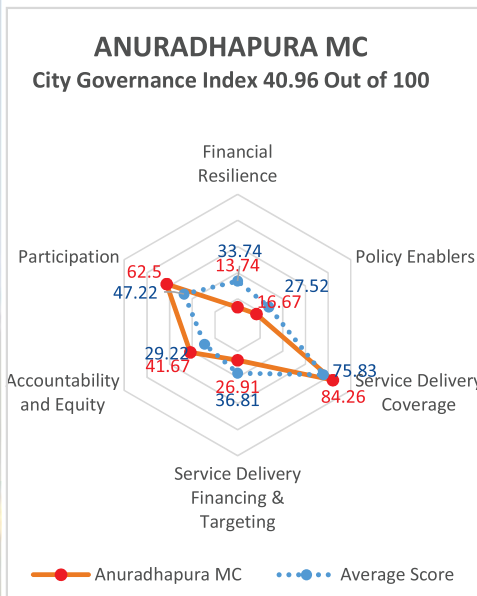
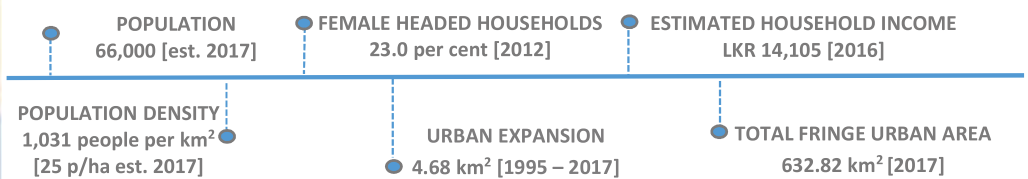
Non Built Up

- Agriculture
- Forest
- Water
- Wetland
- Coastal area
- Shrub
- Barren Land

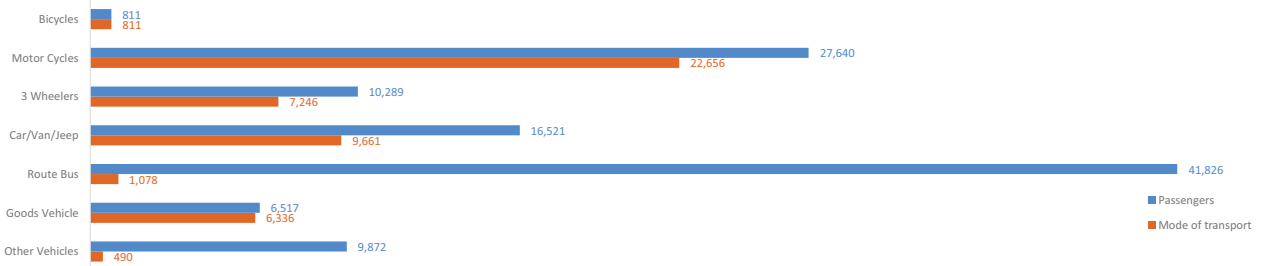
STATE OF SRI LANKAN CITIES

The *State of Sri Lankan Cities report* has examined the nine provincial capital cities of Sri Lanka to provide key city level data and present an integrated policy analysis. In doing so, it aims to support evidence-based urban policy and planning to drive the social and economic development of the country's urban centres. In particular, the rapid urban growth occurring outside municipal council boundaries poses significant challenges in creating competitive, inclusive, resilient, safe and sustainable cities. This city profile highlights key city level data that will help to achieve *a better urban future for all Sri Lankans*.

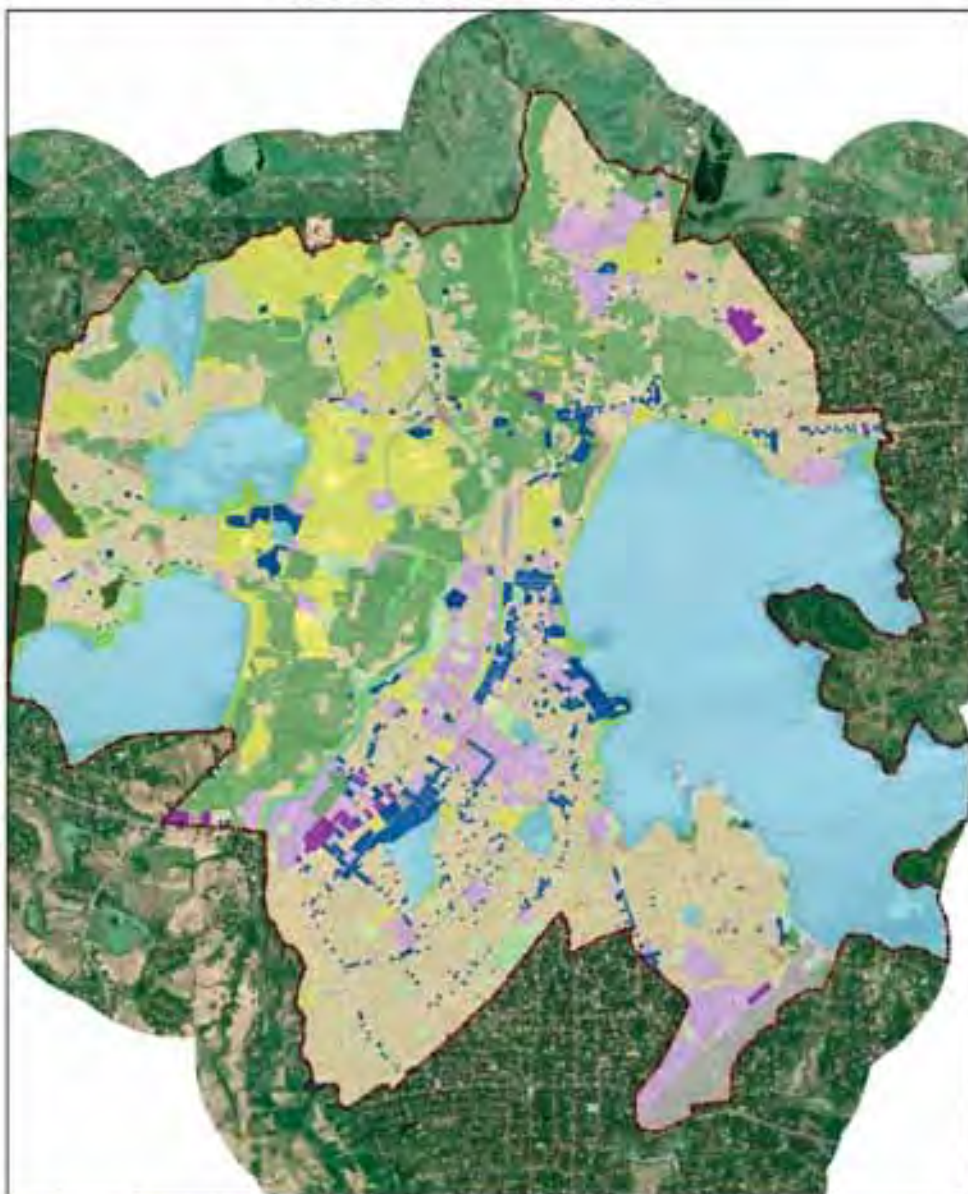
Anuradhapura is the provincial capital city of North Central Province and a world heritage site in Sri Lanka. It is an important tourist destination famous for the ruins of the ancient capital city of Rajarata Kingdom. The city is a major node along the transport corridor which link Colombo to the cities in the north and east of Sri Lanka.



Number of Vehicles and Passengers by Mode in Anuradhapura - one way over a 24 Hour period



Anuradhapura Land Use 2017



LAND EXTENT

URBAN

1995 – 1.96 km²

2017 – 8.59 km²

SEMI – URBAN

1995 – 7.39 km²

2017 – 17.64 km²

LAND USE

Residential

27.74% (14.26 km²)

Commercial

3.45% (1.78 km²)

Agriculture

13.82% (7.10 km²)

Fo rest

0.71% (0.37 km²)

Reference

- SoSLC
- DMC
- DCS



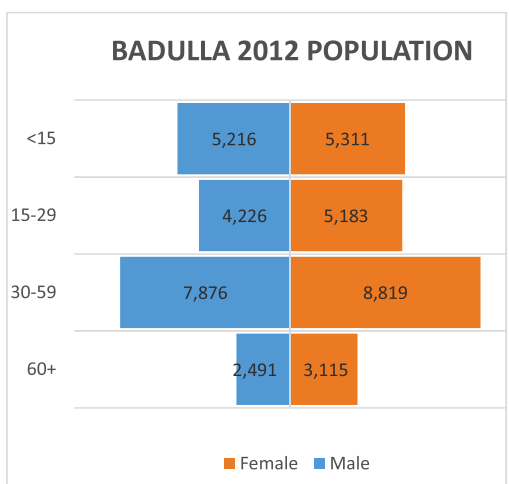
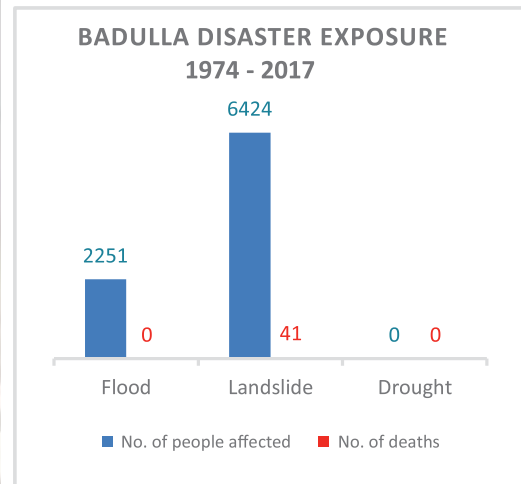
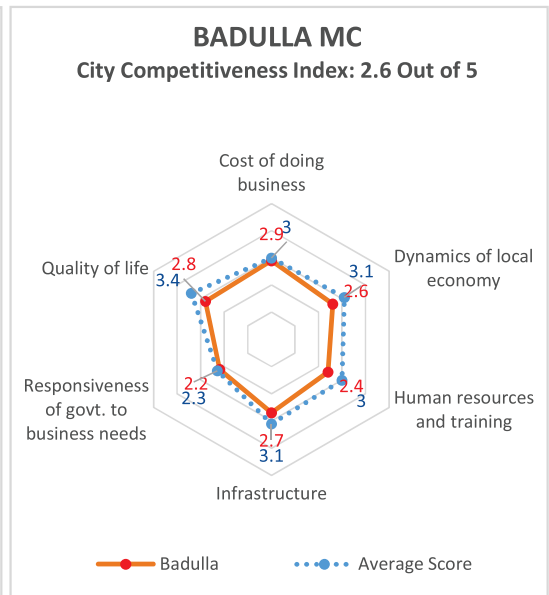
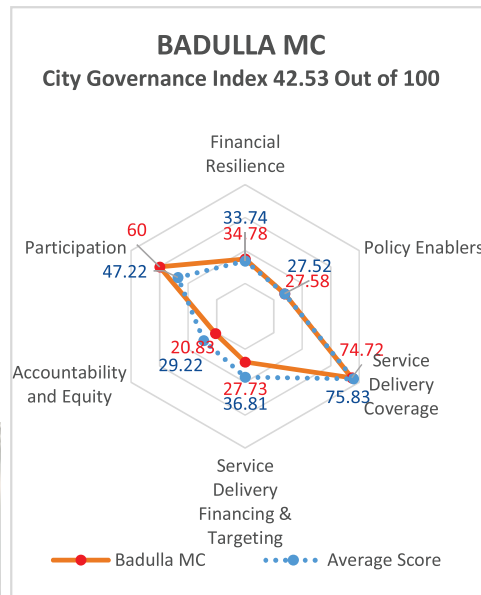
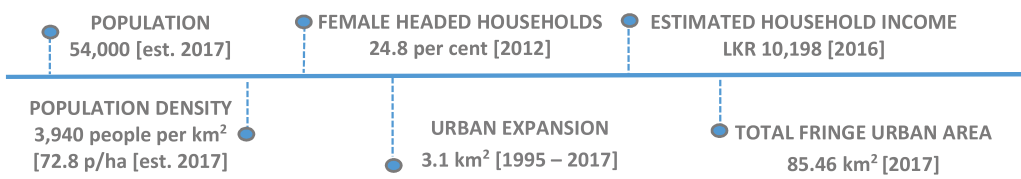
Legend

Anuradhapura Municipal Boundary	Industrial	Under Construction	Reservation
Residential	Transport Public Space	Agriculture	Wetland
Commercial	Cultural	Water	Shrub
Institutional	Forest	Barren Land	

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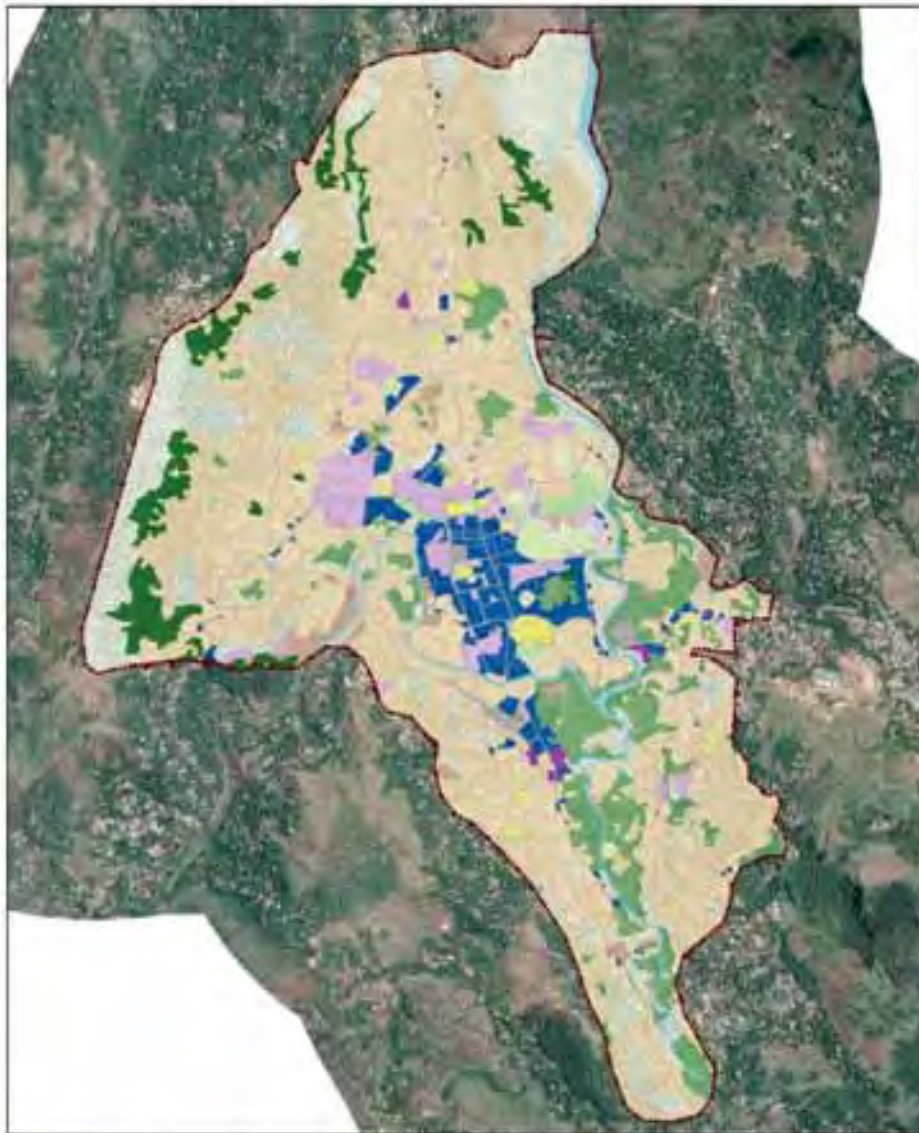
Badulla is the provincial capital city of Uva Province. It is located among the central hills and is highly exposed to landslides. The working age population is one of the lowest among the nine provincial capitals. The area has significant tourism assets that can be further developed to help drive future economic growth.



Number of Vehicles and Passengers by Mode in Badulla - one way over a 24 Hour period



Badulla Land Use 2017



LAND EXTENT

URBAN

1995 – 0.83 km²

2017 – 4.61 km²

SEMI – URBAN

1995 – 2.27 km²

2017 – 2.85 km²

LAND USE

Residential

52.87% (5.63 km²)

Commercial

4.34% (0.46 km²)

Agriculture

8.8% (0.93 km²)

Forest

3.93% (0.42 km²)

Reference

- SoSLC
- DMC
- DCS



Legend

Badulla Municipal Boundary

Land Use



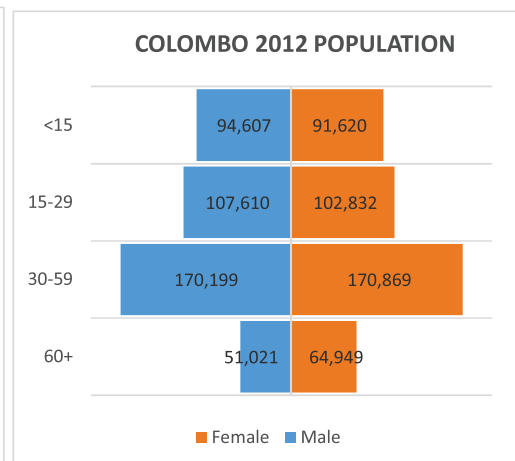
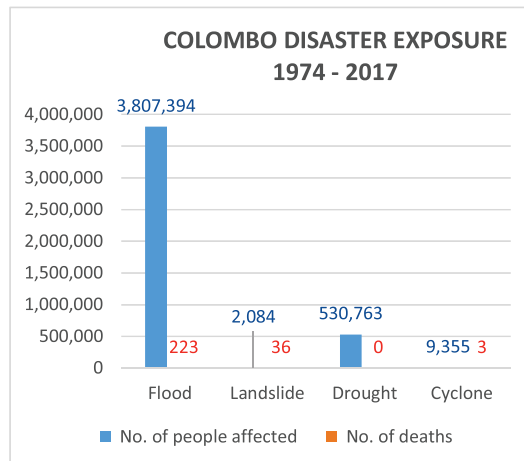
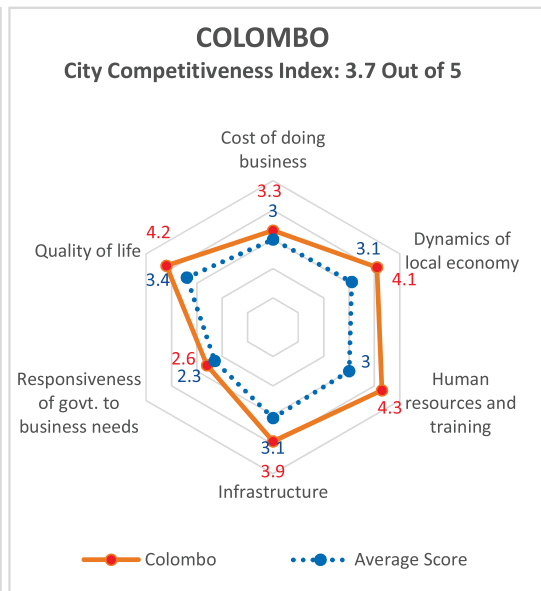
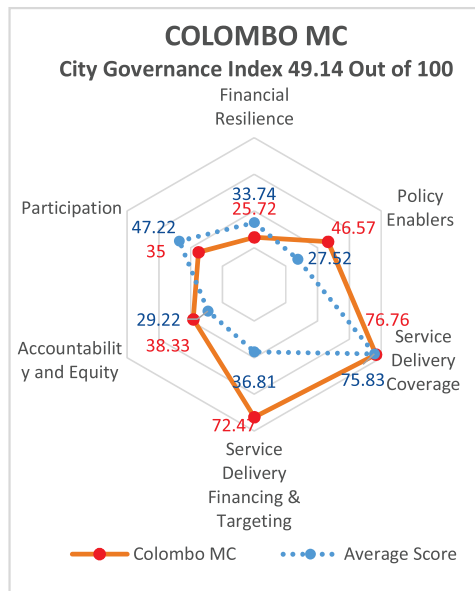
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Colombo is the capital city of Sri Lanka. It is the location of key economic infrastructure such as Colombo Port. It is the gateway city for visitors from around the world with the Colombo Bandaranaike International Airport. The State of Sri Lankan Cities project has defined Colombo city as three municipal councils: Dehiwala-Mt Lavinia, Sri Jayawardenapura Kotte and Colombo.

POPULATION 870,000 [est. 2017] FEMALE HEADED HOUSEHOLDS Colombo – 30.8 per cent [2012] ESTIMATED HOUSEHOLD INCOME Colombo – LKR 377,327 [2016]

POPULATION DENSITY 10,710 people per km² [est. 2017] URBAN EXPANSION 8.14 km² [1995 – 2017] TOTAL FRINGE URBAN AREA 848.7 km² (2017)



COLOMBO

Number of Vehicles and Passengers by Mode in Colombo - one way over a 24 Hour period



Colombo, Kotte and Dehiwala Land Use 2017



LAND EXTENT

URBAN

1995 – 60.48 km²

2017 – 73.82 km²

SEMI – URBAN

1995 – 9.03 km²

2017 – 3.40 km²

LAND USE

Residential

49.67% (36.37 km²)

Commercial

9.04% (6.62 km²)

Agriculture

1.58% (0.13 km²)

Forest

0.39% (0.03 km²)

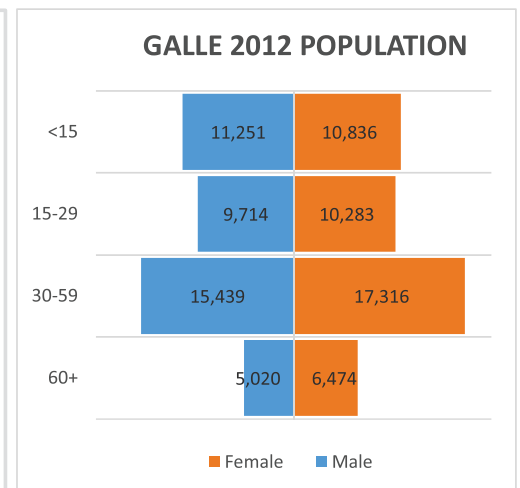
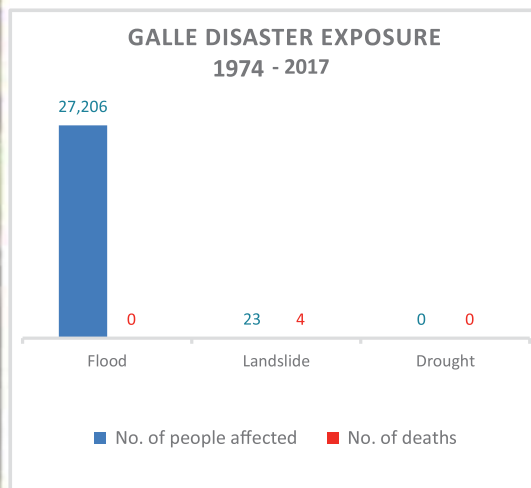
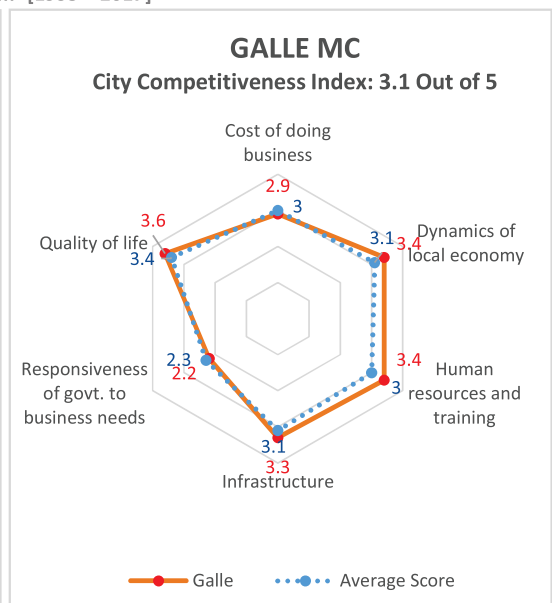
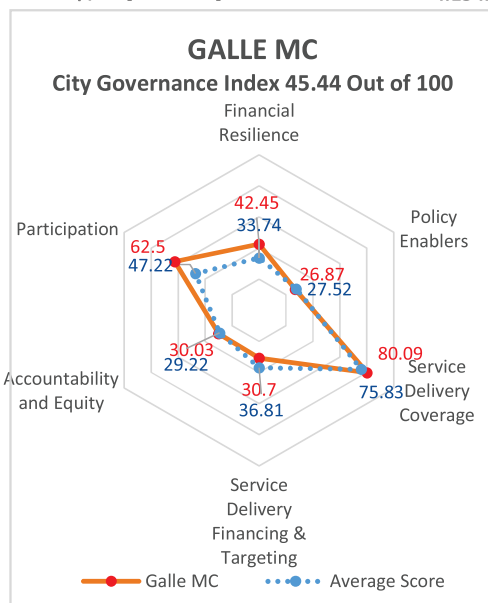
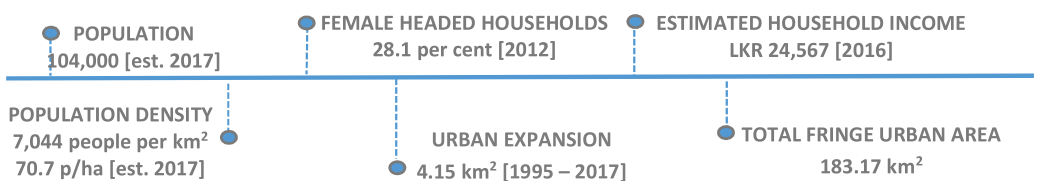
Reference

- SoSLC
- DMC
- DCS

STATE OF SRI LANKAN CITIES

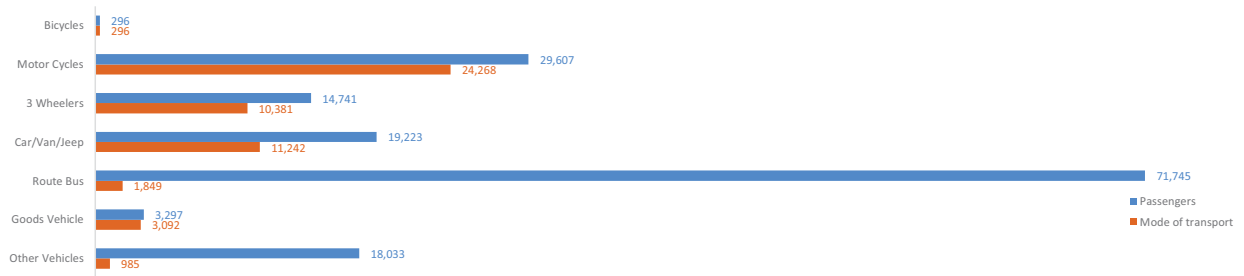
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Galle is the provincial capital city of the Southern Province. The City is a UNESCO World Heritage Site and a significant tourism draw. However, it is notable that Galle has the lowest working age population out of the nine provincial capital cities.



GALLE

Number of Vehicles and Passengers by Mode in Galle - one way over a 24 Hour period



Galle Land Use 2017



LAND EXTENT

URBAN

1995 – 2.70 km²

2017 – 7.59 km²

SEMI – URBAN

1995 – 4.83 km²

2017 – 7.05 km²

LAND USE

Residential

56.31% (9.75 km²)

Commercial

5.6% (0.97 km²)

Agriculture

2.48% (0.43 km²)

Forest

1.18% (0.2 km²)

Reference

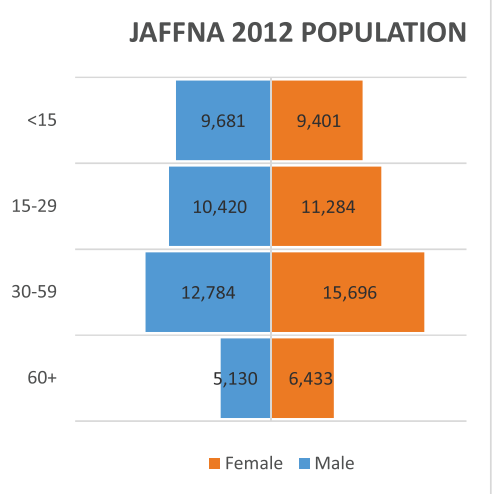
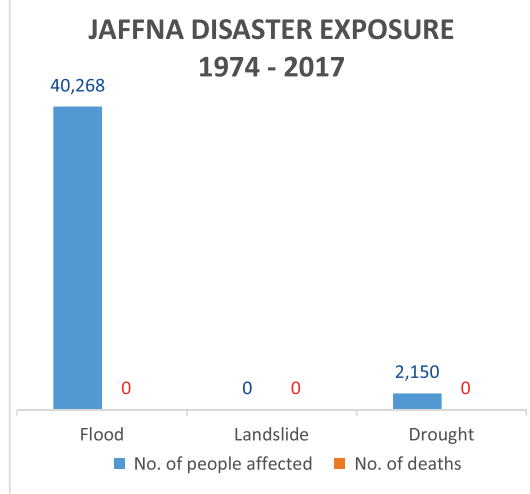
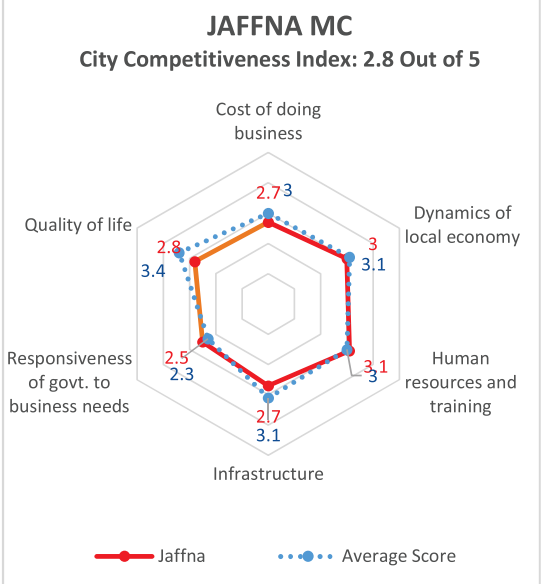
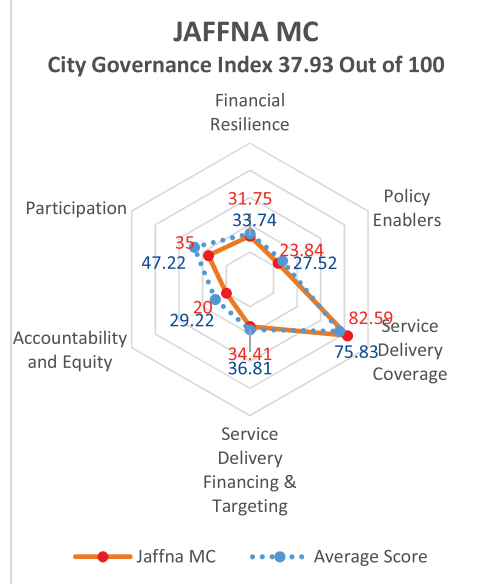
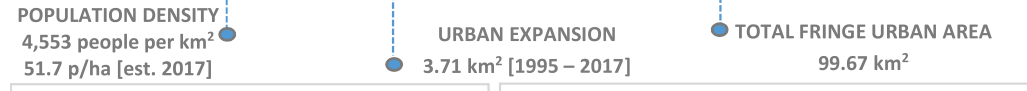
- SoSLC
- DMC
- DCS



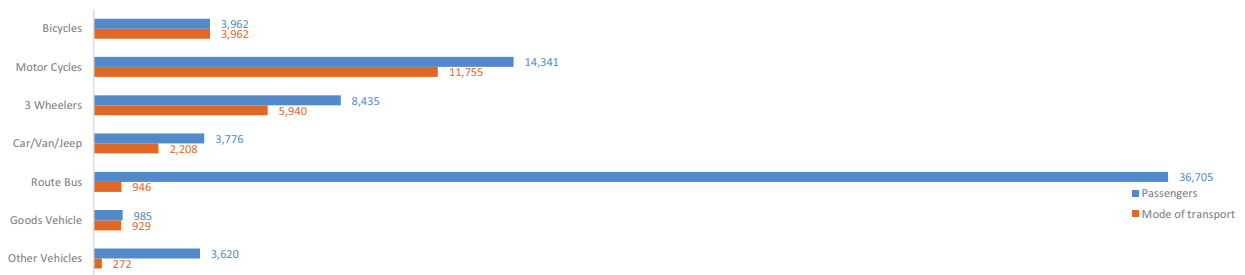
STATE OF SRI LANKAN CITIES

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Jaffna is the provincial capital city of Northern Province. The city is a historical port city, which was established in colonial era. Jaffna has one of the highest annual GDP growth rate and is driven by a service economy.



Number of Vehicles and Passengers by Mode in Jaffna - one way over a 24 Hour period



Jaffna Land Use 2017



LAND EXTENT

URBAN

1995 – 2.76 km²

2017 – 7.53 km²

SEMI – URBAN

1995 – 8.27 km²

2017 – 10.58 km²

LAND USE

Residential

51.92% (9.92 km²)

Commercial

6.4% (1.22 km²)

Agriculture

3.39% (0.65 km²)

Forest

0.2% (0.1 km²)

Reference

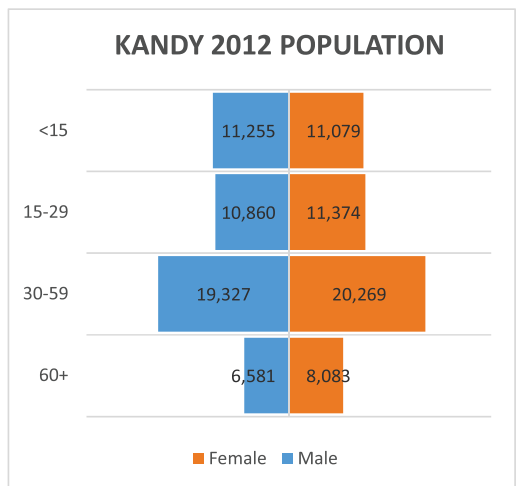
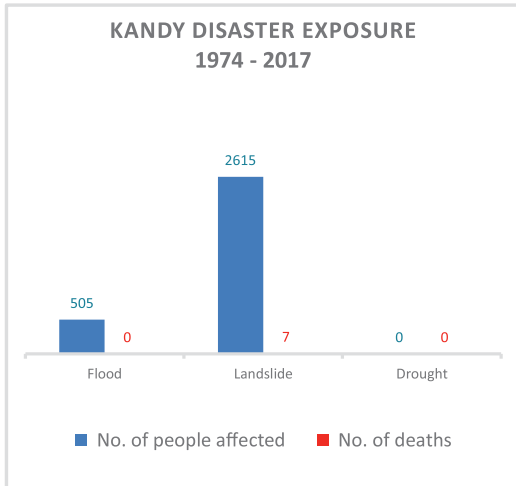
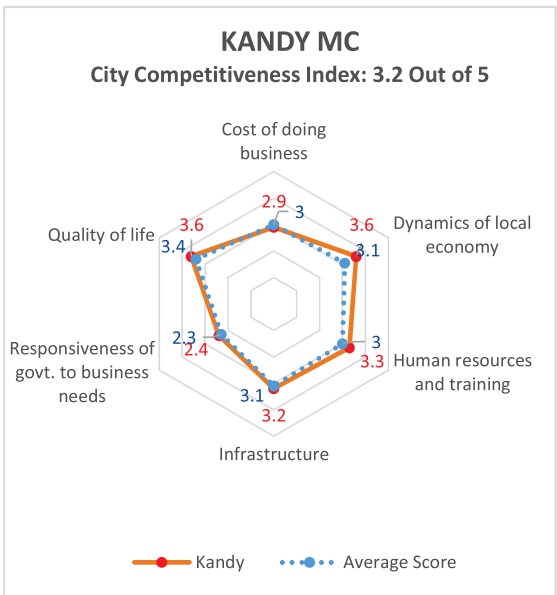
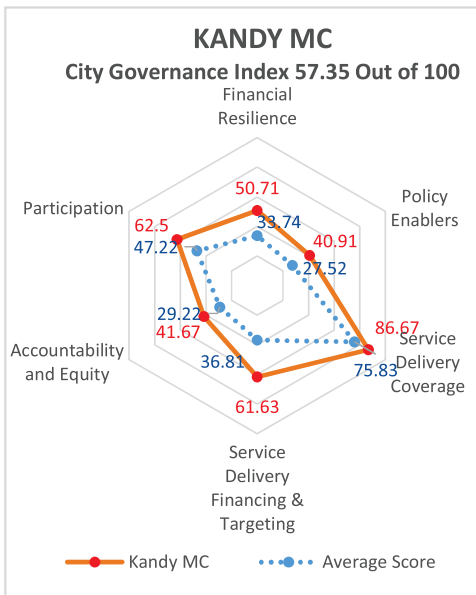
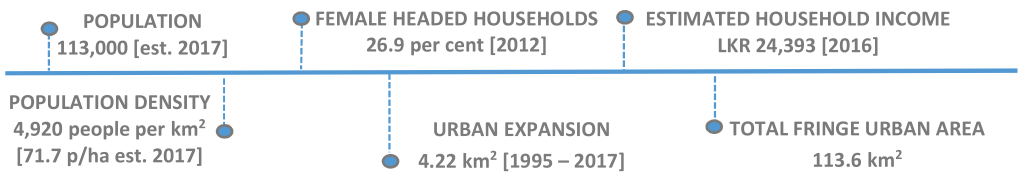
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- DMC
- DCS



STATE OF SRI LANKAN CITIES

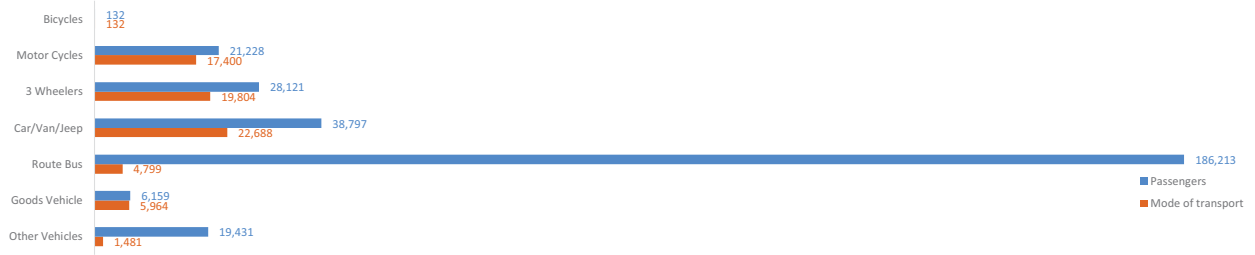
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Kandy is the provincial capital city of Central Province. The city is a UNESCO World Heritage site and a key tourist attraction for Sri Lanka. Kandy registered one of the highest share of in-migrants as proportion of total population.

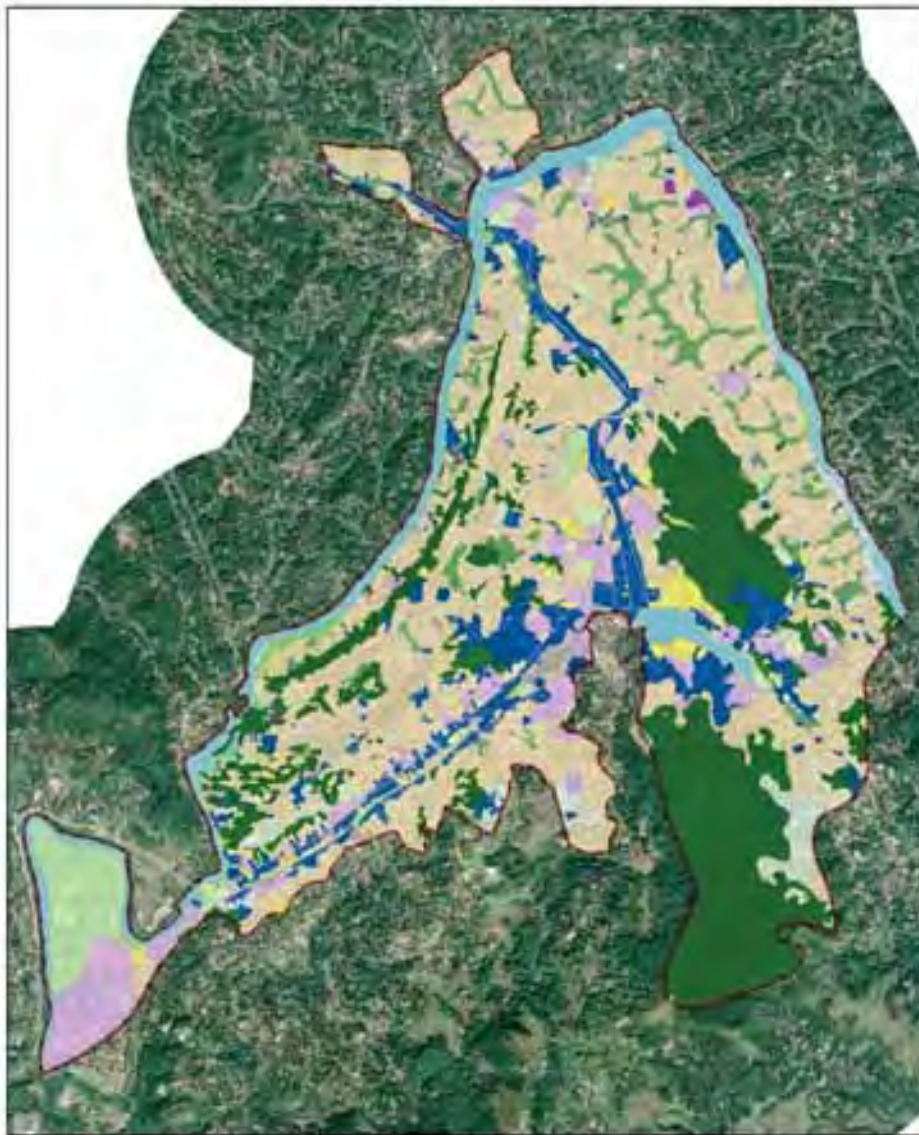


KANDY

Number of Vehicles and Passengers by Mode in Kandy - one way over a 24 Hour period



Kandy Land Use 2017



LAND EXTENT

URBAN

1995 – 1.72 km²

2017 – 6.27 km²

SEMI – URBAN

1995 – 6.28 km²

2017 – 9.55 km²

LAND USE

Residential

38.58% (9.64 km²)

Commercial

8.98% (2.24 km²)

Agriculture

4.15% (1.03 km²)

Forest

19.08% (4.77 km²)

Reference

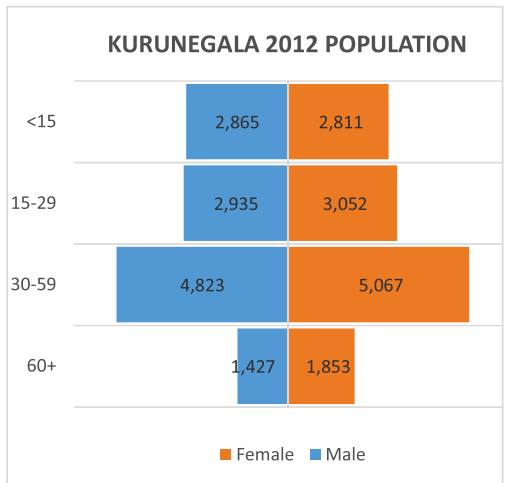
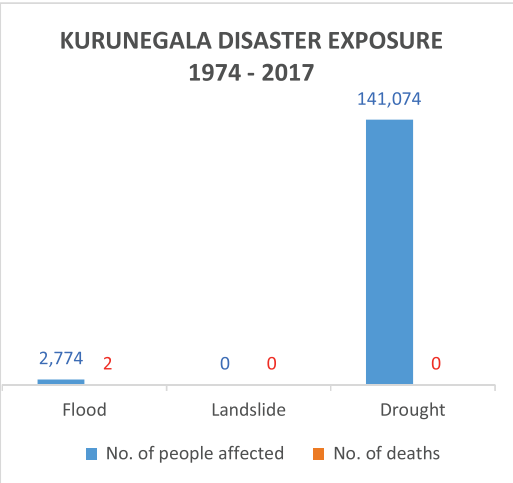
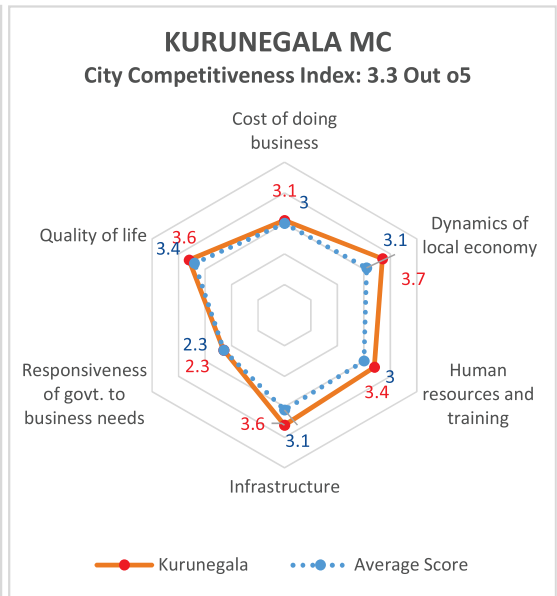
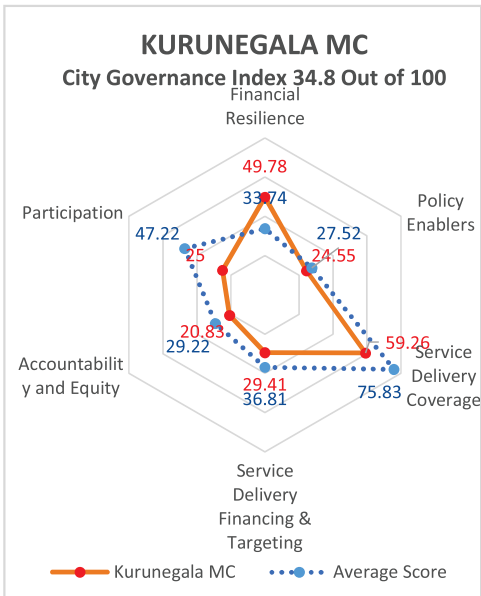
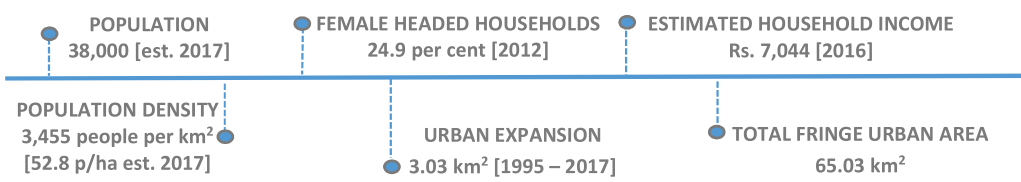
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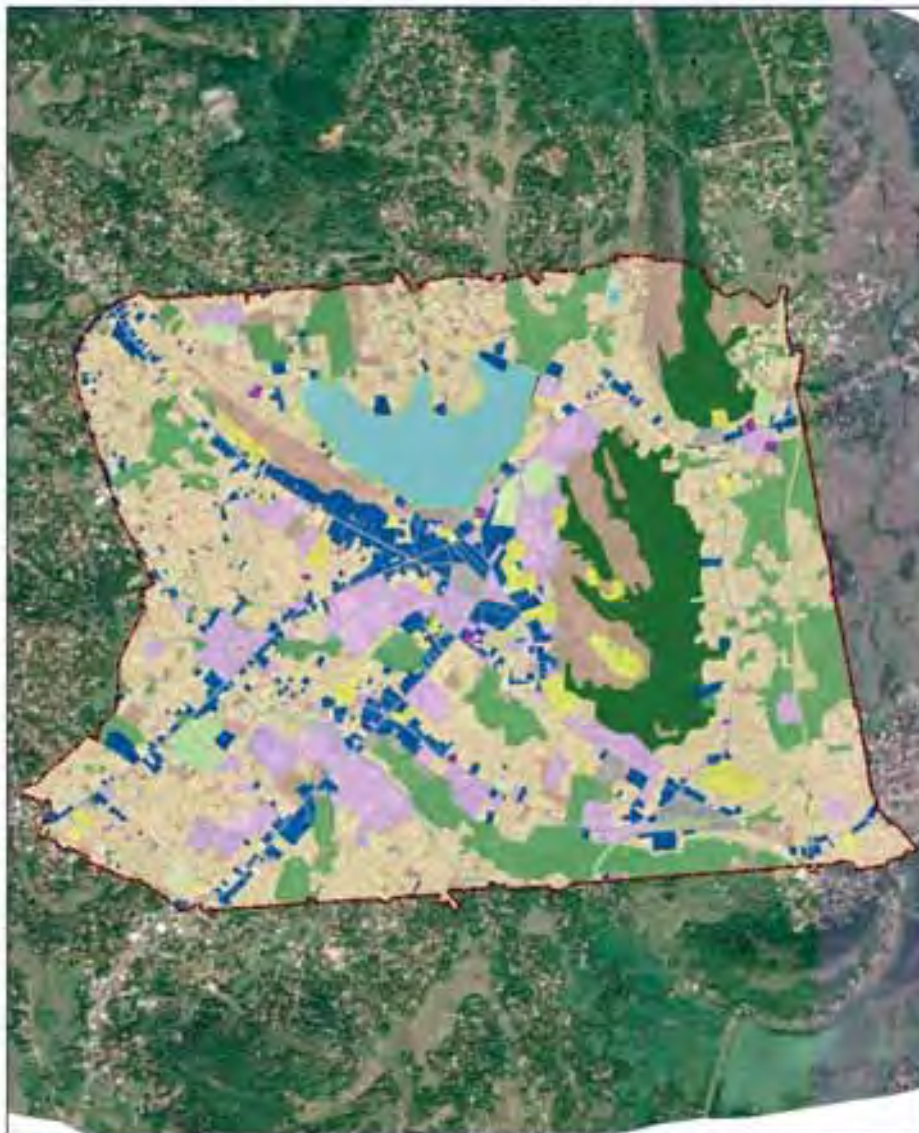
Kurunegala is the provincial capital city of North Western Province. The city provides a good example of ribbon development progressing into urban sprawl. The city is based on a service and industry based economy. The level of higher educational attainment is the highest in Kurunegala compared to the other provincial capital cities.



Number of Vehicles and Passengers by Mode in Kurunegala - one way over a 24 Hour period



Kurunegala Land Use 2017



LAND EXTENT

URBAN

1995 – 0.51 km²

2017 – 3.54 km²

SEMI – URBAN

1995 – 0.77 km²

2017 – 3.57 km²

LAND USE

Residential

39.06% (4.3 km²)

Commercial

7.13% (0.78 km²)

Agriculture

12.6% (1.38 km²)

Forest

7.28% (0.8 km²)

Reference

- SoSLC
- DMC
- DCS



Legend

Kurunegala Municipal Boundary

Land Use

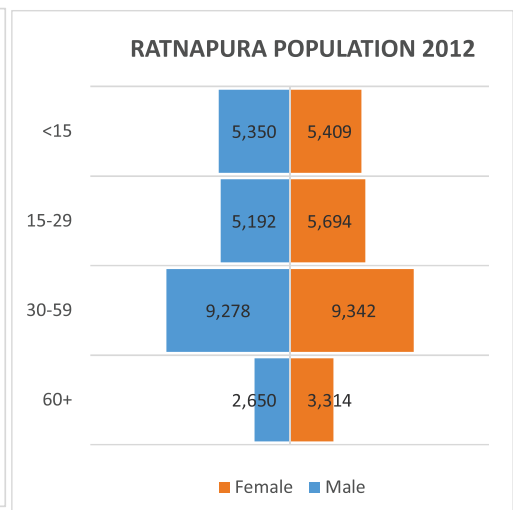
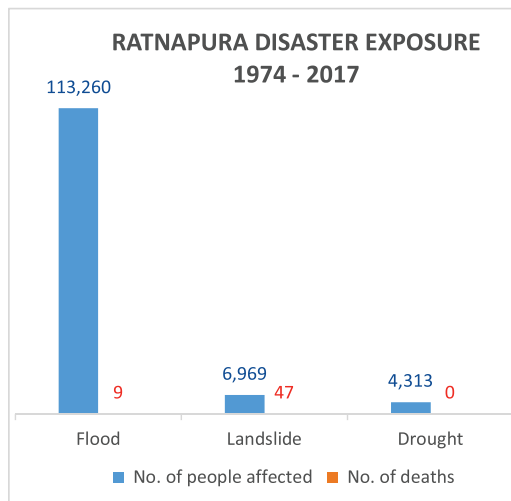
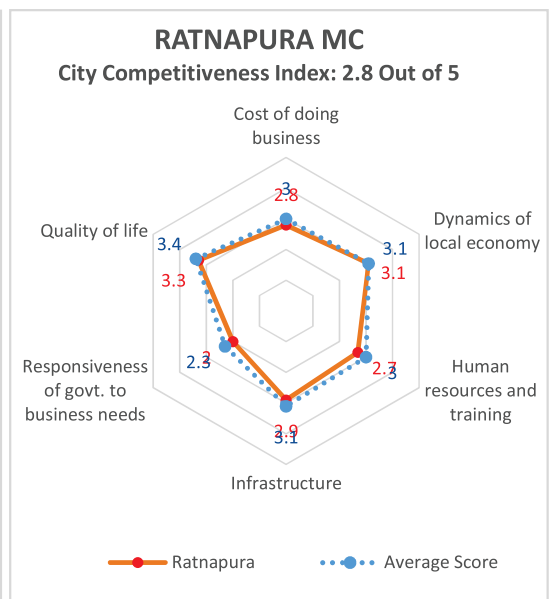
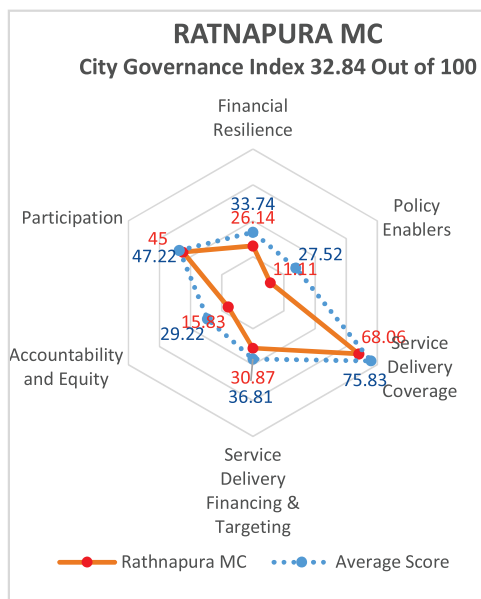
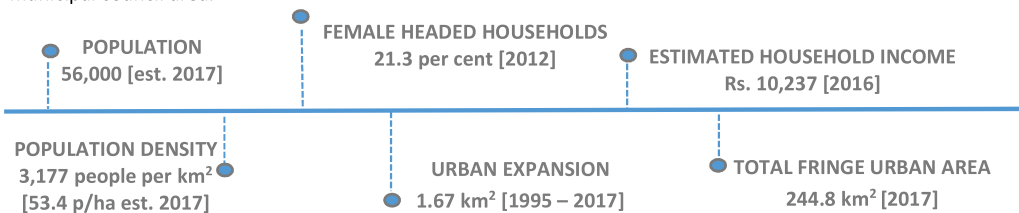




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Ratnapura is the provincial capital city of Sabaragamuwa Province. Ratnapura in Sinhala means “The Gem City” as it is famous for its gem industry. Kalu River which is one of the four main rivers in Sri Lanka flows across the municipal council area.



Number of Vehicles and Passengers by Mode in Ratnapura - one way over a 24 Hour period



Ratnapura Land Use 2017



LAND EXTENT

URBAN

1995 – 0.41 km²

2017 – 2.56 km²

SEMI – URBAN

1995 – 4.57 km²

2017 – 7.74 km²

LAND USE

Residential

36.35% (8.24 km²)

Commercial

2.6% (0.59 km²)

Agriculture

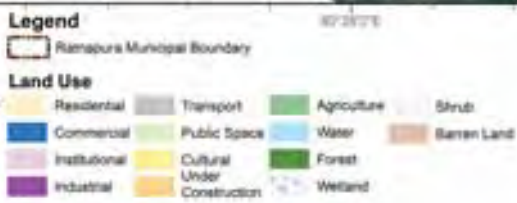
30% (6.8 km²)

Forest

11% (2.55 km²)

Reference

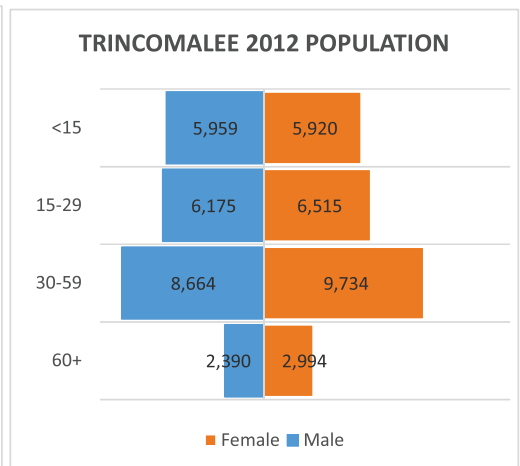
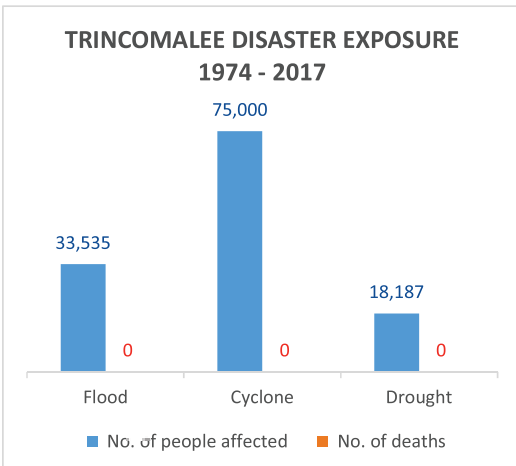
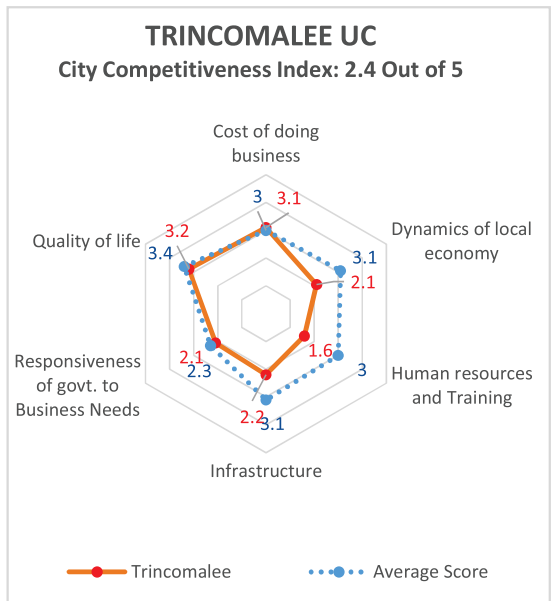
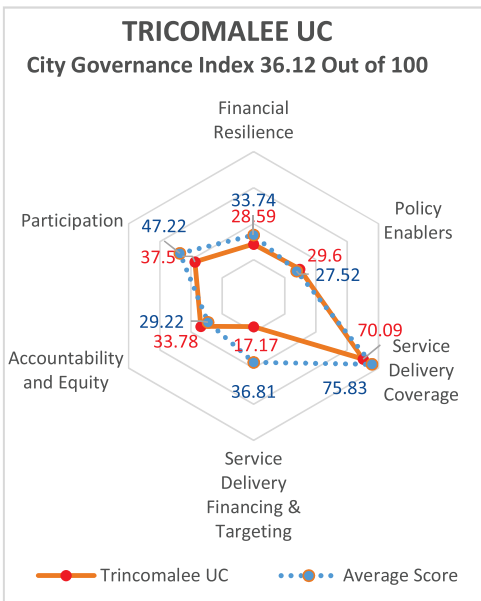
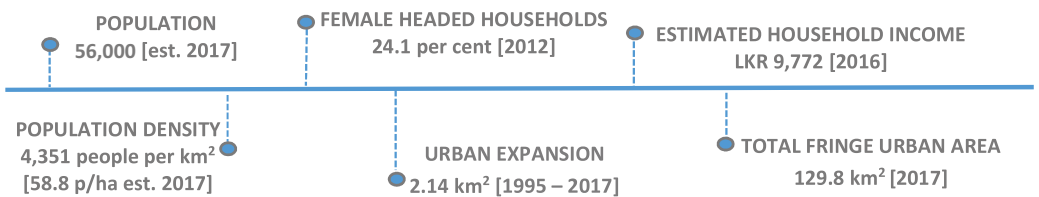
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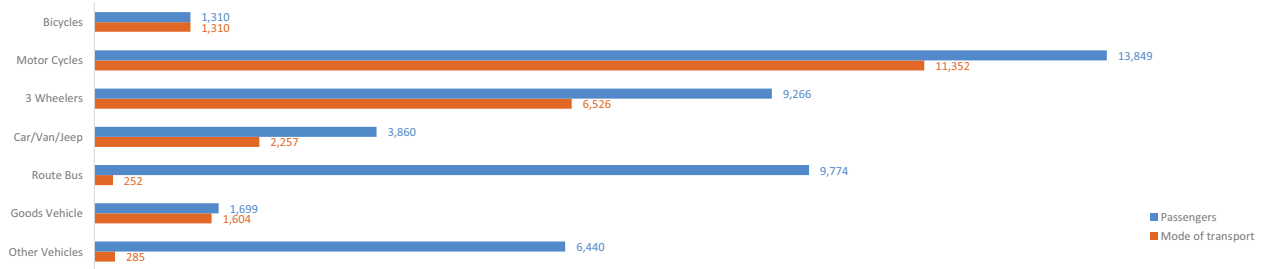
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Trincomalee is the provincial capital city of the Eastern Province and acts as an important gateway to the more remote areas in the east. It is a coastal city developed as a centre for trade and commerce with an emerging tourism industry.



TRINCOMALEE

Number of Vehicles and Passengers by Mode in Trincomalee - one way over a 24 Hour period



Trincomalee Land Use 2017



LAND EXTENT

URBAN

1995 – 1.59 km²

2017 – 4.92 km²

SEMI – URBAN

1995 – 3.93 km²

2017 – 4.58 km²

LAND USE

Residential

35.79% (4.94 km²)

Commercial

4.33% (0.6 km²)

Agriculture

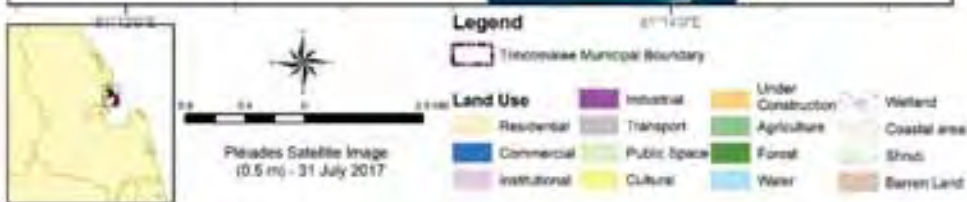
2.11% (0.29 km²)

Forest

21.7% (2.99 km²)

Reference

- SoSLC
- DMC
- DCS



The State of Sri Lankan Cities 2018 presents the first comprehensive assessment of Sri Lanka's recent urban development in the nine Provincial Capitals using spatial and statistical data. The Report, a key output of the *State of Sri Lankan Cities Project*, is accompanied by an urban database to support evidence-based decision making towards sustainable urban development in Sri Lanka. It outlines a vision of **a better urban future for all Sri Lankans**, drawing on the United Nations Sustainable Development Goals and the New Urban Agenda, as well the key Government of Sri Lanka strategic documents. This future vision of Sri Lankan cities includes five key tenets, competitiveness, inclusivity, resilience, safety and sustainability, which frame the analysis of the Report. The Report provides an analysis of the spatial attributes of Sri Lanka's urbanisation, an overview of its people and functions, and examines city economies, urban housing, municipal services, urban connectivity and municipal transport, climate risk and resilience, and governance. The wide variety of maps produced by this project is also presented in the Report.

